FINAL REPORT

Small-Scale Thermal Treatment of Investigation-Derived Wastes (IDW) Containing Per- and Polyfluoroalkyl Substances (PFAS)

SERDP Project ER18-1556

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14. ABSTRACT The focus of this project was to help develop better understanding of PFAS fate associated with lower temperature (below 600 C) thermal treatment approaches. This included an effort to assess the potential benefit of Ca(OH)2 amendments for lowering PFAS decomposition temperatures and off-gassing of volatile organic fluorine (VOF) species. A variety of thermal decomposition products were examined, including fluroride mineralized from the PFAS, sulfur oxyanions, and VOF species that evolved.

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ABSTRACT

Introduction and Objectives: There is intense interest in developing better approaches for managing wastes laden with per- and polyfluoroalkyl substances (PFAS). High temperature thermal treatment (e.g., above 1000 °C) of these materials is frequently performed, but lower temperature treatment (e.g., below 600 °C) may be appropriate to remove PFAS from materials as well. The focus of this limited scope SERDP project was to help develop better understanding of PFAS fate associated with lower temperature thermal treatment approaches. Specifically, the objectives of this project were to evaluate effects of low temperature thermal treatment on PFAS in simulated investigation derived wastes (IDW) and to assess the potential benefit of $Ca(OH)_2$ amendments for lowering PFAS decomposition temperatures and release of volatile organic fluorine (VOF) species.

Technical Approach: Simulated solid IDW materials were prepared with high concentrations of perfluorosulfonic acids (PFSAs) and perfluorocarboxylic acids (PFCAs), with $Ca(OH)_2$ added to a subset of these materials. The high concentrations of PFAS used in these experiments facilitated examination of a variety of thermal decomposition products, including fluoride mineralized from the PFAS, sulfur oxyanions from desulfonation of PFSAs, and VOF species that evolved. Thermal decomposition was performed in a tube furnace at temperatures up to 575 °C and products remaining in solids, trapped in aqueous solutions, and collected in gas sampling bags were examined through a variety of techniques. In addition to evaluation of PFAS, modified approaches were used to examine fluoride associated with solid species, and selected-ion monitoring (SIM) gas chromatography-mass spectrometry (GC-MS) was used to examine expected fluorocarbon ion fragments of collected VOF.

Results: Removal of PFSAs and perfluorooctanoic acid (PFOA) from the solids was essentially complete (>99.9%) when final temperatures reached 575 °C and 450 °C, respectively, with representative decomposition temperatures for PFSAs occurring near 360 °C, and that for PFOA occurring below 300 °C. With the amendment of $Ca(OH)_2$ to solids, decomposition of PFSAs appeared to occur below 300 °C, while PFOA was less affected. Without $Ca(OH)_2$, no more than 30% of initial fluorine in the PFAS was observed as fluoride, consistent with long perfluoroalkyl chains associated with 1H-perfluoroalkane and perfluoroalkene VOF observed. Fluorine mineralization was particularly low for PFOA. $Ca(OH)_2$ amendments increased fluorine mineralization in all cases, but this remained below 50% of initial fluorine content under all conditions evaluated. While up to 5% of PFSAs added to solids were observed as PFCAs in aqueous traps without $Ca(OH)_2$ amendments, these PFCAs were not observed when $Ca(OH)_2$ was present. The inclusion of $Ca(OH)_2$ appeared to cause a shift in the composition of VOF species, possibly suppressing the evolution of perfluoroalkene species.

Benefits: This project demonstrated that low temperature treatments can remove perfluoroalkyl acids (PFAAs) from simulated IDW materials, and that VOF evolve from this low temperature process. Further, this work demonstrated the concept that hydrated lime ($Ca(OH)_2$) amendments can lower PFAS decomposition temperatures, facilitate greater PFAS mineralization, and change the composition of VOF. The use of amendments such as $Ca(OH)_2$ that offer promise for treating PFAS at low temperatures to products with lower toxicity should be investigated further. Better understanding of these processes will aid future implementation of lower temperature thermal treatments for PFAS.

EXECUTIVE SUMMARY

ES.1. INTRODUCTION:

This limited scope project was performed to help address a need for improved treatment approaches for waste derived from subsurface investigations related to per- and polyfluoroalkyl substances (PFAS). Thermal treatment is practical and widely utilized for management of such investigation derived waste (IDW), despite some current uncertainties regarding the fate of volatile organic fluorine (VOF). While high temperature thermal treatment (e.g., above 1000 °C) is frequently used, lower temperature decomposition (e.g., below 600 °C) may also be appropriate and requires fewer resources and less energy. Additionally, lower temperature thermal treatment, including so-called thermal desorption processes, may be applicable at more field sites due to much greater ease of deployment. Lower temperatures have been shown to volatilize many PFAS, but resulting products, including hydrogen fluoride (HF) and VOF species, may present challenges.

The work described herein showed that low temperature treatments can remove perfluoroalkyl acids (PFAAs) from simulated IDW materials, and that VOF evolve from this low temperature process. Further, this work demonstrated the concept that hydrated lime ($Ca(OH)_2$) amendments can lower PFAS decomposition temperatures, facilitate greater PFAS mineralization, and change the composition of VOF. A thermal testing system was developed to evaluate these processes, and to facilitate the examination of VOF and quantification of fluoride species. A gas chromatography-mass spectrometry (GC-MS) method was applied to examine VOF, which may otherwise occur beyond the analytical coverage provided by liquid chromatography with tandem mass spectrometry (LC-MS/MS). It is necessary to consider the composition and chemistry of VOF and other products when evaluating low temperature treatment approaches for PFAS.

ES.2. OBJECTIVES:

The objectives of this project were to evaluate thermal treatment for PFAS in simulated IDW and to assess the potential benefit of $Ca(OH)_2$ amendments for lowering PFAS decomposition temperatures and release of VOF species. One benefit of thermal treatment is that it can be operated at small scales as may be appropriate for IDW. Specific objectives of the work described in this report were:

1. To evaluate thermal decomposition and production of mineralized fluorine (e.g., HF) and VOF species during heating of perfluorocarboxylic acids (PFCAs) and perfluorosulfonic acids (PFSAs);
2. To evaluate whether $Ca(OH)_2$ amendments affect the formation of VOF compounds that may include fluorinated greenhouse and toxic gases; and
3. To evaluate the thermal decomposition of a mixture of the 6 PFAS included in the third Unregulated Contaminant Monitoring Rule (UCMR-3) in a representative soil, with and without $Ca(OH)_2$ amendments. These UCMR-3 PFAS are:
    - Perfluorooctanesulfonic acid (PFOS),
    - Perfluorohexanesulfonic acid (PFHxS),
    - Perfluorobutanesulfonic acid (PFBS),

- Perfluorononanoic acid (PFNA),
- Perfluorooctanoic acid (PFOA), and
- Perfluoroheptanoic acid (PFHpA).

ES.3. TECHNICAL APPROACH:

Three primary technical tasks were performed to achieve the objectives of this limited scope project:

Task 1. Preparation of simulated IDW solids
Task 2. Baseline decomposition of PFOS, PFHxS, and PFOA
Task 3. Decomposition of simulated solid IDW with $Ca(OH)_2$

During Task 1, all-purpose sand and field soil granular solids were separately augmented with PFAS to simulate solid IDW. PFAS augmented granular solids were used for the experiments in this project because they eased handling, concentration measurements, and mixing with $Ca(OH)_2$ solids. All granular solids were dried and sieved, with the fraction passing the 0.6 mm sieve used for the experiments. For experiments with $Ca(OH)_2$, this was homogenized with the solids using a rotary tumbler.

Most of the effort for this project was associated with Tasks 2 and 3. Tasks 2 and 3 were performed in a similar manner, and both tasks used the same testing system to examine thermal decomposition of PFSA and PFCA laden solid materials. This system consisted of a tube furnace fitted with a 1-inch OD stainless-steel process tube, two midget impingers in series to trap fluoride, sulfur dioxide, and other water-soluble species, and a Flexfoil gas sampling bag for collection of VOF species (See **Figure ES - 1**). A nickel sample boat was used to contain PFAS-laden samples within the furnace. Temperatures provided throughout this work are the furnace set temperatures, but those at the sample boat may have been up to 20 °C lower.

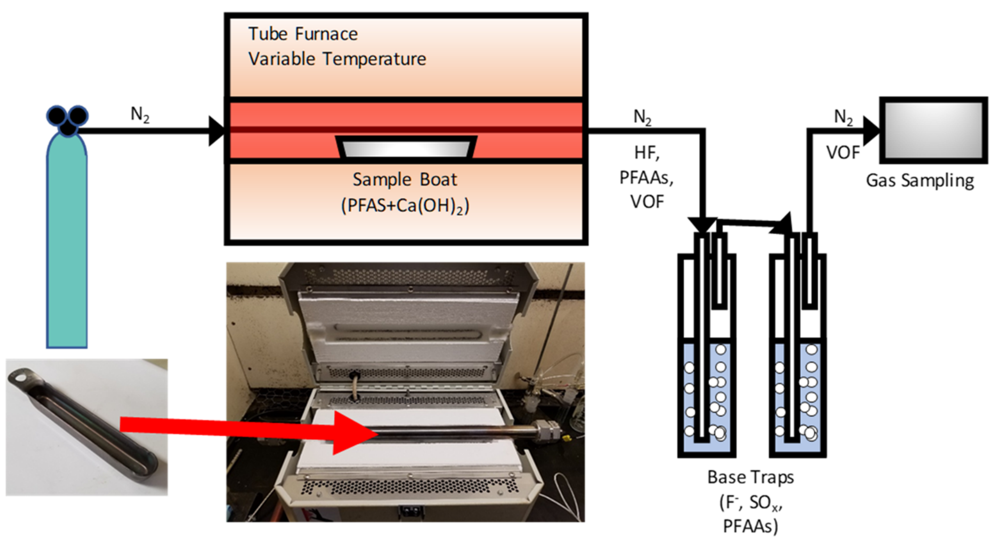

Figure ES - 1. Components of the thermal testing system. Depicted are the nitrogen sweep gas cylinder, tube furnace, midget impingers (i.e., base traps), and Flexfoil gas collection bags.

During experiments, a nickel sample boat containing simulated PFAS IDW was emplaced in the center of the process tube, and the process tube was connected to two midget impingers, which were in turn connected to a Flexfoil bag. The system was closed, such that gases evolved from the simulated IDW were swept to the impingers and ultimately collected in the Flexfoil bags. During a given thermal decomposition experiment, the set temperature of the furnace was systematically increased through a range where PFSA and PFCA decomposition was anticipated. Impingers were replaced approximately every hour, together with a change in furnace temperature, and solutions collected for analysis. Flexfoil bags were replaced at the same time as impingers and stored for off-line analysis of VOF by GC-MS. After a given thermal run, the furnace was allowed to cool and the nickel boat containing thermally treated solids was carefully removed, with contained solids placed in aqueous solution for extraction. Solutes associated with nickel boat and process tube surfaces were also extracted and analyzed.

Fluoride was evaluated by ion chromatography (IC) consistent with USEPA Method 300 or using a fluoride ion specific electrode (ISE). Sulfur oxyanions were evaluated in aqueous solutions and extracts as sulfate, after oxidation by hydrogen peroxide, by IC consistent with USEPA Method 300. An analytical method based on reverse phase liquid chromatography with suppressed conductivity detection (RPLC-SCD) was used to evaluate PFSA and PFCA concentrations for most of the work described in this report, and a limited number of samples were sent to an external DoD ELAP accredited laboratory (Pace Analytical Gulf Coast) for analysis by LC-MS/MS. Overall, agreement between the RPLC-SCD and LC-MS/MS methods was satisfactory for the interpretations provided herein. A GC-MS method was developed and improved throughout this project to evaluate VOF species. While this GC-MS approach requires further refinement, it proved to be one of the more useful tools for the interpretations provided in this work.

ES.4. RESULTS AND DISCUSSION:

Concentrations ranging from 0.8 mg/g to 2.4 mg/g for individual PFAS were targeted for use in the simulated IDW. After preparation, measured PFAS concentrations of the solids were within 35% of target concentrations and satisfactory for purposes of the experiments.

During thermal decomposition experiments, PFSAs and PFCAs were removed from simulated IDW materials at temperatures achievable in the field, and amendment with $Ca(OH)_2$ was shown to increase this removal. Depending on conditions, PFAS removals ranged between 90% (for PFSAs held at 325 °C for 4 hours without $Ca(OH)_2$ addition) and greater than 99.9% (for PFOS and PFHxS ramped up to a final temperature of 575 °C; and PFOA ramped up to a final temperature of 450 °C). VOF evolution from the simulated IDW solids was significant during this process, which was be noted by the presence of the trifluoromethyl ($-CF_3$) ion fragment with mass to charge (m/z) ratio of 69 in GC-MS analyses. **Figure ES - 2** shows the accumulating m/z 69 signal (shown in blue) associated with PFOS decomposition in the simulated IDW using sieved all-purpose sand, both without and with $Ca(OH)_2$. The average furnace temperature at which VOF were collected (based on averaged m/z 69 signal) during PFOS decomposition was estimated, and is also indicated in **Figure ES - 2** as the blue dashed line, shifting from T_{VOF}=364 °C without $Ca(OH)_2$ to T_{VOF}=278 °C with $Ca(OH)_2$. Using this methodology, in the experiments using all-purpose sieved sand, temperatures associated with VOF release from PFSAs decreased from near 360 °C to near 280 °C when $Ca(OH)_2$ was amended, while temperatures associated with VOF release from PFOA were near 250 °C whether $Ca(OH)_2$ was amended or not (See **Figure ES - 3**). Consistent with these observations that $Ca(OH)_2$ lowered decomposition temperature for PFSAs, fewer PFSAs remained when the simulated field IDW material was held at 325 °C for four hours when $Ca(OH)_2$ was amended, and no PFCAs were detected in either case (See **Figure ES - 3**).

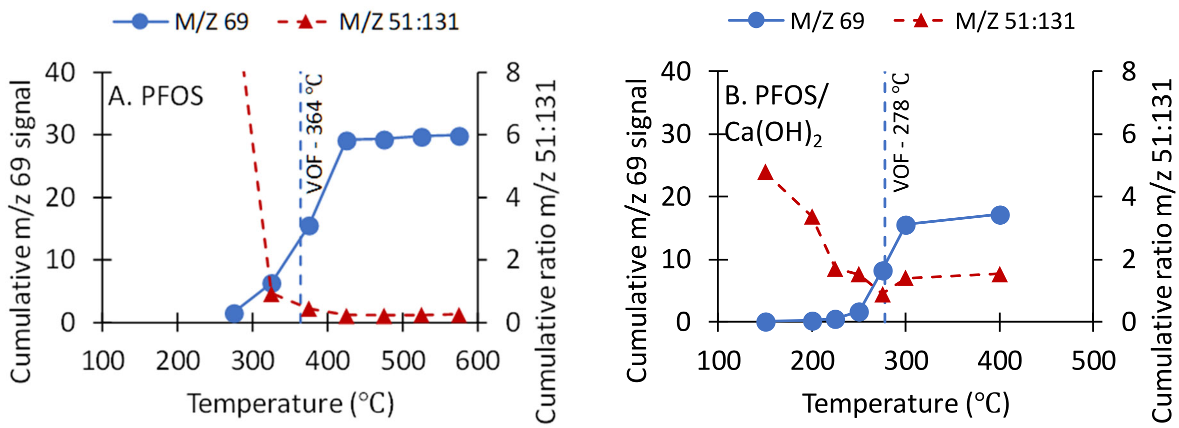

Figure ES - 2. Evolution of VOF from simulated PFOS IDW with increasing temperature. A.) IDW alone and B.) IDW with $Ca(OH)_2$. Blue markers and solid line represent cumulative m/z 69 observed as temperature increases. M/z 69 represents both perfluoroalkene and 1H-perfluoroalkane species. The dashed blue line represents the estimated average temperature at which m/z 69 was recovered. Red markers and dashed line represent the cumulative ratio of m/z 51 to m/z 131. The shift to lower 51:131 ratios with increasing temperature, indicating an increase in perfluoroalkene-like abundance with temperature, was much more muted with $Ca(OH)_2$.

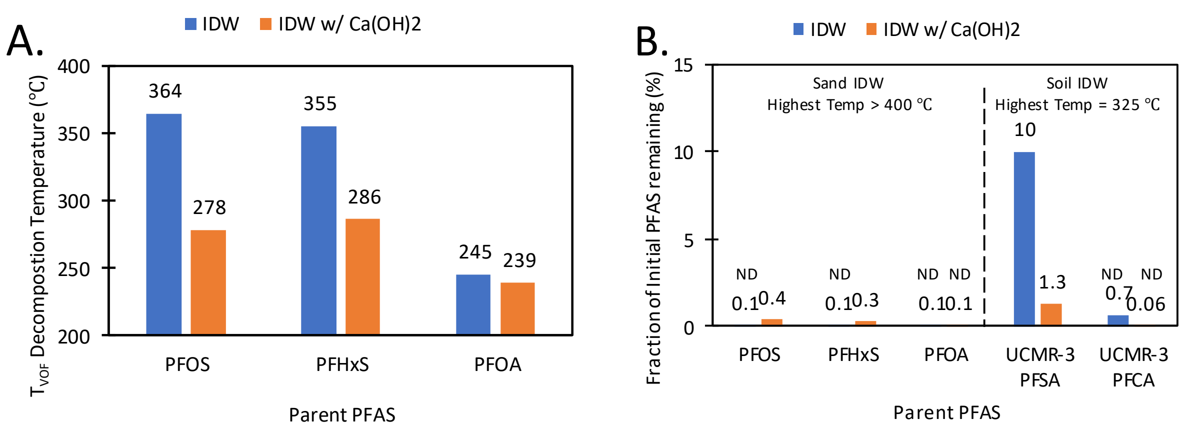

Figure ES - 3. Decomposition temperatures and PFAS remaining after decomposition. A.)Estimated average temperature at which m/z 69 was recovered in VOF showing a shift to lower temperatures with $Ca(OH)_2$ amendments for PFSAs. B.) Observed fraction of PFAS remaining in simulated IDW after thermal treatment.

Improved fluorine mineralization of PFAS and suppression of volatile water-reactive PFCA precursors (e.g., acyl fluoride species) was also noted with the inclusion of $Ca(OH)_2$ amendments

(See **Figure ES - 4**). This suggests promise for enhancing PFAS mineralization and reducing PFCA formation using $Ca(OH)_2$, and this process should be optimized. While the volatile PFCA precursors appeared reasonably facile to remove from the gas phase, they are of interest as they may lead to mobilization and distribution of PFCA species (perhaps localized) if not appropriately considered.

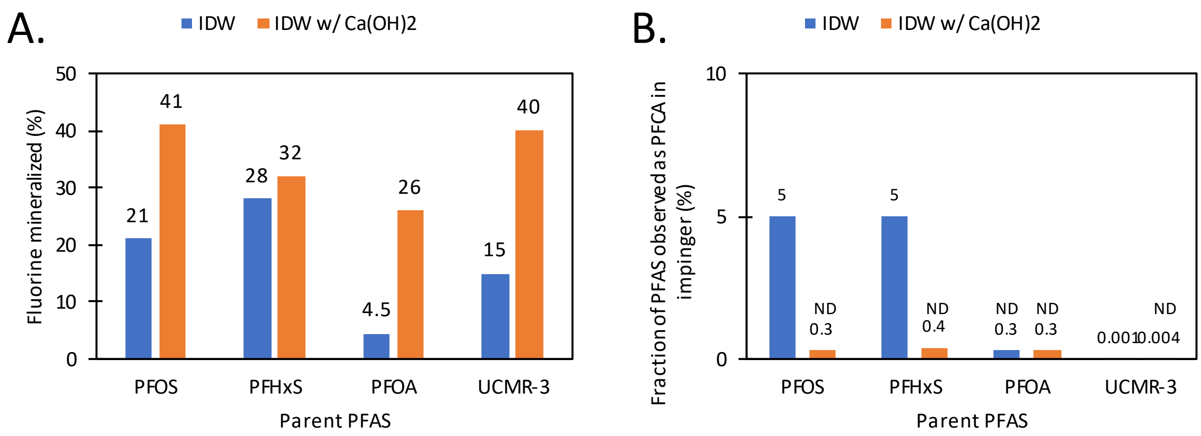

Figure ES - 4. Products of PFAS thermal decomposition. A.) Fraction of fluorine of parent PFAS observed as fluoride products, indicating greater fluorine mineralization with $Ca(OH)_2$ amendments. B.) Fraction of initial PFAS observed as PFCAs in impinger traps, indicating the release of likely volatile intermediates (e.g., acyl fluoride VOF).

VOF collected in Flexfoil bags were observed to contain large quantities of two homologous series – one with strongest signals at m/z 51 and 69, and one with strongest signals at m/z 131 and 69. The mass spectra of VOF collected during decomposition of the simulated field IDW illustrate this well and are shown in **Figure ES - 5** at relevant retention times. Representative 1H-perfluoroalkane and perfluoroalkene species procured from Synquest Labs, Inc (Alachua, FL) match the retention times and mass spectra of the VOF resulting from thermal decomposition closely (See **Figure ES - 5**), and suggest that other observed VOF with analogous spectra are 1H-perfluoroalkane and perfluoroalkene species with longer or shorter perfluoroalkyl chains, including perfluorooctene, 1H-perfluoropentane, 1H-perfluorobutane and likely 1H-perfluoropropane. During this work, examination of such spectra indicated that 1H-perfluoroalkane and perfluoroalkene VOF of similar length as parent PFAS were most common, but other minor VOF components, including possibly more toxic species, should not be ruled out.

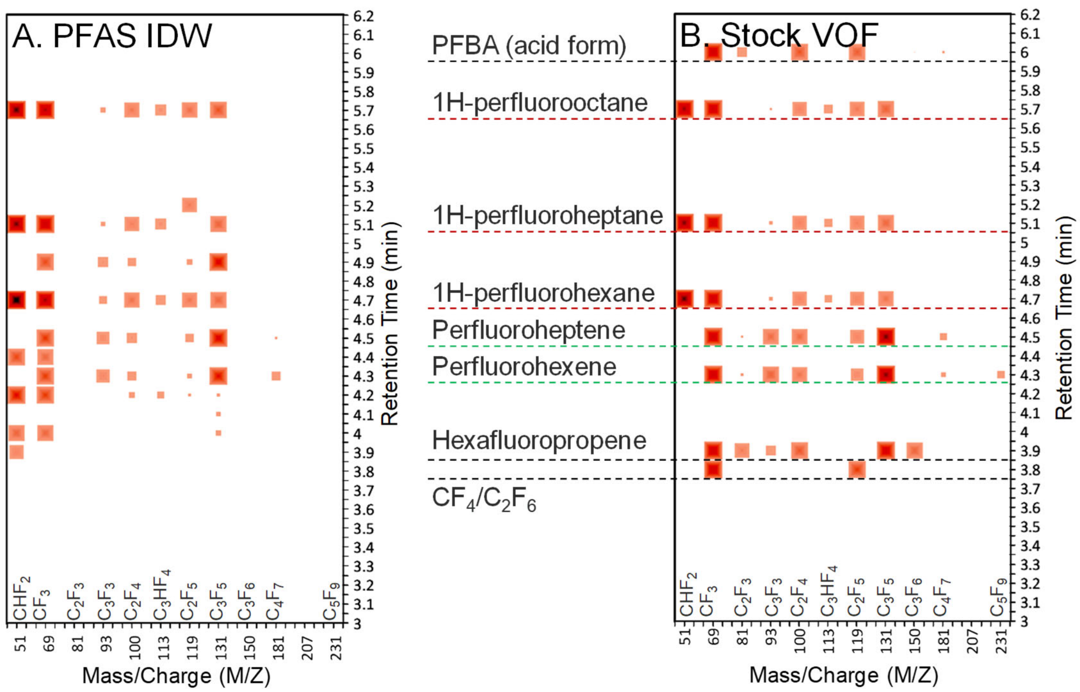

Figure ES - 5. Cumulative GC-MS SIM ion fragment signals of VOF resulting from PFAS decomposition and from stock materials. A.) VOF after thermal decomposition of simulated field IDW with the 6 UCMR-3 PFAS, without $Ca(OH)_2$. B.) VOF from procured stock materials. GC-MS signals were discretized at 0.1 min resolution. For (B), red and green dashed lines indicate homologous 1H-perfluoroalkane and perfluoroalkene species, respectively. The size and intensity of red squares relate to the strength of the signal for ion fragments observed at indicated retention times.

In addition to the m/z 69 ion fragment which is shared among both 1H-perfluoroalkane and perfluoroalkene species, we also evaluated the ratio of m/z 51 to m/z 131 as an indication of relative proportions of these two dominant VOF. This ratio (shown as cumulative amount evolved at temperature indicated and below) is shown in **Figure ES - 2** in red for the case of PFOS decomposition, both without and with $Ca(OH)_2$. As shown, amendment of IDW with $Ca(OH)_2$ resulted in a shift in the cumulative composition of VOF toward greater 1H-perfluoroalkane abundance with $Ca(OH)_2$ amendment. While this is evident by the ratio of m/z 51:131 in **Figure ES - 2**, an additional decomposition experiment with PFOS sand amended with 10 times greater $Ca(OH)_2$ (160 mg/g) very clearly demonstrated this effect. **Figure ES - 6** shows the mass spectra of VOF from this experiment together with the baseline spectra of PFOS without $Ca(OH)_2$, and perfluoroalkene VOF species (e.g., perfluoroheptene at RT=4.5 min) were notably suppressed in the presence of higher $Ca(OH)_2$.

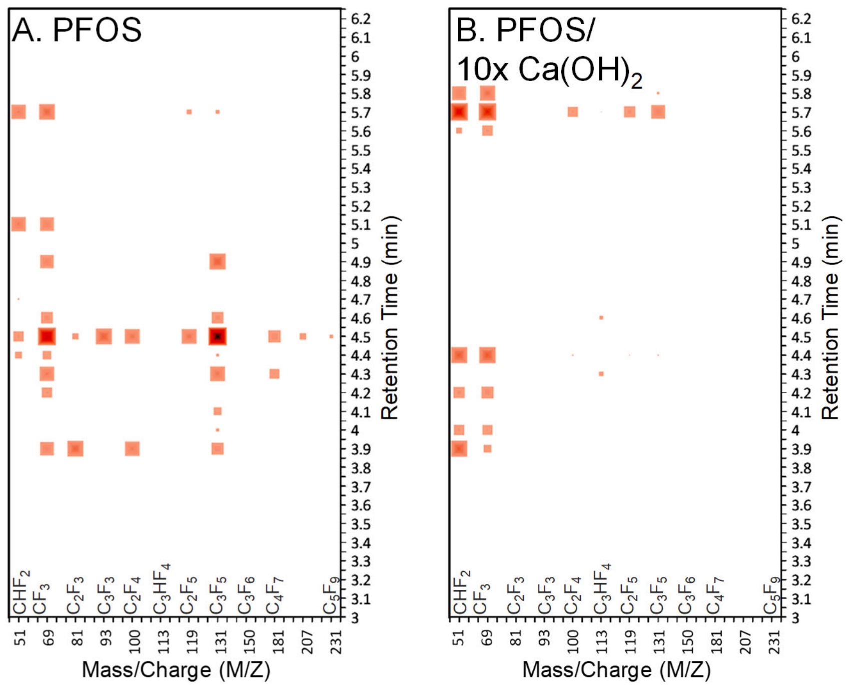

Figure ES - 6. Cumulative GC-MS SIM ion fragment signals of VOF resulting from PFOS decomposition in simulated IDW and with $Ca(OH)_2$ amendment. GC-MS signals were discretized at 0.1 min resolution. A shift from perfluoroalkene (e.g., m/z 131) to 1H-perfluoroalkane species (e.g., m/z 51) is observed when $Ca(OH)_2$ is present. Furnace temperatures for both experiments were matched and ranged from 275 °C to 575 °C.

ES.5. Implications for Future Research and Benefits:

Low temperature thermal treatment of PFAS is promising as it has been shown to remove PFAAs through partial mineralization and transformation to more volatile VOF. Improved understanding of these VOF is essential to evaluate the fate of thermally treated PFAS, and to assess toxicity risks associated with VOF products. Future development of low temperature thermal treatment approaches for PFAS will rely on safe, cost-effective, and optimized methods for managing the VOF produced.

There remains a need to continue identifying and quantifying VOF that may evolve during PFAS thermal decomposition, including VOF evolving from PFAA precursors and novel PFAS, such as GenX. Towards this end, GC-MS methods for VOF should continue to be refined. At this time, the GC-MS method used in this work requires high concentrations of analytes and there would be significant benefit associated with improving the sensitivity of these measurements. Particularly with respect to VOF, identification of major species and other components of interest should facilitate better approaches to trap and concentrate species for better detection.

All the experiments performed during this limited-scope project utilized relatively inert and dry N_2 as a sweep gas. This may have had the experimental benefit of preserving more reactive products or intermediates that otherwise may not have been observed. However, the influence of oxygen and water in the gas phase should be investigated as these may significantly alter volatile products. For example, oxygen may be added at the vinyl bond of the perfluoroalkene species, resulting in possible acyl fluoride groups, which may be subsequently hydrolyzed to form new PFCAs, albeit with a shorter perfluoroalkyl chain. With respect to low temperature thermal treatment of PFAS, and better understanding of possible volatile emissions, all such processes are important to consider and warrant further investigation.

During this work, $Ca(OH)_2$ amendments were observed to decrease decomposition temperatures, increase fluorine mineralization, and change the composition of VOF. It is unclear whether or how these individual effects are related, but the suppression of perfluoroalkene species, as exhibited in **Figure ES - 6** is intriguing. It would be helpful to better understand reactions between perfluoroalkene, or possibly acyl fluoride species, and $Ca(OH)_2$ that could lead to fluorine mineralization, or whether $Ca(OH)_2$ otherwise inhibits formation of these volatile species during thermal PFAS decomposition. For application of low temperature treatment for PFAS, better understanding of factors affecting the relative abundances of perfluoroalkene and 1H-perfluoroalkane VOF is necessary, as these VOF likely behave differently during subsequent flue gas treatment approaches (e.g., sorption or oxidation) that may be necessary. Ultimately, understanding products resulting from low temperature thermal decomposition of PFAS, including the perfluoroalkene and 1H-perfluoroalkane VOF identified in this work, will be critical for the DoD as it considers thermal treatment approaches to manage PFAS laden materials.

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ACRONYM LIST

AC	Activated Carbon
AFFF	Aqueous film forming foam
APTIM	Aptim Federal Services, LLC
CaF_2	Calcium fluoride
$Ca(OH)_2$	Calcium hydroxide
CF_4	Tetrafluoromethane
C_2F_6	Hexafluoroethane
$C_5F_{11}COF$	Perfluorohexanoyl fluoride
$C_7F_{15}COF$	Perfluorooctanoyl fluoride
COF_2	Carbonyl Fluoride
DoD	United States Department of Defense
EDTA	Ethylenediaminetetraacetic acid
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency
GAC	Granular activated carbon
GC-MS	Gas Chromatography-Mass Spectrometry
HAL	Health advisory level
HF	Hydrogen fluoride
HFP	Hexafluoropropylene
IC	Ion Chromatography
ID	Interior diameter
IDW	Investigation derived waste(s)
ISE	Ion specific electrode
JBMDL	Joint Base McGuire-Dix-Lakehurst
K	Potassium
KOH	Potassium hydroxide
LC-MS/MS	Liquid chromatography tandem-mass spectrometry
LOD	Limit of detection
m/z	Mass-to-charge ratio
MRT	Mean residence time
N_2	Diatomic nitrogen
Na	Sodium
Na_3H-EDTA	Trisodium Ethylenediaminetetraacetic acid
NaOH	Sodium hydroxide
ND	Not detected
OD	Outside diameter
PFAA	Perfluoroalkyl acid
PFAS	Per- and Polyfluoroalkyl Substance(s)
PFBS	Perfluorobutanesulfonate, perfluorobutanesulfonic acid
PFCA	Perfluorocarboxylic acid
PFHpA	Perfluoroheptanoate, perfluoroheptanoic acid
PFHxS	Perfluorohexane sulfonate, perfluorohexanesulfonic acid
PFNA	Perfluorononanoate, perfluorononanoic acid

Acronym List (cont'd)

PFOA	Perfluorooctanoate, perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate, perfluorooctanesulfonic acid
PFPA	Perfluoropropionate, perfluoropropionic acid
PFSA	Perfluorosulfonic acids
ppt	Parts per trillion
PTFE	Polytetrafluoroethylene
PVC	Polyvinyl chloride
RPLC-SCD	Reverse phase liquid chromatography - suppressed conductivity detection
RT	Retention time
SB	Soil boring
SERDP	Strategic Environmental Research and Development Program
SiF_4	Silicon tetrafluoride
SIM	Selected-ion monitoring
SO_2	Sulfur dioxide
SO_3	Sulfur trioxide
T_{VOF}	Average temperature of VOF collection
TFE	Tetrafluoroethylene
TIC	Tentatively identified compound
UCMR-3	Third Unregulated Contaminant Monitoring Rule
USEPA	United States Environmental Protection Agency
VOF	Volatile Organic Fluorine

KEYWORDS
Per- and polyfluoroalkyl substances (PFAS), perfluorosulfonic acids (PFSAs), perfluorocarboxylic acids (PFCAs), perfluoroalkyl acids (PFAAs), thermal degradation, pyrolysis, thermolysis, thermal treatment, investigation derived wastes (IDW), hydrated lime ($Ca(OH)_2$), volatile organic fluorine (VOF), 1H-perfluoroalkane, perfluoroalkene, hydrogen fluoride.

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1.0 OBJECTIVES

The objectives of this project were to evaluate thermal treatment for per- and polyfluoroalkyl substances (PFAS) in simulated investigation derived wastes (IDW) and to assess the potential benefit of hydrated lime ($Ca(OH)_2$) amendments for lowering PFAS decomposition temperatures and release of volatile organic fluorine (VOF) species. One benefit of thermal treatment is that it can be operated at small scales as may be appropriate for IDW. Specific objectives of the work described in this report were:

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2. To evaluate whether $Ca(OH)_2$ amendments affect the formation of VOF compounds that may include fluorinated greenhouse and toxic gases; and
3. To evaluate the thermal decomposition of a mixture of the 6 PFAS included in the third Unregulated Contaminant Monitoring Rule (UCMR-3) in a representative soil with and without $Ca(OH)_2$ amendments. These UCMR-3 PFAS are:
    - Perfluorooctanesulfonic acid (PFOS),
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    - Perfluorobutanesulfonic acid (PFBS),
    - Perfluorononanoic acid (PFNA),
    - Perfluorooctanoic acid (PFOA), and
    - Perfluoroheptanoic acid (PFHpA).

2.0 Background

There is heightened concern within the U.S. and internationally regarding environmental releases of per- and polyfluoroalkyl substances (PFAS). Regulatory limits for some PFAS in water are in the low parts per trillion (ppt) range, driven by their recalcitrance and associations between PFAS exposure and health outcomes such as developmental impacts, hepatoxicity, immunosuppression, and others.[1–4] PFAS are contaminants of concern across all branches of the Department of Defense (DoD) primarily due to their presence in aqueous film-forming foams (AFFF) which are widely applied for suppressing hydrocarbon fires. Historical application of AFFF at military sites includes emergency applications, fire training exercises, and equipment testing, resulting in more than 650 sites across DoD.[5]

Recognition of the risks posed by PFAS has resulted in evaluations and investigations associated with DoD use of these materials. Site investigations have been and continue to be initiated to determine the extent of the issue, resulting in IDW that may contain PFAS (e.g., sediments from the installation of groundwater monitoring wells). The scale and types of IDW generated at sites vary widely, but IDW laden with PFAS requires disposal management.

Thermal treatment is practical and widely utilized for management of IDW, despite some current uncertainties regarding the fate of VOF. High temperature thermal treatment (e.g., above 1000 °C) is widely applied,[6–8] but lower temperature decomposition (e.g., below 600 °C) is also of interest as it requires fewer resources and is less energy intensive. Additionally, lower temperature thermal treatment, including so-called thermal desorption processes, may be applicable at more field sites due to much greater ease of deployment. Lower temperatures have been shown to volatilize many PFAS, but resulting products, including hydrogen fluoride (HF) and VOF, may present challenges.

The impact of thermal processing on PFAS has been investigated experimentally in a variety of contexts that provide insight into required temperatures and expected products. The fluorochemical industry, for example, has long examined such processes from an industrial processing perspective. In this context, thermally processed PFCA salts were shown to yield up to 9- carbon perfluoroalkene species at temperatures below 300 °C, with yields as high as 97% depending on parent PFCA and cations used.[9] During these studies, 1H-perfluoroalkane, and acyl fluoride species were also noted as products depending on cation type and other reaction conditions.[9] More recently, similar approaches have been evaluated for the production of perfluoroalkene monomers of interest, such as tetrafluoroethylene (TFE) from the pyrolysis of perfluoropropionic acid salts (PFPA) with high yields.[10] In addition to non-polymeric PFAS (e.g., PFCAs), polymeric PFAS such as (e.g., polytetrafluoroethylene, PTFE) have also been investigated as a source of fluorocarbon monomers, particularly with TFE and hexafluoropropylene (HFP) products noted with variable efficiency.[11–14]

In addition to studies related to industrial processing of fluorochemicals, thermal treatment of PFAS has also been experimentally investigated with regards to waste management needs. For example, thermal treatment of activated carbon (AC) containing PFAS at temperatures exceeding 700 °C has been shown to remove most PFAS from AC, but VOF species as well as mineralized fluorine products were produced,[15] with much greater mineralization at 1000 °C. VOF indicated incomplete mineralization of the PFAS and highlight the continued need for improved understanding of thermal treatment approaches. Other VOF that have been observed after thermal decomposition of PFAS include 1H-perfluoroalkane, perfluoroalkene, and cyclic perfluoroalkane species,[16,17] broadly consistent with products described earlier with respect to industrial processes. VOF may be further transformed in the atmosphere and result in the broader distribution of PFCA species. For example, several VOF (e.g., 1H-perfluorooctane) are considered PFOA-related compounds with respect to the Stockholm Convention on Persistent Organic Pollutants.[18]

Optimization of thermal processing of PFAS-containing solids through use of amendments has received attention. For example, the addition of alkaline NaOH solution to GAC prior to thermal treatment resulted in greater fluorine mineralization localized to the GAC than without such alkaline treatment.[19] Similar to this alkaline treatment, the addition of $Ca(OH)_2$ to various solid materials (e.g., sludge, boron nitride) has been investigated.[20–23] During these studies, $Ca(OH)_2$ was suggested to the lower decomposition temperature of PFOS from near 450 °C to near 350 °C and lead to the formation of stable CaF_2 minerals, as observed by x-ray diffraction analyses.[21] Later studies with $Ca(OH)_2$ suggested greater fluorine mineralization of PFSAs than PFCAs when $Ca(OH)_2$ was present.[22] During these efforts, VOF were examined by gas chromatography-mass spectrometry (GC-MS) and changes among ion fragments associated with VOF were noted, although it is not clear whether individual VOF (e.g., 1H-perfluoroalkane) were identified in chromatograms.[22]

During this limited-scope project, we pursued the concept that $Ca(OH)_2$ amendments may be utilized to lower decomposition temperatures and VOF emissions, with the goal of understanding factors that affect this performance. This required developing a thermal testing system that facilitated the examination of VOF products and allowed for quantification of fluoride species.

3.0 Materials and Methods

3.1 Thermal testing system

A thermal testing system was used to experimentally examine the thermal decomposition of PFSA and PFCA laden solid materials. This system consisted of: a tube furnace fitted with a 1-inch OD, 0.875-inch ID diameter 316 stainless-steel process tube; two midget impingers (25 mL) in series to trap fluoride, sulfur dioxide, and other water-soluble species; and a Flexfoil gas sampling bag for collection of VOF species (See **Figure 1**). A nickel sample boat was used to contain PFAS-laden samples within the furnace. The stainless-steel process tube was 20” long, with an internal volume of approximately 200 mL. Nitrogen gas ($N_{2(g)}$) flowing at approximately 25 mL/min was used as a sweep gas during experiments resulting in a mean residence time (MRT) of ~8 minutes in tube. While the system was typically closed, it was contained within a fume hood to prevent possible exposures to vented gases when components were serviced.

The thermal response of this system was evaluated with flow of $N_{2(g)}$ and in the presence of an empty sample boat using a K-type thermocouple inserted to the mid-point of the tube near the sample boat. **Figure 2** shows the progression of temperature with time in response to changes in set temperature of the furnace. Temperatures within the process tube were measured to be 10 to 20 °C less than the set temperature and this temperature was generally reached within 10 minutes of change in set temperature. Based on these thermocouple measurements, then, furnace set temperatures can be viewed as conservative estimates of required decomposition temperatures (i.e., biased high), as true temperatures are expected to be as much as 20 °C lower. As such, temperatures provided throughout this work will be the furnace set temperatures. Future efforts should endeavor to incorporate more direct measures of temperature, but this was beyond the scope of the current effort.

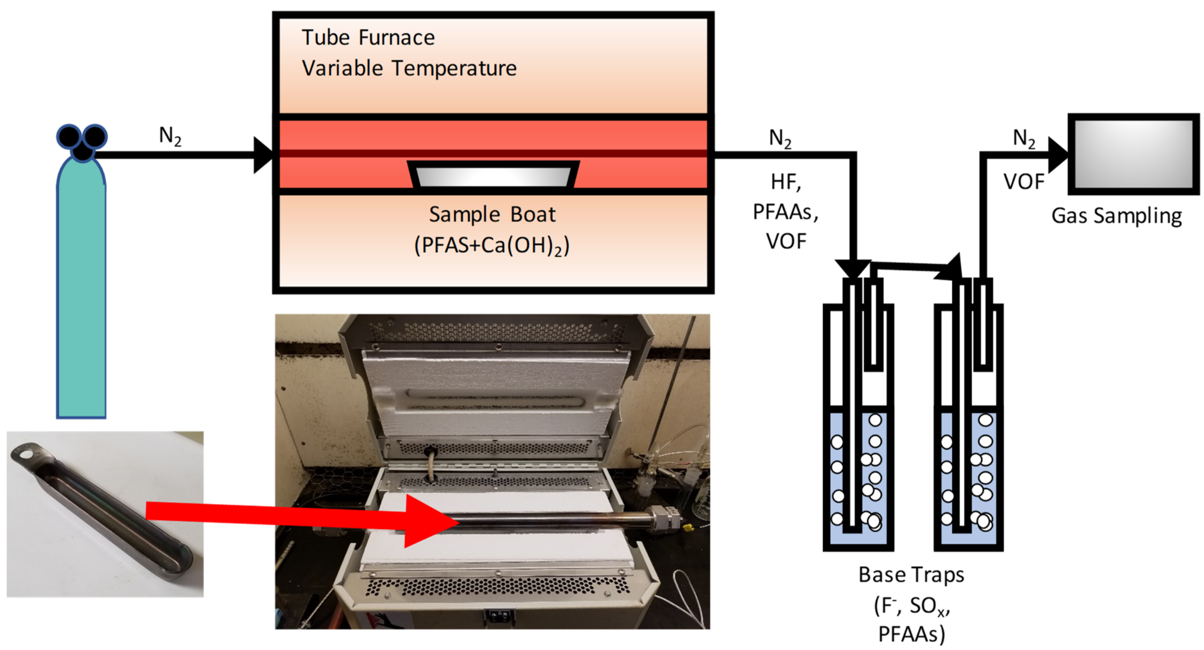
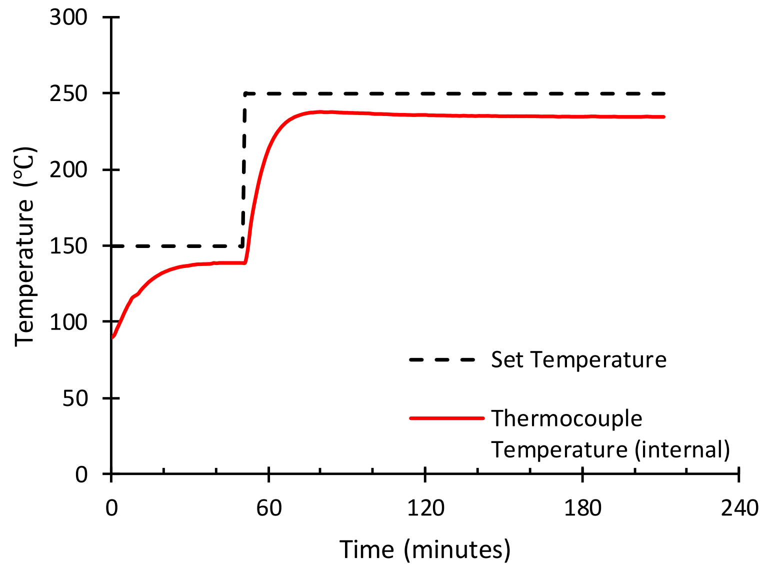


Figure 1. Components of the thermal testing system. Depicted are the nitrogen sweep gas, tube furnace, midget impingers (i.e., base traps), and Flexfoil gas collection bags.



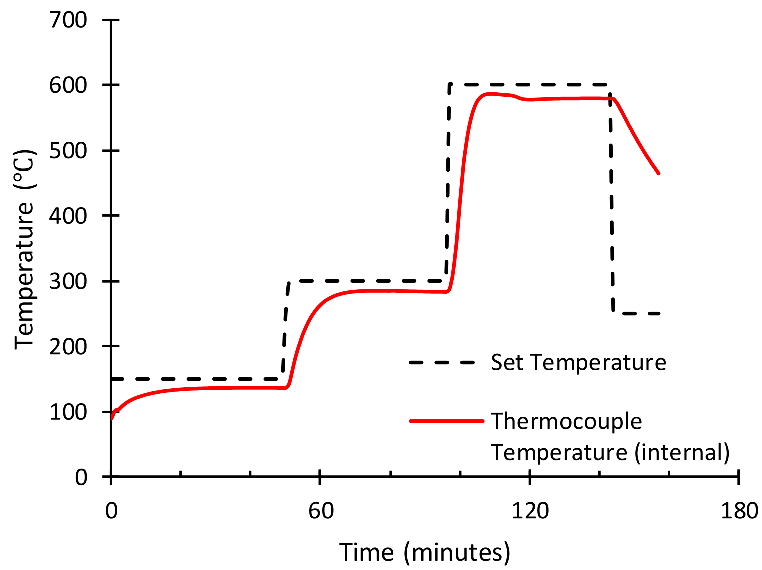


Figure 2. Example furnace set temperatures and measured process tube temperatures. Measured temperatures were located internal to the process tube under flow conditions.

During experiments, the nickel sample boat was emplaced in the center of the process tube, and the process tube was connected by stainless steel compression fittings to smaller diameter stainless steel tubing, and ultimately connected to two midget impingers (25mL) in series via short lengths of PVC tubing. Impingers operate by facilitating contact between the gas and a surface or solution, thereby removing species of interest from the gas phase. Throughout the efforts described in this report, the impingers were filled with 20 mL of 1 mM NaOH solution or carbonate buffered solution prepared in water (20mM at pH~10) to collect water soluble species.

Nitrogen sweep gas carrying VOF species not trapped in the impingers was routed to Flexfoil bags (3L) for ultimate collection. Prior to each use, Flexfoil bags were evacuated, and filled with N_2 gas, to be evacuated again, a minimum of three times.

3.2 Analytical methods

3.2.1 Anions

Fluoride produced during complete or partial PFAS mineralization was of significant interest during this work. Two approaches were used to evaluate fluoride concentrations: ion chromatography (IC) with conductivity detection and potentiometric determination using a fluoride ion specific electrode (ISE). IC was performed consistent with USEPA Method 300 and the ISE was used with matrix matched standards, where possible, as well as with standard addition approaches. **Figure 3** shows a comparison of the two methods utilized (IC and ISE) and agreement between the two was satisfactory. For most samples, IC was determined to be appropriate and it was used for analysis of fluoride in aqueous trap solutions and most aqueous extracts from thermally treated and control solids, nickel boats, and process tube surfaces. Extraction of solids containing $Ca(OH)_2$ and field derived solids were additionally processed using an EDTA solution and analyzed by ISE.

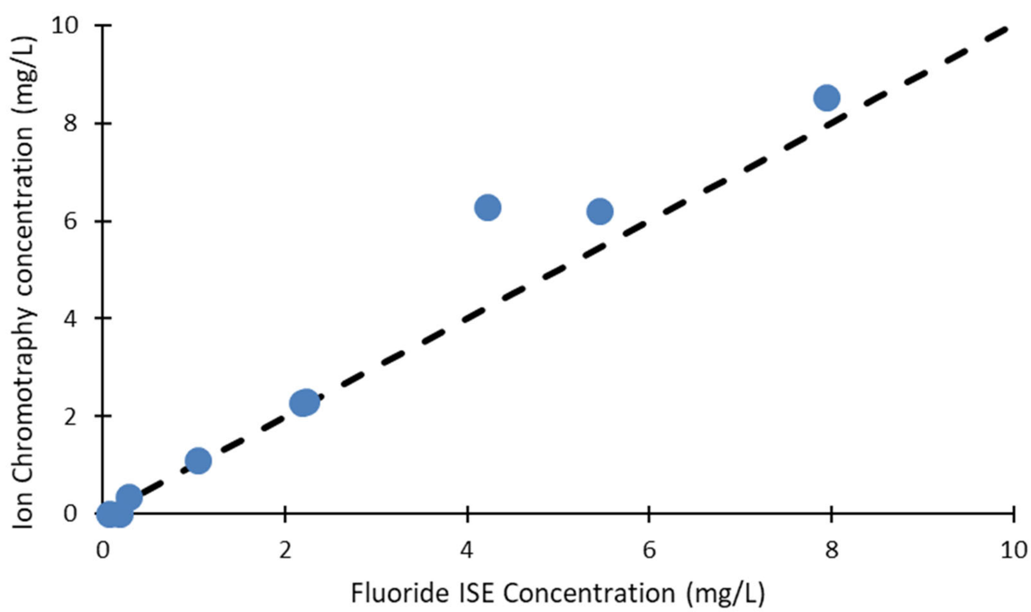


Figure 3. Comparison of fluoride measurements. Measurements were made by ion chromatography (IC) and fluoride ion specific electrode (ISE). The dashed line shows a 1:1 relationship.

Sulfur oxyanions were noted to result from complete or partial mineralization of thermally treated PFSAs, and these were evaluated in aqueous solutions and extracts by IC consistent with USEPA Method 300. In addition to sulfate, a signal later determined to be sulfite was noted in the chromatograms. This interpretation was initially informed by the disappearance of the peak upon treatment with hydrogen peroxide, together with an increase in sulfate concentrations, as shown in **Figure 4**, and was later confirmed with a solution of sodium bisulfite. For clarity, total sulfur oxyanion concentrations of all aqueous samples and extracts were evaluated as sulfate after oxidation by hydrogen peroxide. While quantification and discrimination between sulfite and sulfate signals was beyond the scope of this work, examination of a limited sample set suggested that sulfite may have comprised a significant fraction of sulfur in trapped samples. The presence of sulfite suggests that $SO_{2(g)}$ evolved during decomposition, rather than $SO_{3(g)}$. Further investigations examining the speciation of sulfur produced during thermal treatment of PFSAs would benefit from improved efforts at quantifying both SO_2 and SO_3 in gas phases as well as sulfite and sulfate oxyanions associated with solids.

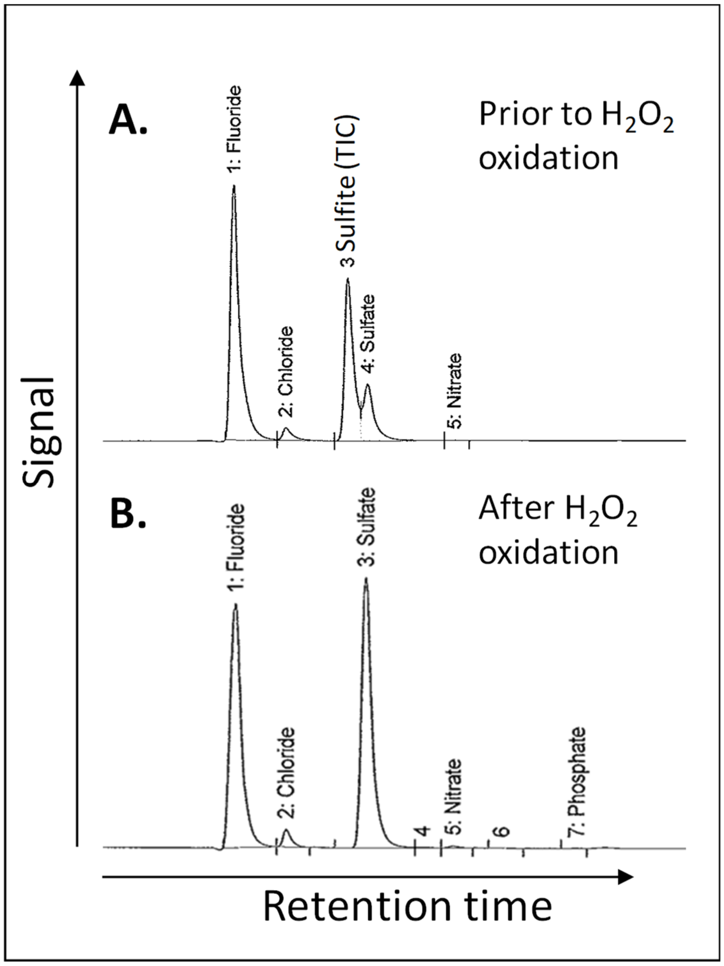


Figure 4. Sample IC chromatogram of aqueous sample from an impinger demonstrating oxidation of sulfite. A.) shows the condition prior to hydrogen peroxide treatment, and B.) after treatment.

3.2.2 PFAS

An analytical method based on reverse phase liquid chromatography with suppressed conductivity detection (RPLC-SCD) was used to evaluate PFSA and PFCA concentrations for most of the work described in this report,[24,25] with a limited number of samples sent to an external DoD ELAP accredited laboratory (Pace Analytical Gulf Coast) for analysis by liquid chromatography with tandem mass spectrometry (LC-MS/MS). Drawbacks of the RPLC-SCD method include higher detection limits (on the order of 0.05 mg/L) and interference between

PFCA and PFSA species due to co-elution. Experimentally, the use of elevated PFAS concentrations addressed the issue of relatively high detection limits. The drawback related to co-elution of PFSA and PFCA species led to occasional equivocal determinations, but the use of a single PFAS during most experiments, and complementary analytical determinations facilitated use of the information provided by the RPLC-SCD method.

To briefly describe the RPLC-SCD method, a borate buffer mobile phase was used to load a large volume sample aliquot (0.5-2.5 mL) onto a 2-mm guard column (Acclaim PA2) to collect and concentrate the PFAS analytes. After sample introduction, the guard column was washed with buffer to remove matrix interferences. After the wash step the concentrator column was switched into line with a 2-mm analytical column (Acclaim PA2), where acetonitrile was used as an organic modifier in the mobile phase to transport the PFAS analytes through the column for separation and analysis. After separation, the PFAS were detected and quantitated using external suppressed conductivity. **Figure 5** shows example chromatograms with three PFCAs and three PFSAs of interest, together comprising the six UCMR-3 PFAS.

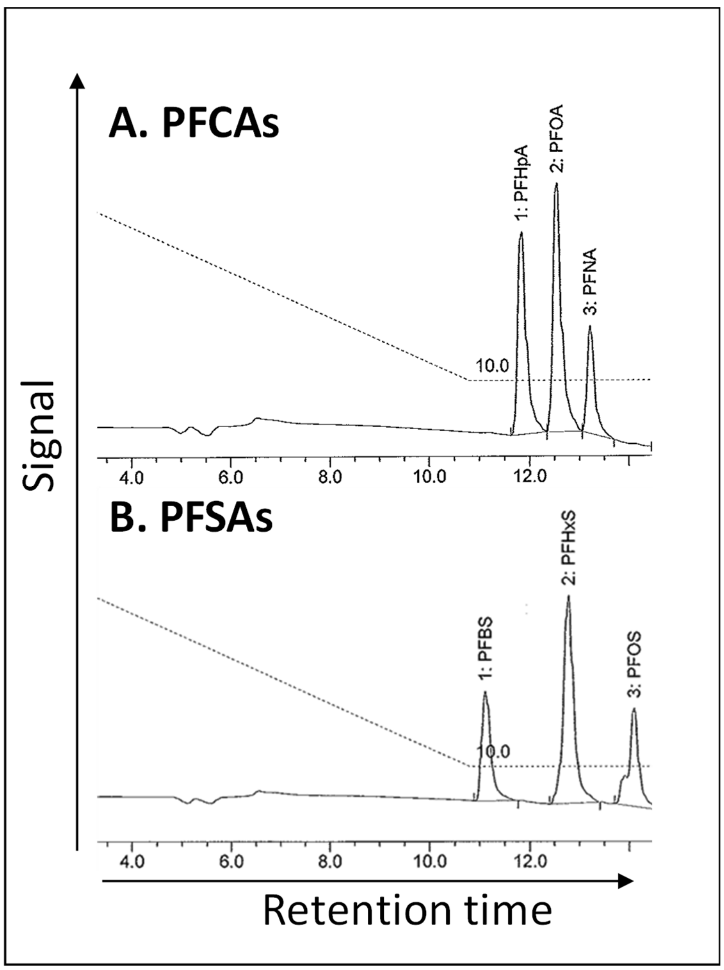


Figure 5. RPLC-SCD chromatogram associated with the 6 UCMR-3 PFAS. A.) Shows the 3 PFCAs, and B.) the 3 PFSAs.

3.2.3 VOF

A method using GC-MS instrumentation was developed and improved throughout this project to evaluate VOF collected in Flexfoil bags after PFAS decomposition. This method was pursued after preliminary observations of VOF by GC-MS appeared successful. While the GC-MS approach used in this work requires further refinement, evaluation of VOF proved to be one of the more useful tools for the interpretations of this work. It enabled identification of several VOF and preliminary assessment of their relative amounts. Future efforts are necessary to better quantify observed species as well as to further identify unknown compounds. Improved identification of relevant VOF will also facilitate future efforts at concentrating such VOF analytes for observation at much lower concentrations.

The GC-MS method used an Agilent 7980/5975 GC-MS system equipped with a 60-meter DB-624 column (Agilent part # 123-0364UI) with high purity helium carrier gas. Samples were introduced to the GC-MS instrument by manual injection of 0.2- or 0.5-mL volumes. Oven temperatures were ramped from 45 °C to 250 °C and the transfer line was maintained at 250 °C. The total runtime of the method was 18 minutes. Selected-ion monitoring (SIM) was used to observe 12 ion fragments that corresponded to fluorocarbon species (fragments at mass charge ratio, m/z of 51, 69, 81, 93, 100, 113, 119, 131, 150, 181, 207, 231). SIM was used to increase signals by focusing acquisition time on ion fragments of interest. For purposes of this initial investigation, retention times of integrated peak areas were truncated at a resolution of 0.1 minutes.

Two primary standards were utilized to observe and normalize for fluctuations in GC-MS signal response: tetrafluoromethane (CF_4) alone, which was observed at mass 69, and a mixture of CF_4 and hexafluoroethane (C_2F_6), which was observed at both mass 69 and 119. Both of these standards eluted at the same time. Review of collected signals and comparison to reference spectra available on the NIST Chemistry WebBook[26] led to the purchase of perfluoroalkene and 1H-perfluoroalkane VOF from Synquest Labs, Inc (Alachua, FL). Measured mass spectra (normalized to the signal at m/z 69) for these homologous species are provided in **Figure 6** and **Figure 7**. As discussed in Sections 4.2.3, 4.3.1.3, and 4.3.2.3, many of these spectra and retention times match those of VOF resulting from PFAS thermal decomposition. In examining the mass spectra during this project, it was helpful to focus on three dominant ion fragments observed: m/z 69 as a measure of both perfluoroalkene and 1H-perfluoroalkane type species, m/z 131 as a measure of perfluoroalkene type species, and m/z 51 as a measure of 1H-perfluoroalkane type species. As shown in **Figure 8**, these fragments correspond to components of the associated molecules. More refined identification and quantification of VOF will require additional effort beyond the scope of this project.

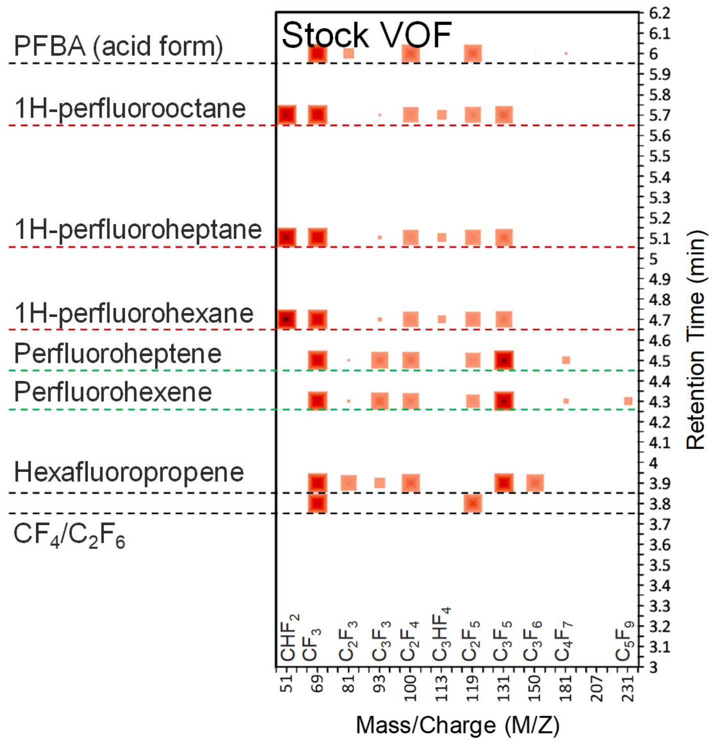


Figure 6. VOF of stocks analyzed by GC-MS SIM method. GC-MS signals were normalized by m/z 69 signal and discretized at 0.1 min resolution. Red and green dashed lines indicate homologous 1H-perfluoroalkane and perfluoroalkene species, respectively. The size and intensity of red squares relate to the strength of the signal for ion fragments observed at indicated retention times.

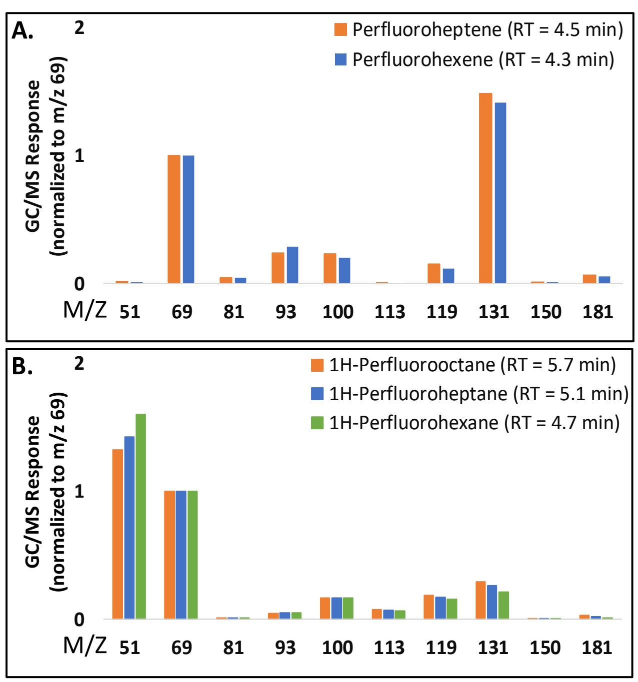


Figure 7. Measured mass spectra of A.) perfluoroalkene and B.) 1H-perfluoroalkane species. There is great similarity in these series. Note that m/z 131 and 69 are dominant in A.), and m/z 51 and 69 are dominant in B.)

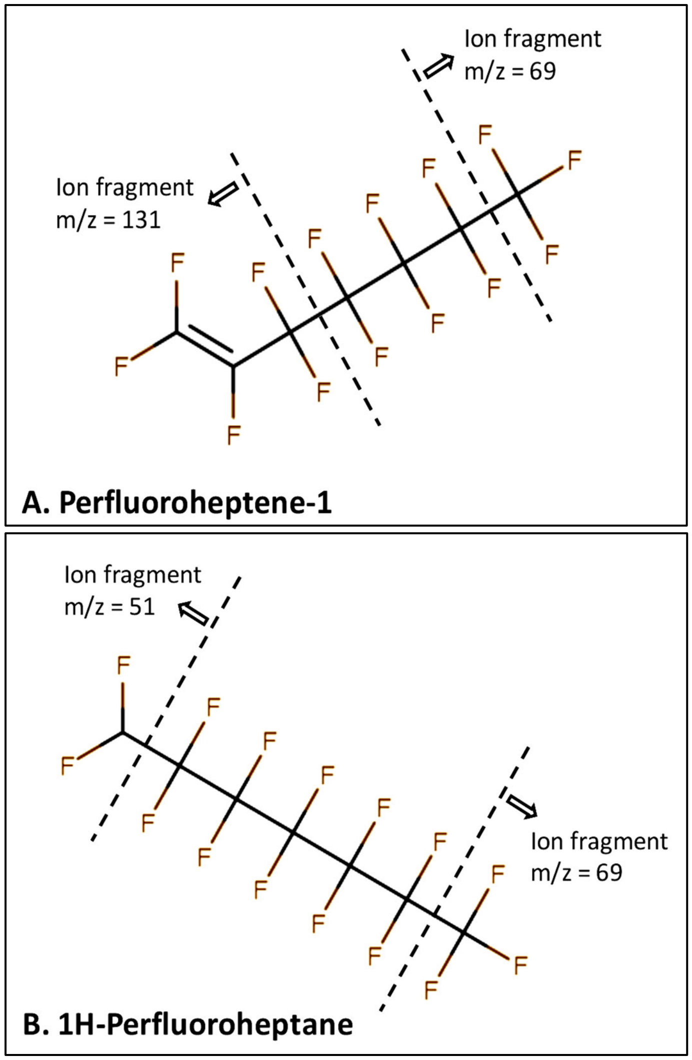


Figure 8. Molecular structures of A.) perfluoroheptene and B.) 1H-perfluoroheptane. The dominant ion fragments observed by GC-MS SIM are indicated. Note that the hydrogen atom is omitted in the representation of 1H-perfluoroheptane but is included in the mass of the ion fragment as CHF_2 (m/z 51).

3.3 Experimental Methods

The thermal decomposition of PFAS in simulated IDW materials and the evaluation of $Ca(OH)_2$ amendments for lowering decomposition temperature and releases of VOF were addressed with three primary technical tasks:

Task 1. Preparation of simulated IDW solids
Task 2. Baseline decomposition of PFOS, PFHxS, and PFOA
Task 3. Decomposition of simulated solid IDW with $Ca(OH)_2$

The experimental methods associated with each of these tasks is detailed below, with results described in Sections 4.1,4.2, and 4.3

3.3.1 Preparation of simulated IDW solids

To investigate PFAS thermal decomposition during this work, sand and soil granular solids were augmented with PFAS. While other methods of introducing PFAS to the tube furnace were investigated (e.g., drying of salts in the sample boat), preparation of PFAS augmented granular solids eased handling, concentration measurements, and mixing with $Ca(OH)_2$ solids. All granular solids were dried and sieved, with the fraction passing the 0.6 mm sieve used for the experiments.

For most of the experiments performed, solids consisted of sieved all-purpose sand. PFAS were not detected by RPLC-SCD in aqueous extracts of this sand prior to their amendment. PFAS were added to the sieved sand by adding 6 mL of a single alkaline methanol PFAS stock (10 g/L or 10 g/kg) to 25 g of sand in 20 mL vials. After the methanol was subsequently evaporated under filtered $N_{2(g)}$ flow, the solids were homogenized through use of a vortex mixer or rotary tumbler. Target and measured PFAS concentrations of these augmented solids are discussed in Section 4.1. For experiments with $Ca(OH)_2$, 0.1 g of $Ca(OH)_2$ was mixed with 6 g of PFAS containing solids and homogenized by use of rotary tumbler, resulting in an average concentration of 16.7 mg/g.

A second set of solids was prepared using sieved field IDW collected from soil borings at Joint Base McGuire-Dix-Lakehurst (JBMDL). This IDW was collected on January 28 and 29, 2019 in the vicinity of the Lakehurst Historic Fire Training Area #1 (AFFF Area 16) during field efforts associated with SERDP Project ER18-1204. The JBMDL IDW used was a composite from five soil borings (SB1 to SB5) and covered depths from 5 to 12 feet. Limited characterization of this IDW suggested that total PFAS concentrations were less than 1 mg/kg prior to augmentation, significantly lower than concentrations after amendment. The sieved IDW was mixed 1:1 with sieved all-purpose sand and loaded with the six UCMR-3 PFAS. 100 g of the sieved IDW/sand mixture was augmented in a glass jar through addition of 10 mL of each individual alkaline methanol PFAS stock (10 g/kg). As before, after the methanol was evaporated under filtered $N_{2(g)}$ flow, the solids were homogenized through use of a rotary tumbler. Target and measured PFAS concentrations of these augmented solids are discussed in Section 4.1. For the experiment with $Ca(OH)_2$, 0.67 g of $Ca(OH)_2$ was mixed with 20 g of PFAS containing solids, for a concentration of 33.5 mg/g, and homogenized by use of rotary tumbler.

The particle sizes (<0.6 mm) utilized in these experiments facilitated preparation of well-mixed and homogenous solids, and likely reduced spatial distances between PFAS and $Ca(OH)_2$ amendments. Due to the short length scales associated with the simulated IDW solids, heat and mass transport limitations were likely muted compared to larger scale materials and treatment systems. As such, the results observed during these studies likely represent more optimal conditions leading to PFAS decomposition and VOF transport. Nonetheless, the underlying decomposition mechanisms probed are relevant, and the knowledge gained from these efforts can help inform systems at different scales. For larger scale systems, heat and mass transport limitations, as well as impacts of soil moisture and other constituents, require greater consideration beyond the scope of this work.

3.3.2 Baseline decomposition of PFOS, PFHxS, and PFOA

The thermal decomposition of representative PFSAs (PFOS and PFHxS) and a PFCA (PFOA) was evaluated using the testing system and sample train described in Section 3.1. The nickel sample boat was loaded with 2.5 to 3 g of the PFAS augmented sieved sand described above (~5-8 mg PFAS) and emplaced in the furnace process tube, which was subsequently sealed and connected to all remaining components of the system. The $N_{2(g)}$ sweep gas was then set to a flow rate of 25 mL/min through the process tube and the experiment was initiated.

During a given thermal decomposition experiment, the set temperature of the furnace was systematically increased through a range where PFSA and PFCA decomposition was anticipated: 275 °C to 575 °C for PFSAs, and 150 °C to 450 °C for PFOA. During thermal runs, impingers were replaced approximately every hour, together with a change in furnace temperature, and solutions collected for analysis. Impinger solutions were analyzed for anions (fluoride and sulfur oxyanions) and PFAS by RPLC-SCD. Between uses, impingers were washed and triple rinsed. There was no evidence of significant carry-over of analytes between uses, and there were no detections of fluoride or PFAS among blanks. Additionally, no significant changes in concentration of fluoride in impingers due to sorption were observed over time when initial concentrations were 1 mg/L.

For VOF collection, Flexfoil bags were replaced at the same time as impingers and stored for off-line analysis by GC-MS. While VOF were noted to be stable for longer periods in the Flexfoil bags, they were generally analyzed within 24 hours of collection.

After a given thermal run, the furnace was allowed to cool and the nickel boat containing thermally treated solids was carefully removed and solids were placed in aqueous solution for extraction. The nickel boat was separately placed in aqueous solution for extraction of its surfaces, and additional solution placed within the process tube for extraction of inner surfaces. Extracts of the solids, boat and process tube surfaces were analyzed for anions (fluoride and sulfur oxyanions) and PFAS by RPLC-SCD as described previously.

3.3.3 Decomposition of simulated solid IDW with $Ca(OH)_2$

3.3.3.1 Decomposition of PFOS, PFHxS, and PFOA in sand amended with $Ca(OH)_2$

The thermal decomposition of representative PFSAs (PFOS and PFHxS) and a PFCA (PFOA) mixed with $Ca(OH)_2$ was evaluated in the same manner as described above in Section 3.3.2. As noted in Section 3.3.1, these solids were mixed with $Ca(OH)_2$ at a concentration of 16.7 mg/g. For these experiments, the nickel sample boat was loaded with 3 g of the PFAS and $Ca(OH)_2$ augmented sieved sand.

During thermal decomposition experiments, the set temperature of the furnace was adjusted to account for PFAS decomposition at lower temperatures in the presence of $Ca(OH)_2$. Temperatures were systematically increased from approximately 150 °C to 400 °C for PFOS/$Ca(OH)_2$ materials, from 150 °C to 450 °C for PFHxS/$Ca(OH)_2$ materials, and from 100 °C to 450 °C for PFOA/$Ca(OH)_2$ materials. Use of impingers and Flexfoil bags was analogous to the Task 2 experiments described in Section 3.3.2.

After each thermal run, the furnace was allowed to cool, the nickel boat was carefully removed, and the treated solids were removed and extracted as described in Section 3.3.2. Extracts of the solids, sample boat and process tube surfaces were then analyzed for anions (fluoride and sulfur oxyanions) and PFAS by RPLC-SCD.

It was noted that extracts and recoveries of analytes from $Ca(OH)_2$ amended sand using a single aqueous extraction appeared incomplete. As such, solids containing $Ca(OH)_2$ were additionally processed. This process consisted of up to three sequential extractions (suspension in fresh solution and separation by centrifugation) in ultrapure water, and for fluoride analyses, up to three additional extractions using a trisodium EDTA solution (20 mM Na_3H-EDTA). Trisodium EDTA was utilized to complex calcium and other species and to facilitate extraction and subsequent quantification of fluoride by ISE. Decreases in measured concentrations with sequential extracts indicated extraction efficiency.

3.3.3.2 Decomposition of UCMR-3 PFSAs and PFCAs in amended field IDW

Thermal decomposition of the six UCMR-3 PFAS was evaluated using the same overall system described in Section 3.1. This was performed using the field IDW material prepared as described in Section 3.3.1, with and without $Ca(OH)_2$. The $Ca(OH)_2$ concentration used for these experiments, 33.5 mg/g, was double that of the earlier experiments due to the approximate doubling of organic fluorine associated with amended PFAS. As before, the nickel sample boat was loaded with 3 g of solids.

During these experiments, the furnace was set to a constant temperature of 325 °C for the duration of the experiment. The furnace was kept at this temperature for four hours, with replacement of impingers and Flexfoil bags every hour in the same manner as described in Sections 3.3.2 and 3.3.3.1. A 5-mL subsample of impinger solutions was reserved for analyses by an external DoD ELAP accredited lab (Pace Analytical Gulf Coast) for PFAS. Due to limited sample volume (and in order to reserve sample in case of loss during shipping), samples sent to the external lab were diluted 250x (0.5 mL sample to 125 mL water).

After four hours, the furnace was allowed to cool and the nickel boat containing thermally treated solids was carefully removed, with contained solids split in half for analyses of PFAS by RPLC-SCD and LC-MS/MS at the external DoD ELAP accredited lab. Due to limited sample quantities (and in order to reserve sample in case of loss during shipping), between 0.5 g and 0.8 g of solids were sent to the external laboratory. The solids to be analyzed by RPLC-SCD were placed in aqueous solution for extraction and were also analyzed for fluoride and sulfur oxyanions.

Extracts of the solids, sample boat and process tube surfaces were analyzed for anions and PFAS as described in Section 3.3.3.1. As before, multiple extractions of the solids, including a second set using a trisodium EDTA solution to complex calcium, were performed.

4.0 RESULTS AND DISCUSSION

4.1 Preparation of simulated IDW solids

Concentrations of simulated IDW solids prepared for the experiments were evaluated. The three all-purpose sieved sand solids prepared with PFOS, PFHxS and PFOA were evaluated by extraction with water and analysis by RPLC-SCD (See **Table 1**). Amended concentrations of solids used were satisfactory and within 25% of target PFAS concentrations. During this work, it was clear that use of alkaline methanol stocks was important, particularly for PFAS procured as acid/protonated species. For example, use of acidic PFOA in methanol without alkaline stabilization resulted in loss of PFOA during preparation of augmented solids, perhaps due to volatilization during evaporation and drying of the solids.

Concentrations of the UCMR-3 PFAS in solids prepared using sieved field IDW are provided in **Table 2**. These UCMR-3 PFAS were quantified by both the RPLC-SCD method and LC-MS/MS with reasonably good agreement between the two measures. PFBS analysis by RPLC-SCD was sensitive to the high pH of $Ca(OH)_2$ amended samples, so this was omitted from **Table 2**. Measured PFAS concentrations were often lower than target concentrations, but LC-MS/MS measures were within 35% of target concentrations and satisfactory for purposes of the experiments. Reasons for discrepancies between target and measured PFAS concentrations were unresolved, but may have included some loss of PFAS to glass jar surfaces during preparation. Analytical reports for the LC-MS/MS and RPLC-SCD analyses associated with the field IDW are included in Appendix A.

The concentrations of PFAAs associated with the simulated IDW solids used in this work are much greater and more homogenous than would be expected in many IDW materials. Further, the PFAAs were also recently added to the solids and perhaps less strongly sequestered through associations with organic and inorganic materials. While these differences are unlikely to affect the decomposition processes probed during this work, this should be verified in future studies. Like the issues associated with different heat and mass transfer limitations in larger scale systems described in Section 3.3.1, this was outside the scope of this study.

Table 1. PFAS concentrations of three prepared IDW solids. These solids were prepared with all-purpose sand. Expected sulfur and fluorine concentrations associated with the PFAS are also provided.

Solid	Target PFAS Concentration (mg/g)	Measured PFAS Concentration by RPLC-SCD (mg/g)[a]	Expected Sulfur Concentration (mg/g)[b]	Expected Fluorine Concentration (mg/g)[b]
IDW - PFOS	2.4	2.7	0.52	1.7
IDW - PFHxS	1.9	1.8	0.42	1.1
IDW - PFOA	2.4	2.7	-	1.8
Notes:	(a) – Measurements prior to experiment and/or of control samples (b) – Based on measured PFAS concentrations			

Table 2. Concentrations of the 6 UCMR-3 PFAS in prepared soil IDW. LC-MS/MS analyses were performed at Pace Analytical Gulf Coast. Expected sulfur and fluorine concentrations associated with the PFAS are also provided.

PFAS Amendment	Target Concentration (mg/g)	Measured Concentration by RPLC-SCD (mg/g)[a]	Measured Concentration by LC-MS/MS (mg/g)[a]	Expected Sulfur Concentration (mg/g)[b]	Expected Fluorine Concentration (mg/g)[b]
PFSAs					
-PFOS	0.8	0.86	0.59	0.11	0.38
-PFHxS	0.8	0.69[c]	0.61	0.15	0.38
-PFBS	0.8	0.67[d]	0.62	0.20	0.35
PFSA Total	2.4	2.2	1.8	0.46	1.1
PFCAs					
-PFNA	0.8	0.77	0.58	-	0.40
-PFOA	0.8	0.69[c]	0.61	-	0.42
-PFHpA	0.8	0.55	0.55	-	0.37
PFCA Total	2.4	2.0	1.7	-	1.2
PFAS Total	4.8	4.2	3.6	0.46	2.3

Notes:
(a) – Average of two controls samples analyzed (with and without $Ca(OH)_2$)
(b) – Based on LC-MS/MS measured concentrations performed by Pace Analytical Gulf Coast
(c) – Taken as ½ of the equivocal total PFHxS/PFOA signal which co-eluted
(d) – Does not include $Ca(OH)_2$ amended sample as PFBS response by RPLC-SCD was sensitive to high pH

4.2 Baseline decomposition of PFOS, PFHxS, and PFOA

The thermal decomposition of representative PFSAs (PFOS, PFHxS) and a PFCA (PFOA) was investigated to provide a baseline for evaluating the impacts of $Ca(OH)_2$ amendments. While these solids were not amended with $Ca(OH)_2$, it was impractical in this work to eliminate all materials that could possibly help facilitate PFAS decomposition, such as sand grain surfaces and small quantities of NaOH and KOH (introduced with the methanol stocks).

4.2.1 Evaluation of sample extracts

PFAS, fluorine, and sulfur oxyanion quantities extracted from solids, sample boats, and the process tube after thermal treatment are provided in **Table 3**. None of the amended PFAS were detected after thermal treatment, suggesting greater than 99.9% removal from the solids in each case (based on 0.05 mg/L detection limit in extracts). Approximately 1% of PFOS removed from the solids was observed as PFOA in the extracts, more than 95% of which was observed in the extract of process tube surfaces. Due to the likely decomposition of PFOA itself at elevated temperatures, this recovery of PFOA from the process tube suggested it may have been located in colder regions of the process tube.

Up to 13% of initial sulfur quantities were found in extracts, primarily associated with process tube surfaces. Concentrations, however, were similar to those found in extracts observed after PFOA decomposition (where no sulfur should have resulted from PFOA decomposition) suggesting that background concentrations may have accounted for a sizeable portion of the sulfur observed.

Fluorine, however, was observed in all thermal decomposition experiments at quantities greater than background and controls. Approximately 13% of initial fluorine content in the case PFHxS, 8% for PFOS, and 5% for PFOA were accounted for in the extract solutions.

Table 3. Quantities of PFAS, fluoride, and sulfur oxyanions extracted from IDW solids, sample boat, and process tube.

Solid	Temp Range (°C)	Initial PFAS (mg/g)	Final PFAS[a] (mg/g)[b] and (%)[c]	Initial Sulfur (mg/g)	Final Sulfur (mg/g)[b] and (%)[c]	Initial Fluorine (mg/g)	Final Fluorine (mg/g)[b] and (%)[c]
IDW-PFOS	275-575	2.7	PFOA-0.02 (1%)	0.17	0.02 (13%)	1.7	0.13 (8%)
IDW-PFOS (Control)	-	2.7	PFOS-3.0 (110%)	0.17	0.005 (3%)	1.7	0.01 (0.3%)
IDW-PFHxS	275-575	1.8	ND	0.14	0.01 (8%)	1.1	0.14 (13%)
IDW-PFHxS (Control)	-	1.8	PFHxS-1.8 (100%)	0.14	0.003 (2%)	1.1	ND
IDW-PFOA	150-450	2.7	ND	-	0.01 (-%)	1.8	0.08 (5%)
IDW-PFOA (Control)	-	2.7	PFOA-2.5 (91%)	-	0.005 (-%)	1.8	ND

Notes: (a) – PFAS measured is identified if possible.
(b) – Sum of quantities extracted from solids, sample boat, and process tube normalized by IDW mass emplaced in the furnace
(c) – Percent of initial quantities of PFAS, sulfur, or fluorine

4.2.2 Evaluation of impinger solutions

Quantities of PFAS, fluoride, and sulfur oxyanions recovered in the impingers during thermal decomposition of PFOS and PFHxS are shown in **Figure 9** and provided in **Table 4**. The quantities shown in **Figure 9** represent the quantity collected at the temperature indicated and that collected at all lower temperatures, such that the quantity at the highest temperature (i.e., 575 °C) represents the sum collected during the entire experiment. PFAS, fluoride, and sulfur were not detected or quantified at concentrations greater than background in impingers during the thermal decomposition of PFOA. Agreement among the products of PFOS and PFHxS decomposition in the impingers helps provide confidence that the overall recovery behavior is representative of these PFSAs.

Approximately two-thirds (~66%) of sulfur introduced to the tube furnace associated with PFSAs was recovered at the impingers. The average furnace temperature at which sulfur species were collected in impingers (mass average) was estimated to be 375 °C. Given the qualified quantity of sulfur observed in extracts described in Section 4.2.1, between 74% and 80% of initial sulfur found in parent PFAS were recovered in the extracts and the impingers. While much of sulfur associated with PFSAs was accounted for, the mass balance of sulfur remained incomplete. This suggests there were unexpected challenges in quantifying sulfate or initial PFAS, or else, unexplained loss of sulfur beyond analytical coverage. Future efforts would benefit from improved mass balance of sulfur.

Approximately 15% of fluorine present in the PFSAs was observed in the impingers. Together with extracts described in Section 4.2.1, 4% (PFOA), 22% (PFOS), and 28% (PFHxS) of initial fluorine associated with parent PFAS materials was recovered in the extracts and the impingers. Fluoride measured in the impingers may result from hydrofluoric acid (HF) evolution during thermal decomposition, but may also result from other volatile fluorine species such as silicon tetrafluoride (SiF_4), carbonyl fluoride (COF_2) or other acyl fluoride species (e.g., perfluorooctanoyl fluoride ($C_7F_{15}COF$) or perfluorohexanoyl fluoride ($C_5F_{11}COF$)) that react quickly in the aqueous phase, with liberation of fluoride. Reactions of acyl fluoride species with water can also result in PFCA products, as observed in the impingers (see below). Unlike the signals of PFAS and sulfur, fluorine recovery at the impingers continued as temperatures increased, perhaps as a result of the complex transport behavior of gaseous fluorine species. In experiments with PFSAs, the average furnace temperature at which fluoride was collected in impingers (mass average) was estimated to be 440 °C. Broader scrutiny of individual water-reactive volatile fluorine species is necessary but was beyond the scope of this work.

On a mass basis, approximately 5% of the thermally treated PFSAs was recovered in the impingers as complementary PFCAs with equal number of carbons. Identification of PFHxA in impingers after thermal treatment of PFHxS, however, was equivocal as both PFHxA and PFBS co-eluted in the RPLC-SCD method. As PFOA was noted to result from PFOS decomposition, and a significant quantity of sulfur was recovered, it appeared likely the PFAS recovered were PFCAs rather than sulfonated species. Together with extracts described in Section 4.2.1, up to 6% of initial PFSA masses were recovered as PFCAs in the extracts and the impingers. The average furnace temperature at which PFCAs resulting from PFSA decomposition were collected in impingers (mass average) was estimated to be 390 °C. As noted previously, these PFCAs may have resulted from the reaction of volatile acyl fluorides, or perhaps other volatile intermediate species, with water. Identification and quantification of such volatile PFCA precursor species is necessary but was beyond the scope of this effort.

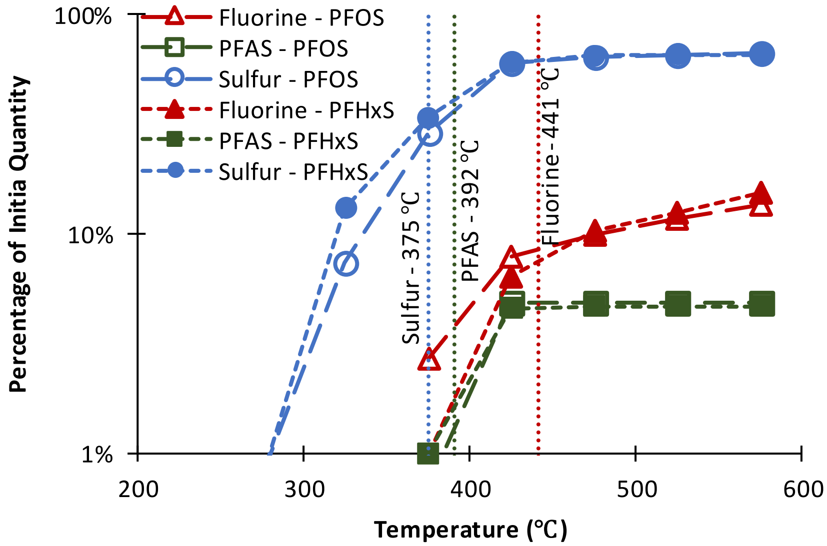


Figure 9. Cumulative percentage of fluorine, PFAS, and sulfur recovered in impingers solutions. These resulted after thermal decomposition of PFOS and PFHxS in IDW without $Ca(OH)_2$. Open symbols represent recoveries during thermal decomposition of PFOS, and closed symbols represent recoveries during thermal decomposition of PFHxS. The PFAS recovered during PFOS decomposition is almost exclusively PFOA (>95%), with minor contributions from PFHpA and likely PFHxA. PFHxA co-eluted with PFBS leading to equivocal assessment. The PFAS recovered during PFHxS decomposition was likely PFHxA. Vertical dashed lines represent the weighted average temperature species were estimated to evolve at.

Table 4. Cumulative quantities of PFAS, fluoride, and sulfur oxyanions collected in impingers during thermal treatment of IDW.

Solid	Temp Range (°C)	Initial PFAS (mg/g)	Trapped PFAS[a] (mg/g)[b] and (%)[c]	Initial Sulfur (mg/g)	Trapped Sulfur (mg/g)[b] and (%)[c]	Initial Fluorine (mg/g)	Trapped Fluorine (mg/g)[b] and (%)[c]
IDW-PFOS	275-575	2.7	PFOA- 0.13 (5%)	0.17	0.12 (67%)	1.7	0.24 (14%)
IDW-PFHxS	275-575	1.8	PFHxA/PFBS-0.08 (5%)[b]	0.14	0.09 (66%)	1.1	0.20 (15%)
IDW-PFOA	150-450	2.7	ND	-	0.01 (-%)	1.8	ND

Notes: (a) – PFAS measured is identified if possible.
(b) – Cumulative total collected in impingers tube normalized by IDW mass emplaced in the furnace
(c) – Percent of initial quantities of PFAS, sulfur, or fluorine

4.2.3 Evaluation of VOF

The VOF that passed through aqueous impingers and collected in Flexfoil bags were evaluated by GC-MS as described in Section 3.2.3. Because these VOF passed through aqueous traps, it suggests they are beyond analytical coverage provided by LC-MS/MS methods generally focused on accurately quantifying PFAAs.

Cumulative signals of the ion fragments observed by SIM during GC-MS analysis of the VOF are presented in **Figure 10**. These signals represent the sum of detected ion fragments at given retention times collected during the entire experiment. Consideration of the relative quantities of the mass spectra shown in **Figure 10** is helpful in understanding the evolution of VOF during PFSA and PFCA decomposition. As noted in Section 3.2.3, homologous series associated with 1H-perfluoroalkane species and perfluoroalkene species appear prevalent among the VOF species. As anticipated, no species were identified with fluoroalkyl chain lengths exceeding that of the parent PFAS themselves. It is interesting to note, however that the most abundant perfluoroalkene species observed in the case of the PFSAs were 1 carbon unit shorter than the parent compounds: perfluoroheptene (RT~4.5 min) resulting from PFOS decomposition, and tentatively identified (TIC) perfluoropentene (RT~4.1 min) resulting from PFHxS decomposition. These VOF suggest the loss of three fluorine atoms for each product, if the missing component is completely defluorinated. This contrasts with VOF resulting from PFOA decomposition where products of equal fluoroalkyl carbon length dominated: 1H-perfluoroheptane (RT~5.1 min) with no defluorination, and perfluoroheptene (RT~4.5 min) with loss of a single fluorine atom for each product. This evidence of greater defluorination among VOF products of PFSA decomposition (occurring at higher temperatures) relative to PFCA decomposition (occurring at lower temperatures), was consistent with the greater quantities of fluorine observed in impingers and associated with the solid products after thermal decomposition. The prevalence of VOF with preserved fluoroalkyl chain of equal length after PFOA decomposition is very consistent with the lack of fluorine observed in impingers and small quantity of fluorine observed in solids. For all three compounds, smaller signals likely associated with shorter chained VOF were also observed, but detailed scrutiny of these was beyond the scope of this effort.

As mentioned in Section 3.2.3, it can be helpful to focus attention on three of the dominant ion fragments observed in the mass spectra of the perfluoroalkene and 1H-perfluoroalkane species: m/z 69 as a measure of both species, m/z 131 as a measure of perfluoroalkene species, and m/z 51 as a measure of 1H-perfluoroalkane species. As m/z 69 can represent both species, cumulative evolution of this mass fragment observed by GC-MS during the thermal experiments was used to evaluate decomposition progress. This cumulative m/z 69 quantity is represented by the blue markers and solid lines in **Figure 11** for PFOS, PFHxS, and PFOA with increasing temperatures. As before, the average furnace temperature at which VOF were collected (based on averaged m/z 69 signal) can be estimated for PFOS, PFHxS, and PFOA. The temperatures associated with the decomposition of PFOS (T_{VOF}=364 °C), and PFHxS (T_{VOF}=355 °C) were consistent that those determined using analytes observed in the impingers as shown in **Figure 9**. The temperature associated with PFOA decomposition is significantly lower than for the PFSAs at T_{VOF}=245 °C, indicating that decarboxylation of PFCAs occurred more readily than desulfonation of PFSAs under the baseline conditions tested.

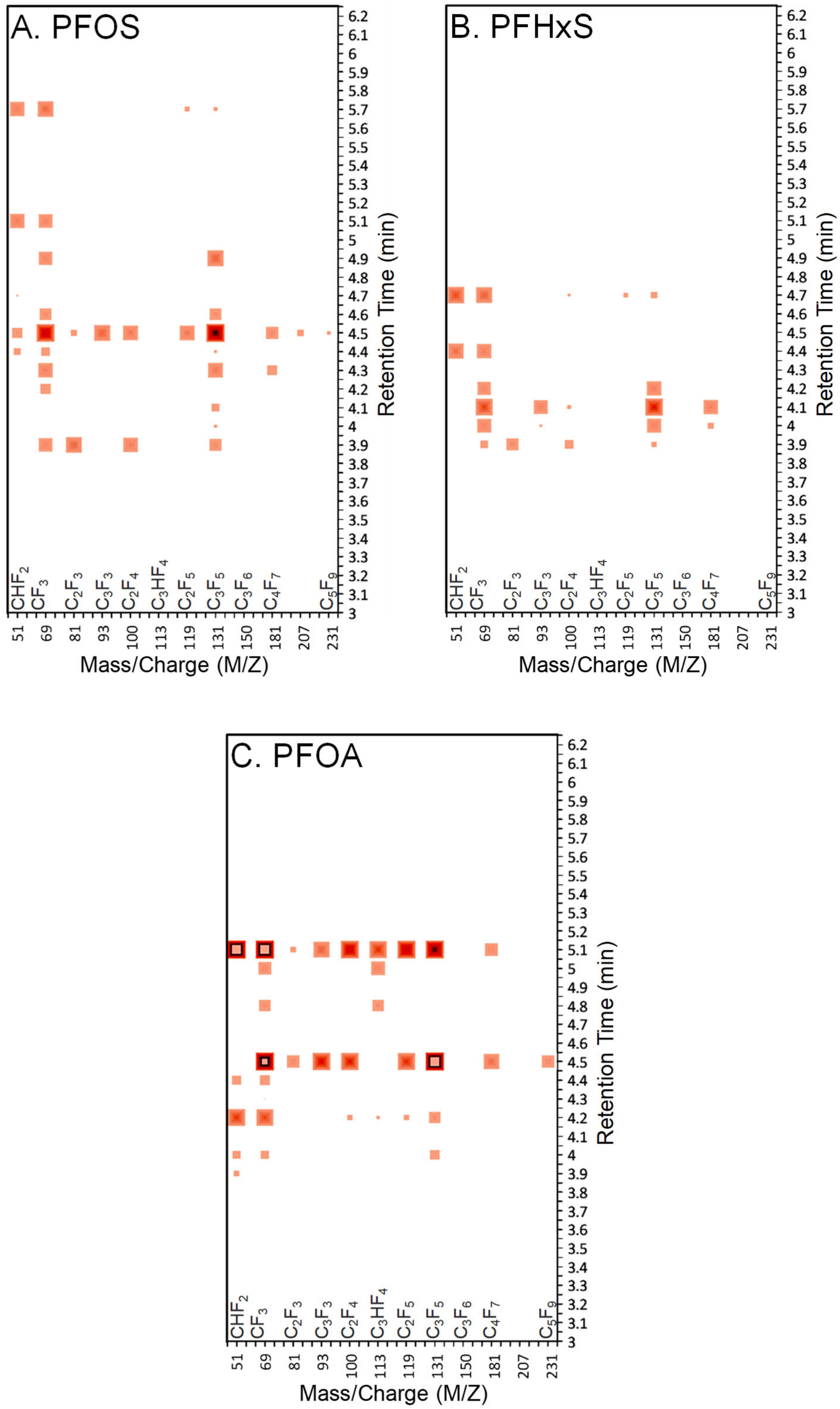


Figure 10. Cumulative GC-MS SIM ion fragment signals of VOF resulting from PFAS decomposition in sand IDW. This IDW was not amended with $Ca(OH)_2$. GC-MS signals were discretized at 0.1 min resolution. VOF resulting from decomposition of a single PFAS in the IDW: A.) PFOS, B.) PFHxS, and C.) PFOA.

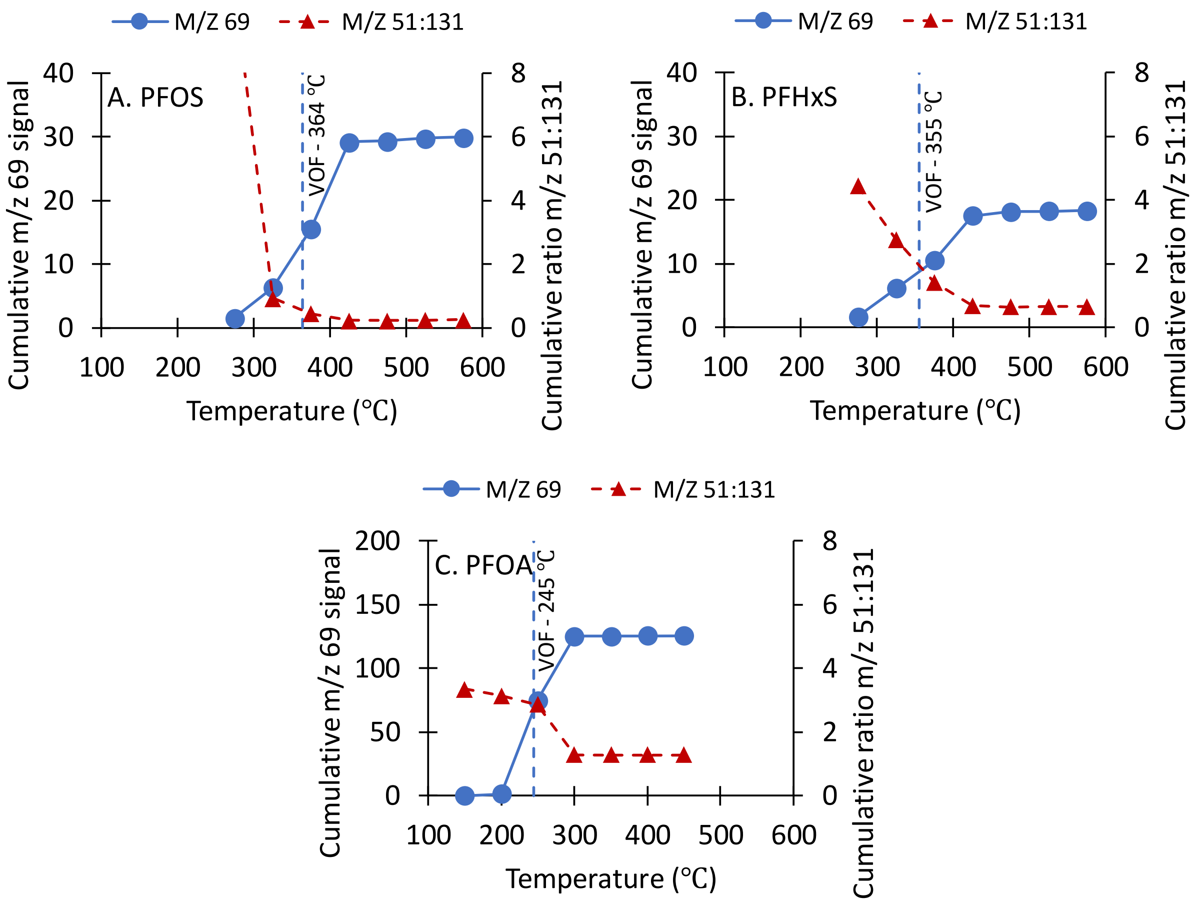


Figure 11. Evolution of VOF from simulated IDW without $Ca(OH)_2$. Blue markers and line represent cumulative m/z 69 observed as temperature increases. M/z 69 represents both perfluoroalkene and 1H-perfluoroalkane species. The dotted blue line represents the estimated average temperature at which m/z 69 was recovered. Red markers and line represent the cumulative ratio of m/z 51 to m/z 131. A shift to lower 51:131 ratios was observed with increasing temperature, indicating an increase in perfluoroalkene like abundance with temperature.

During the thermal experiments, a shift in VOF composition from greater 1H-perfluoroalkane abundance to greater perfluoroalkene abundance was noted with increasing temperature. This shift can be observed through inspection of the ratio of m/z 51 (representing 1H-perfluoroalkane species) to m/z 131 (representing perfluoroalkene species), which is shown as the red markers and dashed lines in **Figure 11**. The decrease in this cumulative ratio observed for all PFAS examined indicates this shift, which was noted to be most evident at furnace temperatures near 300 °C. Determining whether the observed perfluoroalkene species resulted from elimination of HF from 1H-perfluoroalkane species with increasing temperature, or through some other pathway from parent PFSA or PFCA species would be helpful for understanding VOF formation and evolution, and warrants study beyond the scope of this preliminary effort. It is notable perhaps, however, that the shift to greater perfluoroalkene species was more evident in VOF collected during PFSA decomposition, which occurred at higher temperatures and appeared associated with greater fluorine mineralization.

4.3 Decomposition of simulated solid IDW with $Ca(OH)_2$

4.3.1 Decomposition of PFOS, PFHxS, and PFOA in sand amended with $Ca(OH)_2$

To assess the potential benefit of $Ca(OH)_2$ for lowering decomposition temperatures of PFAS and lowering releases of VOF, the sands investigated and described in Section 4.2 were reexamined after mixing with 16.7 mg/g of $Ca(OH)_2$, as described in Section 3.3.1. The same general tools utilized during the baseline investigation were applied for this comparison: evaluation of extracts of solids and surfaces, evaluation of impinger solutions, and evaluation of VOF by GC-MS. However, as noted in Section 3.3.3.1, lower temperatures were used during these experiments to account for lower temperature decomposition facilitated by the $Ca(OH)_2$ amendments.

4.3.1.1 Evaluation of sample extracts

Extracted PFAS, fluorine, and sulfur oxyanion quantities associated with solids, sample boats, and the process tube after thermal treatment are provided in **Table 5**. Approximately 0.01 mg/g of PFOS and 0.005 mg/g of PFHxS were observed after treatment of their respective solids, corresponding to 0.4% and 0.3% of the amended quantities, respectively. This indicates that approximately 99.6% of PFOS and PFHxS were removed from the sands after thermal treated at temperatures up to 400 °C and 450°C, respectively, and greater than 99.9% removal of PFOA (based on 0.05 mg/L detection limit in extracts), after treatment at temperatures up to 450 °C. Unlike during the baseline assessment, no other PFAAs were observed among the extracts, with cumulative detection limits of approximately 0.005 mg/g.

Recovery of sulfur from PFSAs in the solid extracts was substantial, with 50-60% of initial sulfur recovered. This contrasts with no more than 15% recovery in cases without the $Ca(OH)_2$ amendment. The recovery of sulfur in the presence of $Ca(OH)_2$ is similar to the total recovery observed in impingers previously (up to 67%, see **Table 4**). No sulfur was detected in the impingers, indicating that volatile and trapped sulfur oxyanions accounted for no more than 1% of initial quantities. As in the case without $Ca(OH)_2$, while much of the added sulfur was accounted for, the mass balance of sulfur remained incomplete, perhaps for the same reasons as noted in Section 4.2.2. Future efforts would benefit from improved mass balance of sulfur.

Fluoride was observed associated with solids in all thermal decomposition experiments with $Ca(OH)_2$, accounting for: 41% of initial PFOS fluorine, 32% of initial PFHxS fluorine, and 26% of initial PFOA fluorine. Despite the lower temperatures that were used in these experiments, each of these quantities is greater than total fluoride observed without $Ca(OH)_2$: by a factor of 1.9x for PFOS, 1.1x for PFHxS, and 5.8x for PFOA. It is unclear why the relative improvement for mineralization of PFHxS was smaller. It should be noted that 80% to 90% of the fluoride observed was extracted using the complexing EDTA solution, after previous extractions with water alone showed limited recovery of fluoride. This increased fluoride extraction with more aggressive EDTA extraction suggests it was present as CaF_2 or other less soluble species.

Table 5. Quantities of PFAS, fluoride, and sulfur oxyanions extracted from $Ca(OH)_2$ amended IDW solids, sample boat, and process tube.

Solid	Temp Range (°C)	Initial PFAS (mg/g)	Final PFAS[a] (mg/g)[b] and (%)[c]	Initial Sulfur (mg/g)	Final Sulfur (mg/g)[b] and (%)[c]	Initial Fluorine (mg/g)	Final Fluorine (mg/g)[b] and (%)[c]
IDW-PFOS w/ $Ca(OH)_2$	150-400	2.7	PFOS-0.01 (0.4%)	0.17	0.11 (62%)	1.7	0.7 (41%)
IDW-PFOS w/ $Ca(OH)_2$ Control	-	2.7	PFOS-1.8 (67%)	0.17	0.01 (6%)	1.7	0.01 (0.3%)
IDW-PFHxS w/ $Ca(OH)_2$	150-450	1.8	PFHxS-0.005 (0.3%)	0.14	0.08 (55%)	1.1	0.35 (32%)
IDW-PFHxS w/ $Ca(OH)_2$ Control	-	1.8	PFHxS-1.5 (83%)	0.14	0.004 (3%)	1.1	0.01 (0.6%)
IDW-PFOS w/ $Ca(OH)_2$	100-450	2.7	ND	-	0.005 (-%)	1.8	0.5 (26%)
IDW-PFOA w/ $Ca(OH)_2$ Control	-	2.7	PFOA-2.4 (89%)	-	0.005 (-%)	1.8	0.01 (0.3%)
Notes:	(a) – PFAS measured is identified if possible. (b) – Sum of quantities extracted from solids, sample boat, and process tube normalized by IDW mass emplaced in the furnace (c) – Percent of initial quantities of PFAS, sulfur, or fluorine						

4.3.1.2 Evaluation of impinger solutions

No quantities of PFAS, fluoride, or sulfur oxyanions were observed in the impingers after thermal decomposition of the PFAS when amended with $Ca(OH)_2$. This contrasts with experiments performed in the absence of $Ca(OH)_2$, suggesting that $Ca(OH)_2$ inhibits volatilization or otherwise sequesters the relevant species. With respect to possible evolution of PFCA forming species, which were recovered at impingers when $Ca(OH)_2$ was not added to solids, it is unlikely that more than 0.02 mg of PFCAs could have been present in the impingers without detection. This indicates that less than 0.4% of PFAS treated in presence of $Ca(OH)_2$ were converted to volatile species that form PFCAs in solution.

4.3.1.3 Evaluation of VOF

The VOF that passed through aqueous impingers and collected in Flexfoil bags were evaluated by GC-MS as described in Sections 3.2.3 and 4.2.3. As before, these VOF passed through aqueous traps and were likely beyond analytical coverage provided by LC-MS/MS methods.

Cumulative signals of the ion fragments observed by SIM during GC-MS analysis of the VOF are presented in **Figure 12**. 1H-perfluoroalkane and perfluoroalkene species were again prevalent and no species were identified with fluoroalkyl chain lengths exceeding that of the parent PFAS. The greatest VOF signal observed in each case was associated with the 1H-perfluoroalkane species of equal fluoroalkyl chain length as the parent PFAS: 1H-perfluorooctane (RT = 5.7 min) for PFOS, 1H-perfluorohexane (RT=4.7 min) for PFHxS, and 1H-perfluoroheptane (RT=5.1 min) for PFOA. For the case of PFSA decomposition, this contrasts with the experiments without $Ca(OH)_2$ amendment, where strong signals representing fluoroalkyl chains with one fewer carbon were noted, particularly the perfluoroalkene species.

The prevalence of a second 1H-perfluoroalkane VOF signal shown in **Figure 12** may also be of interest – that associated with a fluoroalkyl chain length three carbons shorter than the parent PFAS (i.e., 1H-perfluoropentane [TIC, RT = 4.4 min] for PFOS, 1H-perfluoropropane [TIC, RT = 4 min] for PFHxS, and 1H-perfluorobutane [TIC, RT=4.1 min] for PFOA). These VOF were noted despite the apparent absence of 1H-perfluoroalkane VOF of intermediate chain lengths (e.g., the absence of 7- or 6-carbon 1H-perfluoroalkane species for PFOS). While speculative, this pattern suggests the cleavage/release of a 3-carbon intermediate species, perhaps as fluoropropane or fluoropropene.

As before, ion fragments m/z 69 and the ratio of m/z of 51:131 were used to evaluate decomposition progress as furnace temperatures were increased (see **Figure 13**). The average furnace temperature at which VOF were collected (estimated based on averaged m/z 69 signal) were significantly lower than without $Ca(OH)_2$ for PFOS (T_{VOF}=278 °C) and PFHxS (T_{VOF}=286 °C), but almost identical for PFOA (T_{VOF}=239 °C). While no products were observed at impingers for comparison, these lower temperatures likely indicate that $Ca(OH)_2$ facilitated PFSA decomposition at lower temperatures, while the impact on PFCAs was more limited. Perhaps this relates to stronger interactions between $Ca(OH)_2$ and sulfonate groups than carboxylate groups. It may also be related to the presence of Na^+ or K^+ cations in the alkaline methanol, which several industry studies indicated facilitated PFCA decomposition at similar temperatures.[9,27,28]

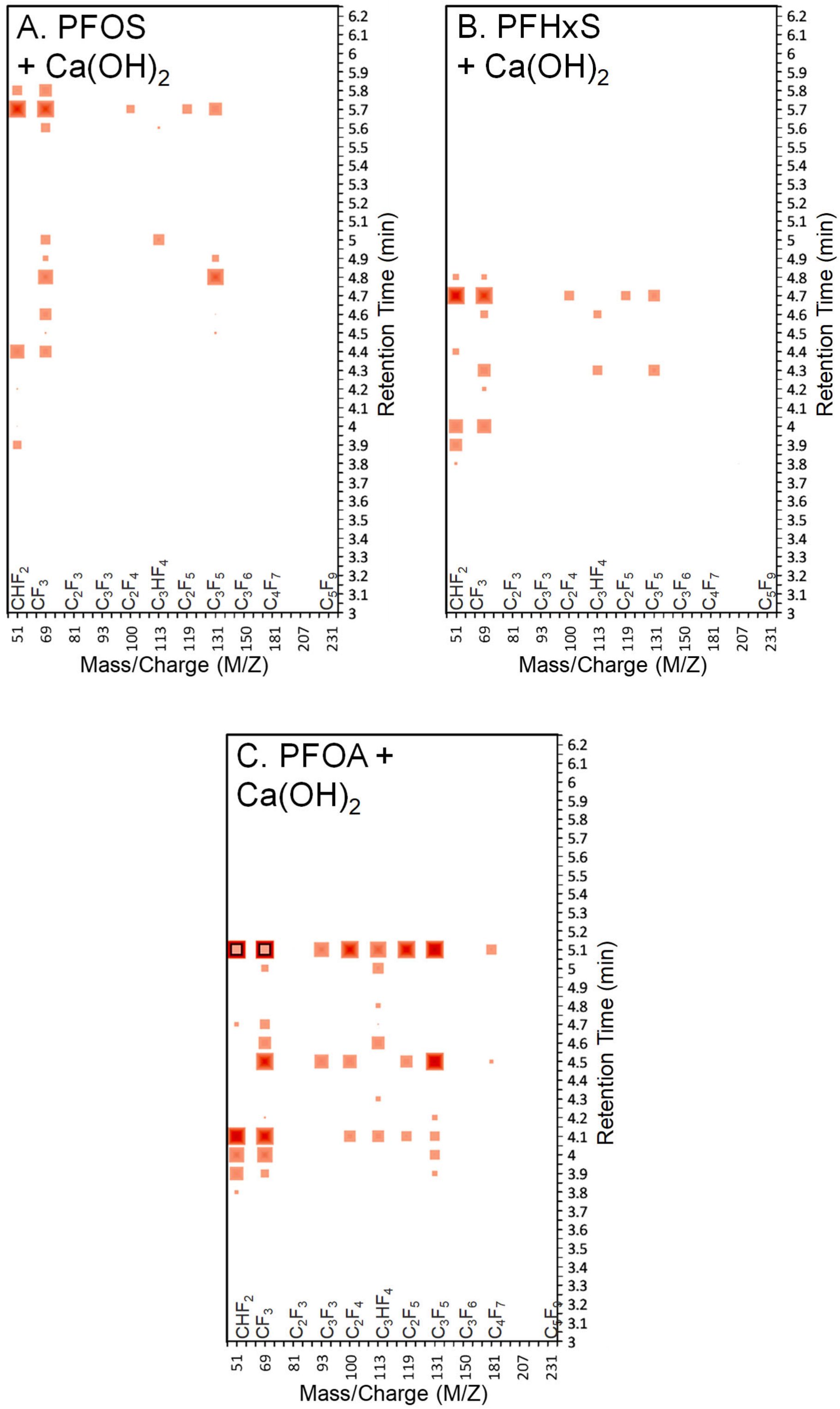


Figure 12. Cumulative GC-MS SIM ion fragment signals of VOF resulting from PFAS decomposition in sand IDW amended with $Ca(OH)_2$. GC-MS signals were discretized at 0.1 min resolution. VOF resulting from decomposition of a single PFAS in the IDW: A.) PFOS, B.) PFHxS, and C.) PFOA.

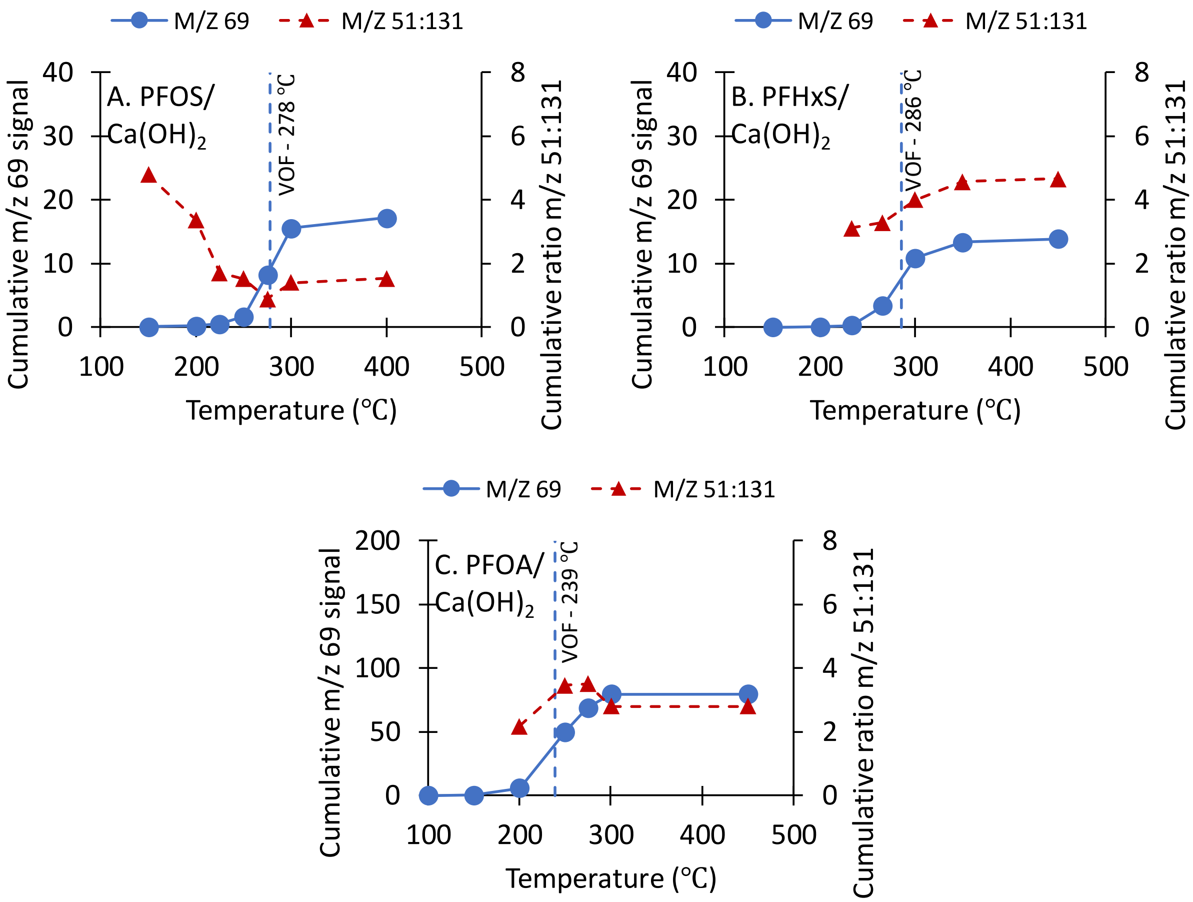


Figure 13. Evolution of VOF from simulated IDW with $Ca(OH)_2$. Blue markers and line represent cumulative m/z 69 observed as temperature increases. M/z 69 represents both perfluoroalkene and 1H-perfluoroalkane species. The dotted blue line represents the estimated average temperature at which m/z 69 was recovered. Red markers and line represent the cumulative ratio of m/z 51 to m/z 131. 51:131 ratios were observed to be constant or increasing as VOF evolved, indicating a more limited perfluoroalkene contributions than in absence of amended $Ca(OH)_2$.

The shift in VOF composition from 1H-perfluoroalkane to perfluoroalkene species noted during decomposition of the PFAAs without $Ca(OH)_2$ with increasing temperature (as indicated by a decrease in the m/z 51:131 ratio) was muted or absent in the presence of $Ca(OH)_2$. While this is evident in the data presented in **Figure 13**, an additional decomposition experiment with PFOS sand amended with 10 times greater $Ca(OH)_2$ (160 mg/g) also clearly demonstrated this effect. This experiment was performed at the same temperatures as the thermal decomposition experiment without $Ca(OH)_2$, and cumulative GC-MS signals for both experiments are shown in **Figure 14**. Most of the VOF collected in the presence of $Ca(OH)_2$ occurred at the lowest furnace temperature (275 °C). As shown in **Figure 14**, perfluoroalkene VOF species (e.g., perfluoroheptene at RT=4.5 min) were notably suppressed in the presence of higher $Ca(OH)_2$. While this experiment preceded the use of multiple extractions, or EDTA to facilitate fluoride extractions, fluoride was noted together with sulfur oxyanions in an aqueous extract of the high $Ca(OH)_2$ amended sand. Unfortunately, these extractions were likely far from complete. No analytes of interest were observed in the impinger solutions associated with the experiment with higher $Ca(OH)_2$. The pattern noted earlier, with the absence of 7- and 6-carbon

1H-perfluoroalkane species, is apparent in this data as well. Further evaluating conditions at which perfluoroalkene species form, are inhibited from forming, or decompose are likely of significant importance when evaluating the thermal decomposition of PFAS and deserves further scrutiny.

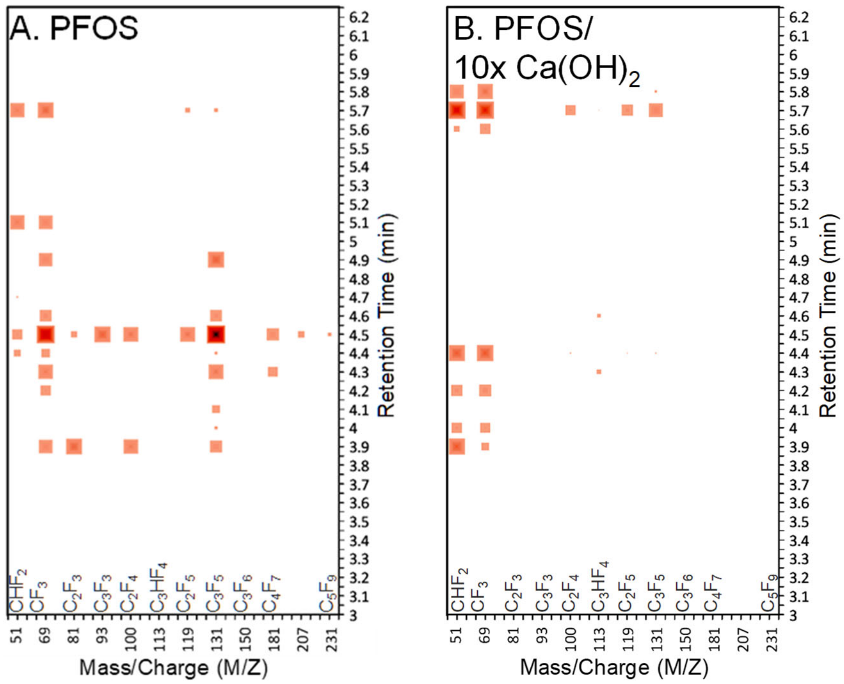


Figure 14. Cumulative GC-MS SIM ion fragment signals of VOF resulting from PFOS decomposition in simulated IDW and with 160 mg/g $Ca(OH)_2$ amendment. GC-MS signals were discretized at 0.1 min resolution. A shift from perfluoroalkene (e.g., m/z 131) to 1H-perfluoroalkane species (e.g., m/z 51) is observed when $Ca(OH)_2$ is present. Furnace temperatures for both experiments were matched and ranged from 275 °C to 575 °C.

4.3.2 Decomposition of UCMR-3 PFSAs and PFCAs in amended field IDW

Experiments performed with the amended field IDW were used to evaluate and verify, under more complex conditions, the interpretations of previous experiments. These experiments were performed with a mix of the six UCMR-3 PFAS, consisting of 3 PFSAs (PFOS, PFHxS, and PFBS) and 3 PFCAs (PFNA, PFOA, and PFHpA) (**Table 2**). Due to the anticipated doubling of fluorine associated with these PFAS in the amended field IDW compared to previous experiments, $Ca(OH)_2$ amendments were doubled to 33.5 mg/g to maintain a similar Ca:F ratio. The same general investigative approach as used for the previously described experiments were used to observe decomposition behavior of the amended field IDW. As noted in Section 3.3.3.2, however, the furnace was set to a fixed temperature of 325 °C for a duration of four hours for these experiments. Based on earlier results, this temperature was expected to result in extensive, if not complete, removal of PFCAs, and more limited removal of PFSAs from the IDW solids.

4.3.2.1 Evaluation of sample extracts and solids

PFAS, fluorine, and sulfur oxyanion quantities associated with solids, sample boats, and the process tube after thermal treatment are provided in **Table 6**. The PFAS quantities provided in **Table 6** were based on concentrations measured by the DoD ELAP accredited laboratory (Pace Analytical Gulf Coast) by LC-MS/MS after collection as described in Section 3.3.3.2. As noted in Section 4.1 (see **Table 2**), LC-MS/MS and RPLC-SCD measurements were in reasonable agreement, and analytical reports for the LC-MS/MS and RPLC-SCD analyses associated with the field IDW are included in Appendix A.

In the absence of $Ca(OH)_2$, a total of approximately 0.17 mg/g of PFSAs (10% of the amended quantity), distributed fairly evenly among PFOS, PFHxS, and PFBS, remained in the solids after treatment at 325 °C for 4 hours. No PFCAs were detected among the solids with a cumulative limit of detection (LOD) of 0.006 mg/g for the three PFCAs added. These quantities indicate that 90% of PFSAs were removed during the treatment and that greater than 99.5% of PFCAs were removed. The extent of PFSA removal was greater than expected based on the earlier experiments with all-purpose sand, which suggested that a component of the field soil may have facilitated some PFSA decomposition.

In the field IDW mixed with $Ca(OH)_2$, a total of approximately 0.02 mg/g of PFSAs remained after treatment, again fairly evenly distributed among PFOS, PFHxS, and PFBS, and no PFCAs were detected. For the PFSAs, this corresponded to a reduction in quantities of 98.7% compared to controls and a reduction of 86% (almost one additional log unit of reduction) beyond that observed in the treated samples without $Ca(OH)_2$. Due to a lower LOD, greater than 99.95% in PFCA quantities were removed in the samples with $Ca(OH)_2$ amendments. No other PFAS were noted among the solid samples.

Sulfur mineralization from the PFSAs in the solid extracts was substantial, with 69% of initial sulfur recovered in the case without $Ca(OH)_2$, and approximately 100% of initial sulfur recovered in the case with $Ca(OH)_2$ amendments. The high recovery of sulfur in both experiments is in agreement with thermal decomposition of significant quantities of PFSAs. The higher recovery among the solids in the case without $Ca(OH)_2$ than in earlier experiments with the sieved all-purpose sand suggest greater sequestration by materials in the field sample, and are perhaps consistent with the greater PFSA mineralization than expected. The mass balance among sulfur species in these experiments was more complete than before, perhaps as a result of better quantification of PFSA species by the LC-MS/MS method.

Fluoride resulting from PFAS decomposition was observed in solids, both without and with $Ca(OH)_2$ amendments. As expected, mineralization and recovery of total fluoride was greater in the case of $Ca(OH)_2$ amendment (40%) than in the case without $Ca(OH)_2$ (15%). This factor of 2.6x increase in fluoride mineralization was consistent with previous experiments where amendment with $Ca(OH)_2$ increased total fluoride mineralization by 1.1x to 5.8x with increased sequestration in the solids.

Table 6. Quantities of PFAS, fluoride, and sulfur oxyanions extracted from simulated soil IDW. Extractions from soils without and with $Ca(OH)_2$ are provided. PFAS analyses by LC-MS/MS were performed at Pace Analytical Gulf Coast.

Analyte (PFAS, Sulfur, or Fluorine)	Initial PFAS (mg/g)[a]	No $Ca(OH)_2$		With 33.5 mg/g $Ca(OH)_2$	
		Final solid extracts (mg/g) and (%)[b]	Impinger (mg/g)[c] and (%)[b]	Final solid extracts (mg/g) and (%)[b]	Impinger (mg/g)c and (%)[b]
PFSAs					
-PFOS	0.59	0.05 (9%)	<6.7×10^{-6} U	0.007 (1.3%)	<6.7×10^{-6} U
-PFHxS	0.61	0.06 (10%)	<6.7×10^{-6} U	0.006 (1.0%)	<6.7×10^{-6} U
-PFBS	0.62	0.06 (10%)	<6.7×10^{-6} U	0.01 (1.6%)	<6.7×10^{-6} U
PFSA Total	1.8	0.17 (10%)	ND	0.02 (1.3%)	ND
PFCAs					
-PFNA	0.58	<0.002 U	<6.7×10^{-6} U	<0.0002 U	<6.7×10^{-6} U
-PFOA	0.61	<0.002 U	<6.7×10^{-6} U	<0.0002 U	<6.7×10^{-6} U
-PFHpA	0.55	<0.002 U	6.5×10^{-6} J	<0.0002 U	<6.7×10^{-6} U
-PFHxA	<0.015 U	<0.002 U	6.9×10^{-6} J	<0.0002 U	<6.7×10^{-6} U
-PFPeA	<0.015 U	<0.002 U	1.0×10^{-5} J	<0.0002 U	<6.7×10^{-6} U
-PFBA	<0.015 U	<0.002 U	2.1×10^{-5}	<0.0002 U	<6.7×10^{-6} U
PFCA Total	1.7	<0.012 U (<0.7%)	4.5×10^{-5} J	<0.001 U (<0.06%)	ND
PFAS Total	3.6	0.17 (5%)	4.5×10^{-5} J (0.001%)	0.02 (0.7%)	ND
Sulfur and Fluorine[d]					
Sulfur	0.15	0.10 (69%)	0.03 (18%)	0.15 (100%)	0.004 (3%)
Fluorine	2.3	0.35 (15%)	ND	0.92 (40%)	ND

Notes: (a) – Based on control samples analyzed by LC-MS/MS at Pace Analytical Gulf Coast
(b) – Percent of initial quantities of PFAS, sulfur, or fluorine
(c) – Mass collected at impingers normalized by IDW mass emplaced in the furnace
(d) – Sulfur and fluorine concentrations are relative to unheated controls

4.3.2.2 Evaluation of impinger solutions

Cumulative totals of sulfur oxyanions and PFAS recovered and measured in impingers are provided in **Table 6**. No fluoride was detected in the impinger solutions. For the soil without $Ca(OH)_2$, approximately 18% of sulfur present in parent PFSAs was observed in the impingers, primarily during the first hour of treatment. This quantity was smaller than expected given the extent of PFSA decomposition but was consistent with the larger than expected quantity observed in soils and consistent with sequestration among the solids. Consistent with the previous experiments utilizing $Ca(OH)_2$ amendments, very little sulfur was observed in impingers during thermal decomposition of PFAS in field solids with $Ca(OH)_2$.

As no PFAS were detected in the impinger solutions by RPLC-SCD, only two impinger solutions were analyzed for PFAS by LC-MS/MS for each experiment: the impinger solution associated with the first hour of decomposition as it was anticipated to contain the greatest quantity of PFAS, and the impinger solution associated with the third hour of decomposition as a comparative baseline sample, where no detectable PFAS were anticipated. As shown in **Table 6**, small quantities of various PFCAs with perfluoroalkyl chains containing 7 or less carbons were detected in the impinger solution after PFAS decomposition in the soil without $Ca(OH)_2$, corresponding to approximately 4.5×10^{-5} mg per gram of treated soil in total. In this case, it is difficult to attribute the PFCAs to either PFSA or PFCA parent compounds, but the earlier observation of PFCAs resulting from PFOS and PFHxS decomposition suggest that PFSAs may have been the source of these PFCAs as well. If all amended PFAS are considered the source, then less than 0.001% of PFAS were recovered as PFCAs in the impingers. If only PFSAs were the source of these PFCAs, then less than 0.002% of these PFSAs were recovered as PFCAs in the impingers. No PFAS were detected among impinger solutions in the case when $Ca(OH)_2$ was added to the soil IDW prior to thermal treatment.

4.3.2.3 Evaluation of VOF

Cumulative signals of the ion fragments observed by SIM during GC-MS analysis of the VOF are presented in **Figure 15**. More than 98% of the total VOF observed were collected in the first hour of heating in the case without $Ca(OH)_2$, and no VOF were noted in Flexfoil bags after the first hour in the case with $Ca(OH)_2$. 1H-perfluoroalkane and perfluoroalkene species appeared to compose the greatest fraction of VOF observed and no species were identified with fluoroalkyl chain lengths exceeding that of the parent PFAS. The VOF spectra shown in **Figure 15** with and without $Ca(OH)_2$ appear similar to each other, and it is evident that large quantities of VOF evolved from the parent PFAS with little to no mineralization of fluorine (e.g., 1H-perfluorooctane, RT=5.7 min, resulting from either PFNA or PFOS). As noted in previous discussions, there was a shift from perfluoroalkene to 1H-perfluoroalkane species with the inclusion of $Ca(OH)_2$, which was perhaps most evident in examining the ratio of m/z 51:131, which increased from 2.1 to 3.6 when $Ca(OH)_2$ was added. It is unclear how this shift related to the increased mineralization of fluorine observed. It is notable, however, that significant signals of both 1H-perfluoroalkane and perfluoroalkene VOF with long perfluoroalkyl chains indicating little mineralized occurred together with significant removal of parent PFAS from the solid phase.

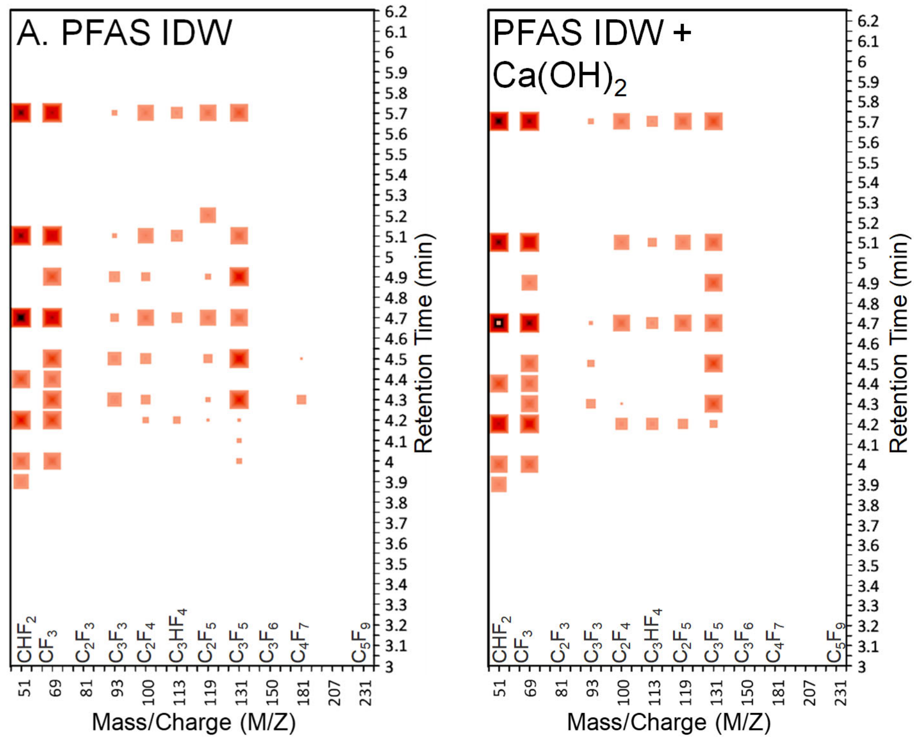


Figure 15. Cumulative GC-MS SIM ion fragment signals of VOF resulting from PFAS decomposition in simulated soil IDW. This soil IDW was amended with the six UCMR-3 PFAS and examined A.) without and B.) with 34 mg/g $Ca(OH)_2$ amendment. While similar, there is a slight shift in abundance among perfluoroalkene (e.g., m/z 131) and 1H-perfluoroalkane species (e.g., m/z 51) species. The furnace temperature for both experiments was set to a constant temperature of 325 °C. GC-MS signals were discretized at 0.1 min resolution.

5.0 CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH

Management of PFAS laden materials is a concern for the DoD. This concern extends to management of IDW that occur at a variety of scales. One management approach for these materials that can cover a broad range of scales is thermal treatment, including lower temperature thermal desorption approaches. The work described in this report showed that low temperature treatments can remove PFAAs from simulated IDW materials, and that VOF evolve from this low temperature process. Further, this work demonstrated the concept that $Ca(OH)_2$ amendments can lower PFAS decomposition temperatures, facilitate greater PFAS mineralization, and change the composition of VOF.

There remains a need to continue identifying and quantifying VOF that may evolve during PFAS thermal decomposition, including species evolving from PFAA precursors and novel PFAS, such as GenX. While further refinements and improvements are necessary, methodologies were developed during this project to use GC-MS instrumentation to assess prevalent VOF species that passed through aqueous traps, and to evaluate mineralized fluoride found as CaF_2 or other less soluble species. At this time, both of these approaches require high concentrations of analytes and there would be significant benefit associated with improving the sensitivity of these measurements. Particularly with respect to VOF, identification of major species and other components of interest should facilitate better approaches to trap and concentrate species for better detection.

PFSAs and PFCAs were removed from simulated IDW at temperatures achievable in the field, and amendment with $Ca(OH)_2$ at quantities up to 34 mg/g were shown to increase this removal. In clean, sieved sand, temperatures associated with VOF release from PFSAs decreased from near 360 °C to near 280 °C when $Ca(OH)_2$ was added, while temperatures associated with VOF release from PFOA were near 250 °C whether $Ca(OH)_2$ was present or not (See **Figure 16**). Consistent with these observations, less PFSAs remained in the field IDW material held at 325 °C when $Ca(OH)_2$ was added, and no PFCAs were detected in either case (See **Figure 16**). Improved fluorine mineralization of PFAS and suppression of volatile water-reactive PFCA precursors (e.g., acyl fluoride species) was also noted with the inclusion of $Ca(OH)_2$ amendments (See **Figure 17**). While these volatile PFCA precursors appeared reasonably facile to remove from the gas phase, they are of interest as they may lead to mobilization and distribution of PFCA species (perhaps localized) if not appropriately considered.

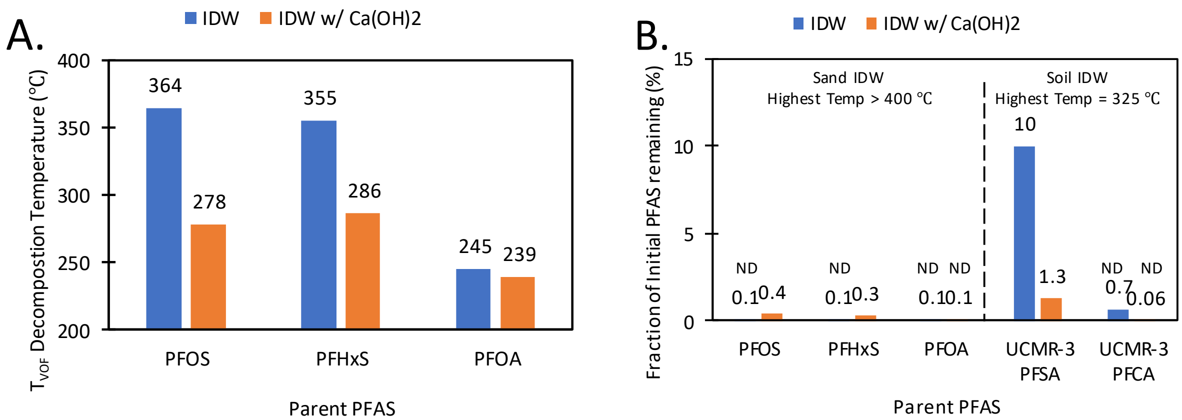


Figure 16. Decomposition temperatures and PFAS remaining after decomposition. A.)Estimated average temperature at which m/z 69 was recovered in VOF showing a shift to lower temperatures with $Ca(OH)_2$ amendments for PFSAs. B.) Observed fraction of PFAS remaining in simulated IDW after thermal treatment, showing less PFAS remaining with $Ca(OH)_2$ amendments.

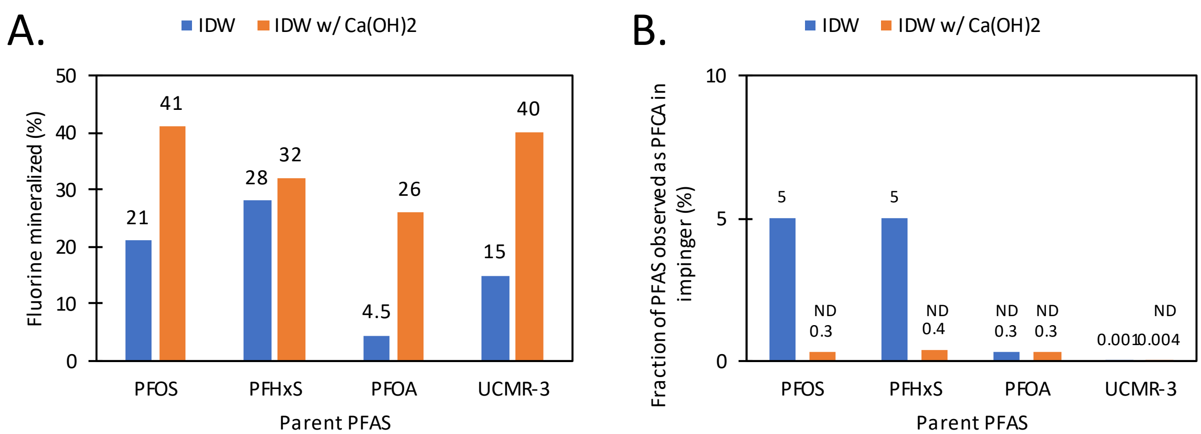


Figure 17. Products of PFAS thermal decomposition. A.) Fraction of fluorine of parent PFAS observed as fluoride products, indicating greater fluorine mineralization with $Ca(OH)_2$ amendments. B.) Fraction of initial PFAS observed as PFCAs in impinger traps, indicating the release of likely volatile intermediates (e.g., acyl fluoride VOF).

At the lower decomposition temperatures evaluated in this work, VOF with fluoroalkyl chains of similar length as parent PFAS were observed. VOF consisted largely of 1H-perfluoroalkane and perfluoroalkene species that were not removed by aqueous impinger traps, but other minor VOF components, including possibly more toxic species, should not be ruled out. Amendment of IDW with $Ca(OH)_2$ resulted in an apparent shift in the cumulative composition of VOF, from greater perfluoroalkene abundance to greater 1H-perfluoroalkane abundance, noted as a shift to greater relative quantities of m/z 51 to m/z 131 ion fragments observed by GC-MS SIM (See **Figure 18**). As greater perfluoroalkene quantities were observed at higher temperatures in the absence of $Ca(OH)_2$, this suggests a possible relationship between the influence of $Ca(OH)_2$ and perfluoroalkene species that should be explored further. For example, it would be helpful to better understand reactions between perfluoroalkene, or possibly acyl fluoride species, and $Ca(OH)_2$ that could lead to fluorine mineralization, or whether $Ca(OH)_2$ otherwise inhibits formation of these volatile species from parent PFAS. For application of low temperature treatment of PFAS, improved understanding of the relative abundances of perfluoroalkene and 1H-perfluoroalkane VOF is also necessary, as these VOF have different toxicities and likely behave differently during subsequent flue gas treatment approaches (e.g., sorption or oxidation) that may be necessary.

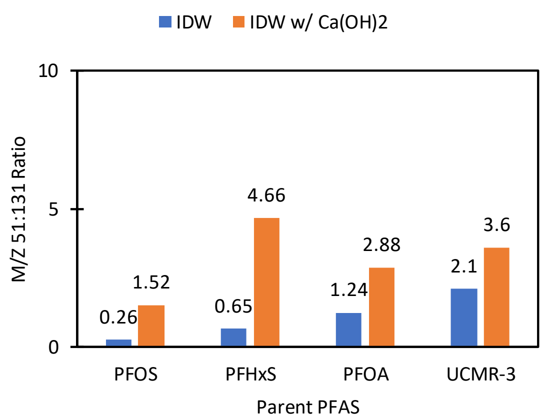


Figure 18. Cumulative ratio of m/z 51 to 131 of VOF evolved from IDW. With the inclusion of $Ca(OH)_2$, a shift to greater 51:131 was observed indicating the greater presence of 1H-perfluoroalkane species.

All the experiments performed during this limited-scope project utilized relatively inert and dry N_2 as a sweep gas. This may have had the potential benefit of preserving more reactive products or intermediates that otherwise may not have been observed. However, the influence of oxygen and water in the gas phase should be investigated as these may significantly alter products. For example, oxygen may be added at the vinyl bond of the perfluoroalkene species, resulting in possible acyl fluoride groups, which may be subsequently hydrolyzed to form new carboxylic groups, albeit with a shorter perfluoroalkyl chain. If these shortened PFCAs remain in the thermal treatment system, this may lead to sequential decomposition of the perfluoroalkyl chain. This process was noted as a challenge causing fluorocarbon polymer instabilities six decades ago, together with a patented technique using humidified air to produce more stable -CF_2H endgroups, analogous to 1H-perfluoroalkane species.[29] The role of $Ca(OH)_2$ and similar species were noted to impact these processes,[29] consistent with the observations described in this report. If the end goal of PFAS thermal treatment is improved fluorine mineralization, the former process of repeated perfluoroalkene oxidation and chain shortening may be desired, provided perfluoroalkene and acyl fluoride VOF are not released, whereas if the formation of more stable and likely less toxic 1H-perfluoroalkane species are desired, inclusion of water vapor may be desired.

$Ca(OH)_2$ was observed to alter the composition of 1H-perfluoroalkane and perfluoroalkene VOF and to impact PFAS mineralization. To apply low temperature treatment of PFAS, it will be important for the DoD to improve its understanding of this dynamic system. This includes understanding whether other amendments perform similarly to $Ca(OH)_2$ and what temperatures are required for desired PFAS mineralization when using such amendments. Recognizing the importance of developing effective management approaches for PFAS laden materials, these efforts will help improve understanding of PFAS fate during low temperature thermal treatment.

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Appendix A

PFAS Analytical Results for Amended Field IDW Experiments

Sample Key for Pace Analytical Gulf Coast Report, PFAS by LC-MS/MS:

Smp 1 – Control Field IDW solid w/o $Ca(OH)_2$

Smp 2 – Treated Field IDW solid w/o $Ca(OH)_2$

Smp 3 – Control Field IDW solid w/ $Ca(OH)_2$

Smp 4 – Treated Field IDW solid w/ $Ca(OH)_2$

Smp 5 – 250x dilution of Impinger 1, Field IDW solid w/o $Ca(OH)_2$ at 325 ℃, 1st hour

Smp 6 – 250x dilution of Impinger 3, Field IDW solid w/o $Ca(OH)_2$ at 325 ℃, 3rd hour

Smp 7 – 250x dilution of Impinger 1, Field IDW solid w/ $Ca(OH)_2$ at 325 ℃, 1st hour

Smp 8 – 250x dilution of Impinger 3, Field IDW solid w/ $Ca(OH)_2$ at 325 ℃, 3rd hour

Aptim Sample Reports

Lab ID RD2784 – Field IDW w/o $Ca(OH)_2$

Lab ID RD2787 – Field IDW w/ $Ca(OH)_2$

LELAP CERTIFICATE NUMBER: 01955
DOD-ELAP ACCREDITATION NUMBER: 74960

ANALYTICAL RESULTS

PERFORMED BY

Pace Analytical Gulf Coast
7979 Innovation Park Dr.
Baton Rouge, LA 70820
(225) 769-4900

Report Date 01/20/2021

Report # 220122279

Project IDW

Deliver To	*Additional Recipients*
Paul Koster Van Groos APTIM 17 Princess Road Lawrenceville, NJ 08648 609 895 5367	NONE

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with Pace Gulf Coast's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
NO	Indicates the sample did not ignite when preliminary test performed for EPA Method 1030
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
CF	HPLC or GC Confirmation
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*****	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	Organics - The result is estimated because it exceeded the instrument calibration range
E	Metals - % diference for the serial dilution is > 10%
L	Reporting Limits adjusted to meet risk-based limit.
P	RPD between primary and confirmation result is greater than 40
DL	Diluted analysis – when appended to Client Sample ID

Sample receipt at Pace Gulf Coast is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of Pace Gulf Coast. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Mark Peterson

Authorized Signature
Pace Gulf Coast Report 220122279

Certifications

Certification	Certification Number
DOD ELAP	74960
Alabama	01955
Arkansas	88-0655
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
Washington	C929
USDA Soil Permit	P330-16-00234

Case Narrative

Client: APTIM **Report:** 220122279

Pace Analytical Gulf Coast received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

This report was completed in accordance with DOD QSM 5.1.1 as specified in the contract.

SEMI-VOLATILES MASS SPECTROMETRY

In the PFAS Isotope Dilution QSM B15 analysis for prep batch 700444,PFHpA was detected at an estimated concentration in the method blank. This is due to laboratory contamination. The concentration is < 10% the concentration in the associated sample(s).

In the PFAS Isotope Dilution QSM B15 analysis for prep batch 700361, the LCS/LCSD RPD for PFUnA was outside the control limits.

MISCELLANEOUS

PFAS Abbreviations

Abbreviation	Analyte Name	Abbreviation	Analyte Name
PFBA	Perfluorobutanoic acid	11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
PFBS	Perfluorobutanesulfonic acid	4:2 FTS	4:2 Fluorotelomer sulfonic acid
PFDA	Perfluorodecanoic acid	6:2 FTS	6:2 Fluorotelomer sulfonic acid
PFDS	Perfluorodecane sulfonic acid	8:2 FTS	8:2 Fluorotelomer sulfonic acid
PFDoA	Perfluorododecanoic acid	9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid
PFEESA	Perfluoro(2-ethoxyethane)sulfonic acid	ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
PFHpA	Perfluoroheptanoic acid	FOSA	Perfluorooctane Sulfonamide
PFHpS	Perfluoro-1-heptanesulfonic acid	HFPO-DA	Perfluoro-2-proxypropanoic acid
PFHxA	Perfluorohexanoic acid	NEtFOSAA	N-ethylperfluorooctanesulfonamidoacetic acid
PFHxS	Perfluorohexanesulfonic acid	NFDHA	Nonafluoro-3,6-dioxaheptanoic acid
PFMBA	Perfluoro-4-methoxybutanoic acid	NMeFOSAA	N-methylperfluorooctanesulfonamidoacetic acid
PFMPA	Perfluoro-3-methoxypropanoic acid		
PFNA	Perfluorononanoic acid		
PFNS	Perfluorononanesulfonic acid		
PFOA	Perfluorooctanoic acid		
PFOS	Perfluorooctanesulfonic acid		
PFPeA	Perfluoropentanoic acid		
PFPeS	Perfluoropentanesulfonic acid		
PFTA	Perfluorotetradecanoic acid		
PFTeDA	Perfluorotetradecanoic acid		
PFTrDA	Perfluorotridecanoic acid		
PFUnA	Perfluoroundecanoic acid		

Q Flag Summary

Client Sample ID: **SMP 5, EXP 12, IMP 1A REP A,B** Lab Sample ID: **22012227905**

Method: **PFAS Isotope Dilution QSM B15** Analysis Date: **12/24/2020 10:53:58 PM**						
Analyte	**CAS**	**CCV OUL**	**LCS/LCSD OUL**	**SURROGATE OUL**	**IS OUL**	**CLCCV OUL**
PFUnA	2058-94-8		X			

Client Sample ID: **SMP 6, EXP 12, IMP 3A REP A-F** Lab Sample ID: **22012227906**

Method: **PFAS Isotope Dilution QSM B15** Analysis Date: **12/24/2020 11:08:23 PM**						
Analyte	**CAS**	**CCV OUL**	**LCS/LCSD OUL**	**SURROGATE OUL**	**IS OUL**	**CLCCV OUL**
PFUnA	2058-94-8		X			

Client Sample ID: **SMP 7, EXP 13, IMP 1A REP A,B** Lab Sample ID: **22012227909**

Method: **PFAS Isotope Dilution QSM B15** Analysis Date: **12/24/2020 11:51:28 PM**						
Analyte	**CAS**	**CCV OUL**	**LCS/LCSD OUL**	**SURROGATE OUL**	**IS OUL**	**CLCCV OUL**
PFUnA	2058-94-8		X			

Client Sample ID: **SMP 8, EXP 13, IMP 3A REP A,B** Lab Sample ID: **22012227910**

Method: **PFAS Isotope Dilution QSM B15** Analysis Date: **12/25/2020 12:05:41 AM**						
Analyte	**CAS**	**CCV OUL**	**LCS/LCSD OUL**	**SURROGATE OUL**	**IS OUL**	**CLCCV OUL**
PFUnA	2058-94-8		X			

CCV OUL=CCV out of limits
LCS/LCSD OUL=LCS/LCSD out of limits
SURROGATE OUL=Surrogate out of limits
IS OUL=Internal Standard out of limits
CLCCV OUL=Closing CCV out of limits

Sample Summary

LAB ID	Client ID	Matrix	Collect Date	Receive Date
22012227901	SMP 1, EXP 12C	Solid	05/27/2020 01:00	12/22/2020 12:00
22012227902	SMP 2, EXP 12T	Solid	05/27/2020 02:00	12/22/2020 12:00
22012227903	SMP 3, EXP 13C	Solid	06/04/2020 11:00	12/22/2020 12:00
22012227904	SMP 4, EXP 13T	Solid	06/04/2020 12:00	12/22/2020 12:00
22012227905	SMP 5, EXP 12, IMP 1A REP A,B	Water	05/27/2020 01:00	12/22/2020 12:00
22012227906	SMP 6, EXP 12, IMP 3A REP A-F	Water	05/27/2020 03:00	12/22/2020 12:00
22012227907	SMP 6, EXP 12, IMP 3A REP A-F-	Water	05/27/2020 03:00	12/22/2020 12:00
22012227908	SMP 6, EXP 12, IMP 3A REP A-F-	Water	05/27/2020 03:00	12/22/2020 12:00
22012227909	SMP 7, EXP 13, IMP 1A REP A,B	Water	06/04/2020 11:00	12/22/2020 12:00
22012227910	SMP 8, EXP 13, IMP 3A REP A,B	Water	06/04/2020 13:00	12/22/2020 12:00

Test Summary

LAB ID	Client ID	Matrix	Method
22012227901	SMP 1, EXP 12C	Solid	PFAS Isotope Dilution QSM B15
22012227902	SMP 2, EXP 12T	Solid	PFAS Isotope Dilution QSM B15
22012227903	SMP 3, EXP 13C	Solid	PFAS Isotope Dilution QSM B15
22012227904	SMP 4, EXP 13T	Solid	PFAS Isotope Dilution QSM B15
22012227905	SMP 5, EXP 12, IMP 1A REP A,B	Water	PFAS Isotope Dilution QSM B15
22012227906	SMP 6, EXP 12, IMP 3A REP A-F	Water	PFAS Isotope Dilution QSM B15
22012227907	SMP 6, EXP 12, IMP 3A REP A-F-	Water	PFAS Isotope Dilution QSM B15
22012227908	SMP 6, EXP 12, IMP 3A REP A-F-	Water	PFAS Isotope Dilution QSM B15
22012227909	SMP 7, EXP 13, IMP 1A REP A,B	Water	PFAS Isotope Dilution QSM B15
22012227910	SMP 8, EXP 13, IMP 3A REP A,B	Water	PFAS Isotope Dilution QSM B15

Manual Integrations

Manual Integrations for LC and IC (if performed) are documented in the raw data.
No other manual integrations were performed by Pace Gulf Coast.

Detect Summary

LAB ID	Client ID	Method	Parameter	Result	Units
22012227901	SMP 1, EXP 12C	PFAS Isotope Dil. QSM B15	Perfluorobutanesulfonic acid (PFBS)	529000	ug/Kg
22012227901	SMP 1, EXP 12C	PFAS Isotope Dil. QSM B15	Perfluoroheptanoic acid (PFHpA)	482000	ug/Kg
22012227901	SMP 1, EXP 12C	PFAS Isotope Dil. QSM B15	Perfluorohexanesulfonic acid (PFHxS)	527000	ug/Kg
22012227901	SMP 1, EXP 12C	PFAS Isotope Dil. QSM B15	Perfluorononanoic acid (PFNA)	498000	ug/Kg
22012227901	SMP 1, EXP 12C	PFAS Isotope Dil. QSM B15	Perfluorooctanesulfonic acid (PFOS)	504000	ug/Kg
22012227901	SMP 1, EXP 12C	PFAS Isotope Dil. QSM B15	Perfluorooctanoic acid (PFOA)	530000	ug/Kg
22012227902	SMP 2, EXP 12T	PFAS Isotope Dil. QSM B15	Perfluorobutanesulfonic acid (PFBS)	62500	ug/Kg
22012227902	SMP 2, EXP 12T	PFAS Isotope Dil. QSM B15	Perfluorohexanesulfonic acid (PFHxS)	58500	ug/Kg
22012227902	SMP 2, EXP 12T	PFAS Isotope Dil. QSM B15	Perfluorooctanesulfonic acid (PFOS)	51900	ug/Kg
22012227903	SMP 3, EXP 13C	PFAS Isotope Dil. QSM B15	Perfluorobutanesulfonic acid (PFBS)	712000	ug/Kg
22012227903	SMP 3, EXP 13C	PFAS Isotope Dil. QSM B15	Perfluoroheptanoic acid (PFHpA)	625000	ug/Kg
22012227903	SMP 3, EXP 13C	PFAS Isotope Dil. QSM B15	Perfluorohexanesulfonic acid (PFHxS)	685000	ug/Kg
22012227903	SMP 3, EXP 13C	PFAS Isotope Dil. QSM B15	Perfluorononanoic acid (PFNA)	668000	ug/Kg
22012227903	SMP 3, EXP 13C	PFAS Isotope Dil. QSM B15	Perfluorooctanesulfonic acid (PFOS)	668000	ug/Kg
22012227903	SMP 3, EXP 13C	PFAS Isotope Dil. QSM B15	Perfluorooctanoic acid (PFOA)	684000	ug/Kg
22012227904	SMP 4, EXP 13T	PFAS Isotope Dil. QSM B15	Perfluorobutanesulfonic acid (PFBS)	10200	ug/Kg
22012227904	SMP 4, EXP 13T	PFAS Isotope Dil. QSM B15	Perfluorohexanesulfonic acid (PFHxS)	5870	ug/Kg
22012227904	SMP 4, EXP 13T	PFAS Isotope Dil. QSM B15	Perfluorooctanesulfonic acid (PFOS)	7460	ug/Kg
22012227905	SMP 5, EXP 12, IMP 1A REP A,B	PFAS Isotope Dil. QSM B15	Perfluorobutanoic acid (PFBA)	12.7	ng/L
22012227905	SMP 5, EXP 12, IMP 1A REP A,B	PFAS Isotope Dil. QSM B15	Perfluoroheptanoic acid (PFHpA)	3.92J	ng/L
22012227905	SMP 5, EXP 12, IMP 1A REP A,B	PFAS Isotope Dil. QSM B15	Perfluorohexanoic acid (PFHxA)	4.12J	ng/L
22012227905	SMP 5, EXP 12, IMP 1A REP A,B	PFAS Isotope Dil. QSM B15	Perfluoropentanoic acid (PFPeA)	6.33J	ng/L

PFAS Isotope Dilution QSM B15

Form 1B

Results

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 1, EXP 12C
Collect Date:	05/27/20 Time: 0100	GCAL Sample ID:	22012227901
Matrix:	Solid % Moisture: NA	Instrument ID:	QQQ2
Sample Amt:	.66 g	Lab File ID:	2210104B_25.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	5000000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	01/04/21 Time: 2203
Prep Batch:	700444	Analytical Batch:	701166
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ug/kg

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
27619-97-2	6:2 Fluorotelomersulfonic acid	15200	U	6440	15200	37900
39108-34-4	8:2 Fluorotelomersulfonic acid	15200	U	9850	15200	37900
375-73-5	Perfluorobutanesulfonic acid	529000		4550	15200	37900
375-22-4	Perfluorobutanoic acid	15200	U	4920	15200	37900
335-76-2	Perfluorodecanoic acid	15200	U	4550	15200	37900
375-85-9	Perfluoroheptanoic acid	482000		4920	15200	37900
355-46-4	Perfluorohexanesulfonic acid	527000		5300	15200	37900
307-24-4	Perfluorohexanoic acid	15200	U	5680	15200	37900
375-95-1	Perfluorononanoic acid	498000		3410	15200	37900
1763-23-1	Perfluorooctanesulfonic acid	504000		6820	15200	37900
335-67-1	Perfluorooctanoic acid	530000		5680	15200	37900
2706-90-3	Perfluoropentanoic acid	15200	U	5680	15200	37900
2058-94-8	Perfluoroundecanoic acid	15200	U	5300	15200	37900

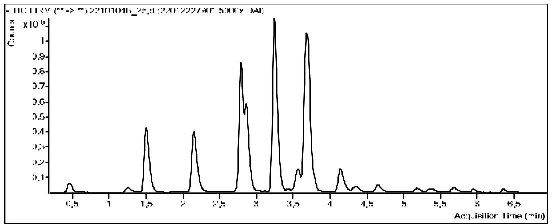
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_25.d	**Position**	P1-C3	**Samp Name**	22012227901	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ2;700444
Acq Date	1/4/2021 22:03						

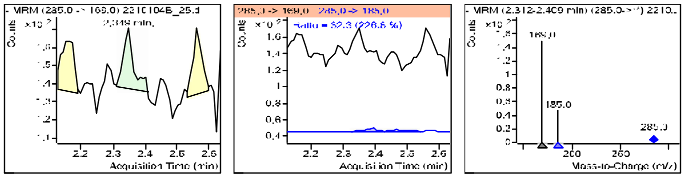
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	62826.369	4.149				90.47	18.0942		2980.46	1.49	
M2PFHxA	177011.954	2.152				91.12	36.4493		5695.70	1.59	
M2PFOA	71724.746	3.248				90.69	18.1377		2752.45	1.70	
M4PFOS	45361.105	3.712				89.74	17.9474		2563.72	1.52	
MPFOA	141.025	3.266				0.00	12.6144		2.18	1.20	
M3PFBA	3410.942	0.464				0.00	4.6523		43.67	1.52	
HFPO-DA	78.821	2.349	M3HFPODA	767	2.384	114.65	0.6775		0.54	0.87	
4:2 FTS	14.728	2.057	M2 4:2 FTS	2404	2.104	97.40	0.0194		0.41	1.51	m
6:2 FTS	114.243	3.217	M2 6:2 FTS	4539	3.225	100.41	0.0781		5.28	2.88	
ADONA	53.578	2.878	M8PFOA	21353	3.247	97.28	0.0038		0.91	1.08	m
PFHpS	2053.307	3.297	M8PFOA	21353	3.247	97.28	0.8533		59.53	1.45	
10:2 FTS	25.168	5.211	M2 8:2 FTS	4266	4.129	102.89	0.0164		2.11	0.69	
PFPeS	240.022	2.323	M5PFHxA	20269	2.151	97.82	0.1178		5.92	1.25	
PFODA	418.153	6.504	M2PFHxDA	10093	6.348	90.43	0.3481		18.80	1.50	
NEtFOSAA	11.688	4.577	d5-NEtFOSAA	11010	4.641	101.64	0.0038		1.59	0.88	
PFHxDA	120.769	6.361	M2PFHxDA	10093	6.348	90.43	0.0652		0.94	1.31	
NMeFOSAA	21.443	4.384	d3-NMeFOSAA	7979	4.365	103.39	0.0065		0.44	0.70	m
PFBA	410.382	0.485	MPFBA	23487	0.463	95.81	0.0471		2.38	1.40	
PFBS	153789.332	1.507	M3PFBS	8636	1.505	94.36	69.8492		5056.78	1.36	
PFDA	36.064	4.131	M6PFDA	15081	4.149	96.85	0.0103		0.19	0.72	
PFDoA	126.853	5.260	MPFDoA	12937	5.186	95.66	0.0512		18.47	0.68	
NEtFOSA	35.051	5.768	d-NEtFOSA	5290	5.694	84.44	0.0263		0.83	0.68	
PFHpA	294849.953	2.798	M4PFHpA	19473	2.797	94.99	63.6276		2934.19	1.42	
PFHxA	378.401	2.153	M5PFHxA	20269	2.151	97.82	0.0818		11.23	1.54	
PFHxS	172105.304	2.875	M3PFHxS	9119	2.874	95.50	69.5164		12530.42	1.23	m
PFNA	302898.261	3.679	M9PFNA	20837	3.678	100.80	65.6776		191.50	1.52	
NEtFOSE	22.581	5.767	d9-NEtFOSE	8980	5.682	91.07	0.0123		3.01	1.00	
PFOA	324572.800	3.249	M8PFOA	21353	3.247	97.28	69.9202		15332.56	1.50	
PFOS	211400.533	3.704	M8PFOS	9983	3.702	96.88	66.4810		3567.12	0.78	m
PFPeA	179.200	1.253	M5PFPeA	16522	1.263	97.32	0.0340		5.78	1.84	
PFTA	76.662	5.946	M2PFTA	9469	5.954	100.12	0.0470		0.58	0.76	
PFTrDA	16.030	5.541	MPFDoA	12937	5.186	95.66	0.0082		0.70	1.17	
PFEESA	129.584	1.895	M3PFHxS	9119	2.874	95.50	0.0163		3.54	1.03	
PFUnA	163.852	4.684	M7PFUnA	16052	4.662	96.15	0.0486		4.58	1.13	

HFPO-DA



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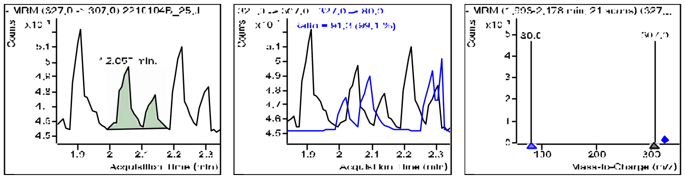
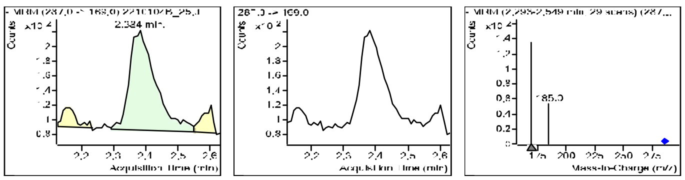


M3HFPODA



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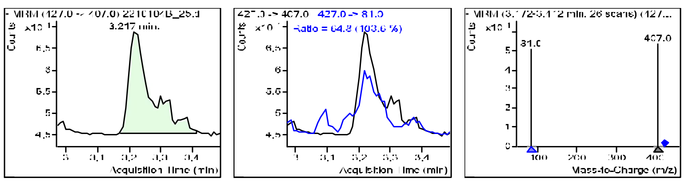
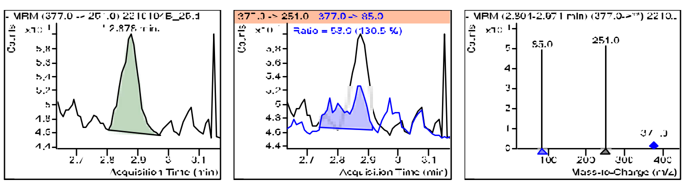


ADONA



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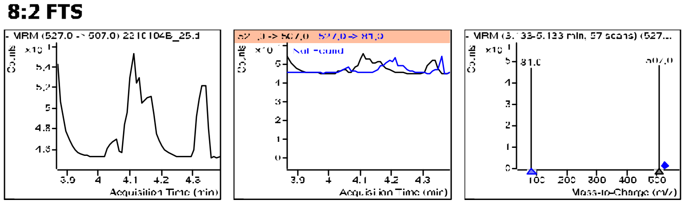
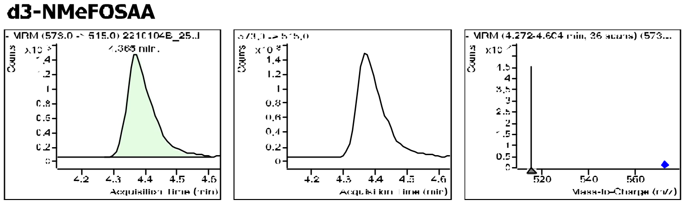


d3-NMeFOSAA



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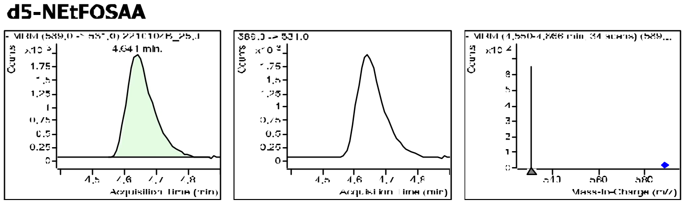
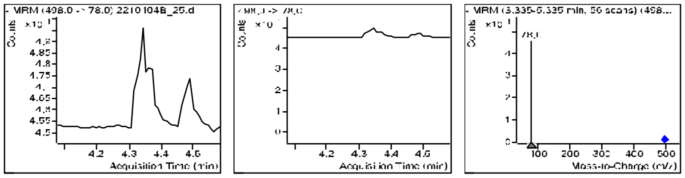
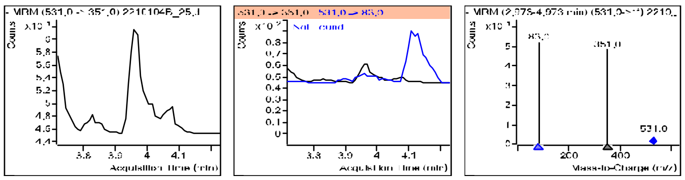


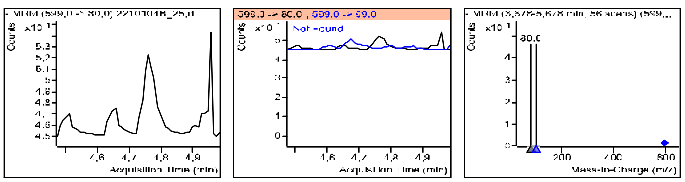
FOSA



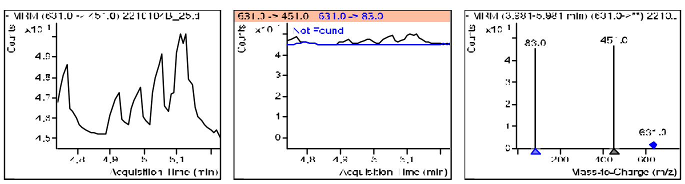
9Cl-PF3ONS



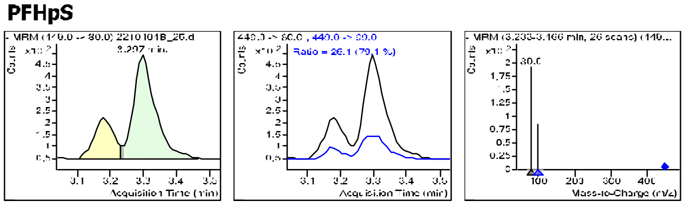
PFDS



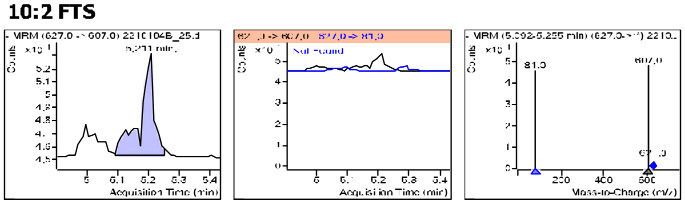
11Cl-PF3OUdS



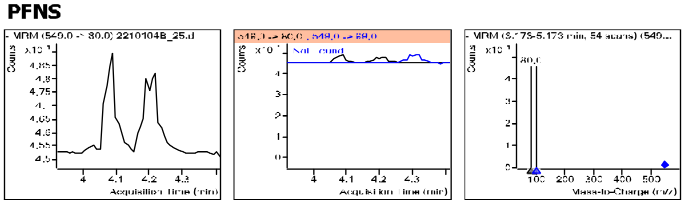
PFHpS



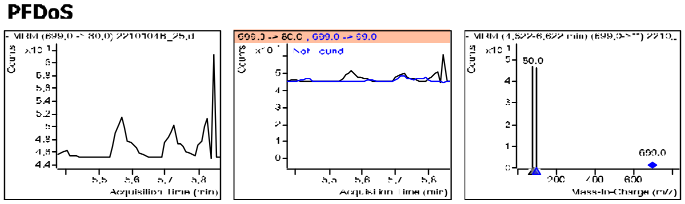
10:2 FTS



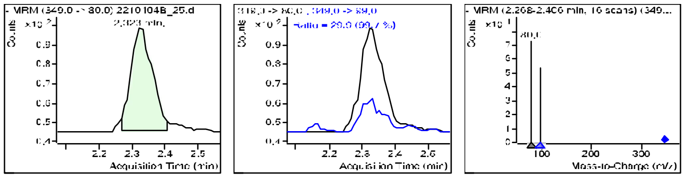
PFNS



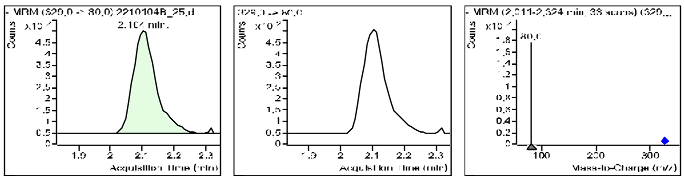
PFDoS



PFPeS



M2 4:2 FTS



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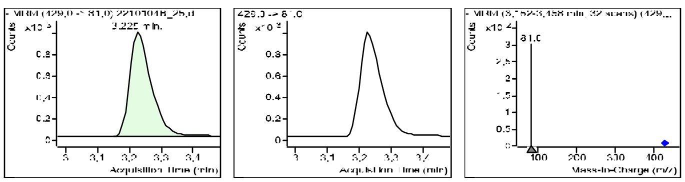
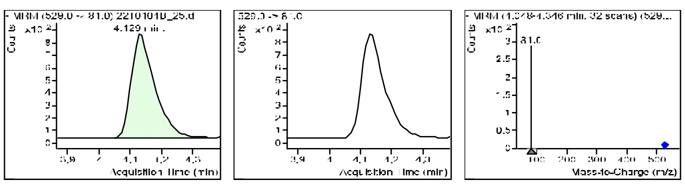
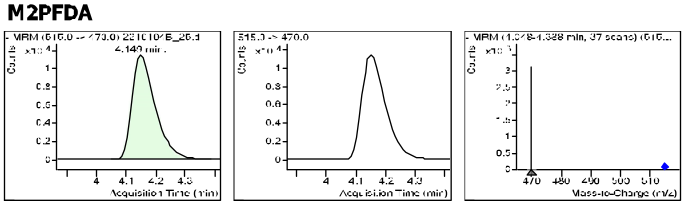


M2 8:2 FTS



M2PFDA



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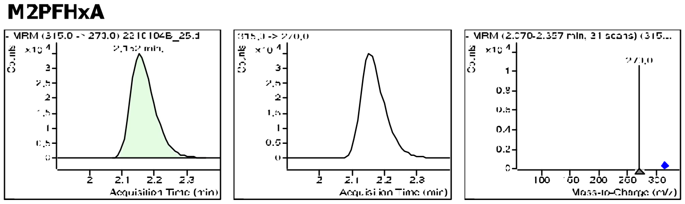

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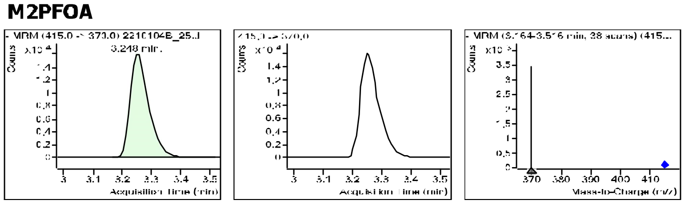

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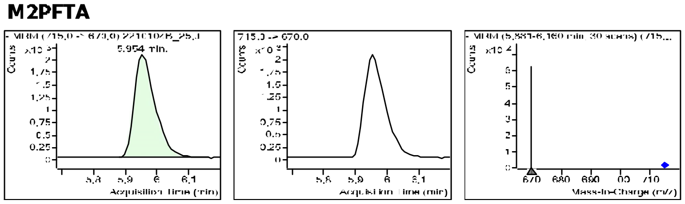

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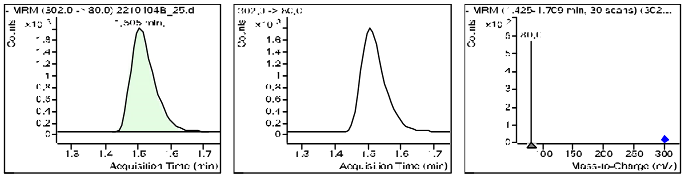

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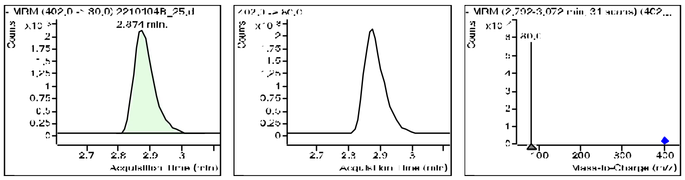

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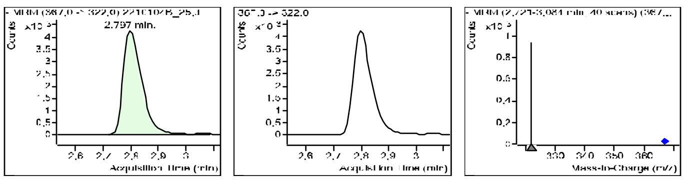

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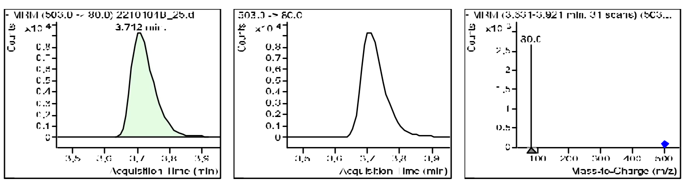

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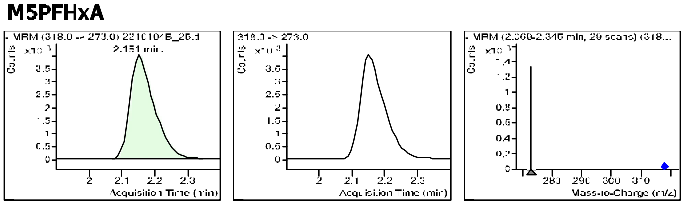

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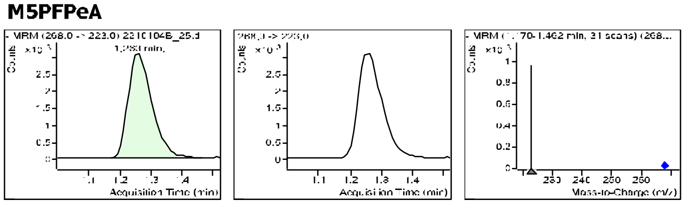

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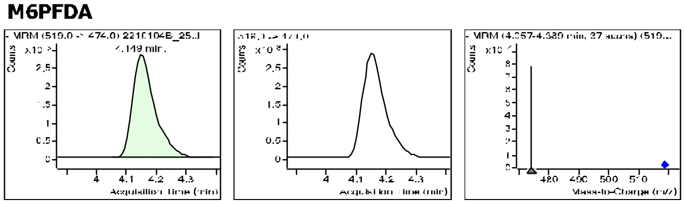

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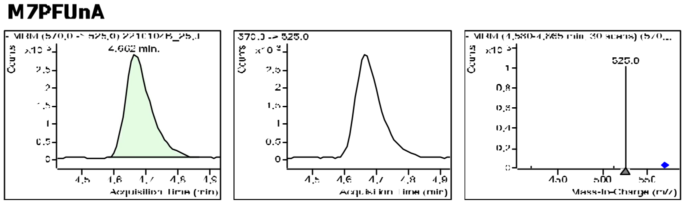

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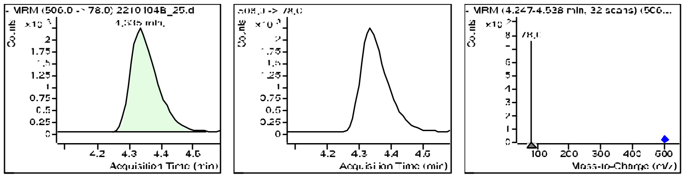

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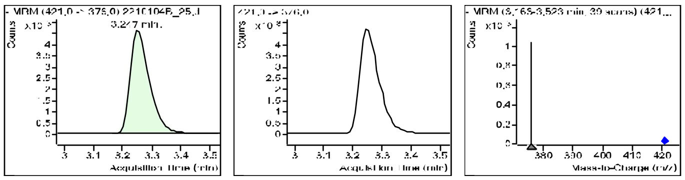

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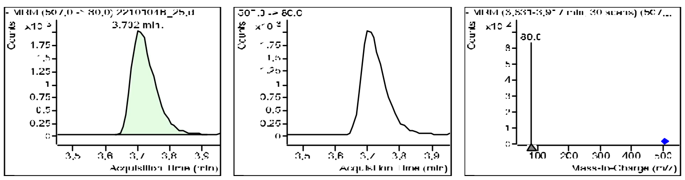

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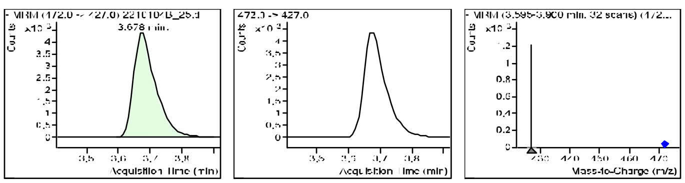

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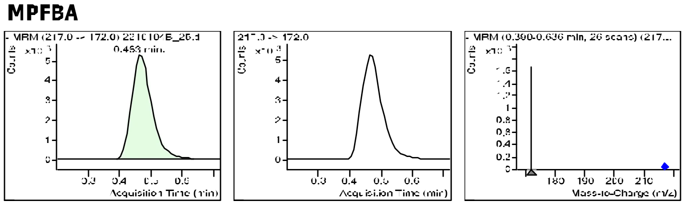

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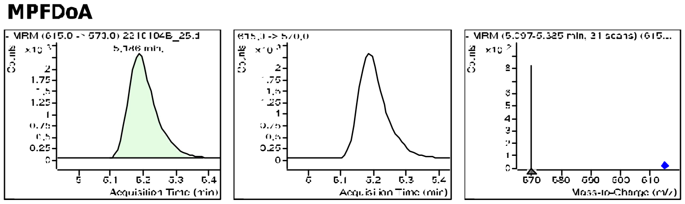

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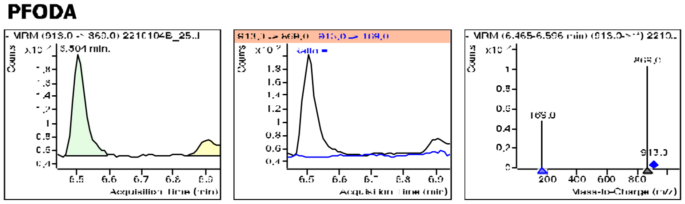

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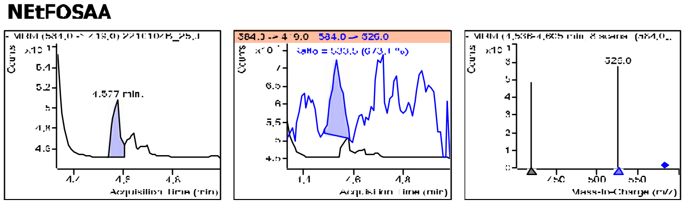

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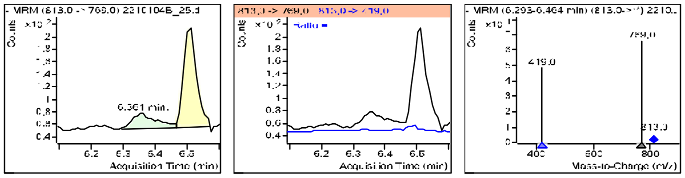

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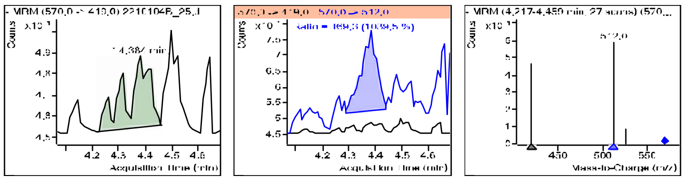

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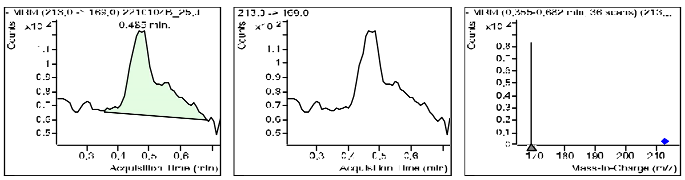

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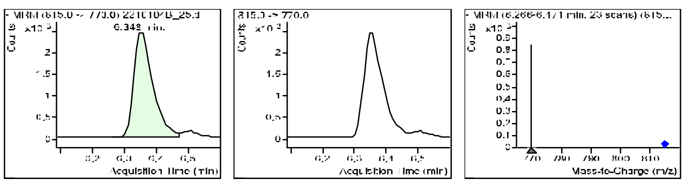

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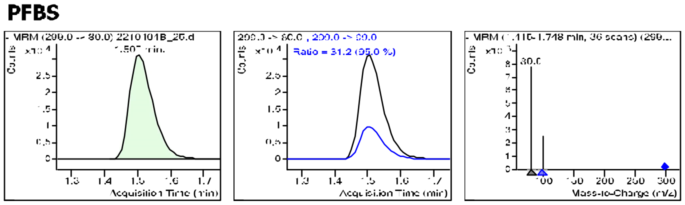

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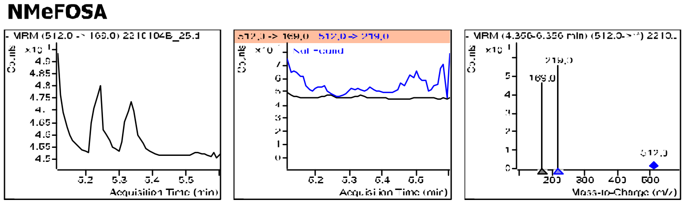

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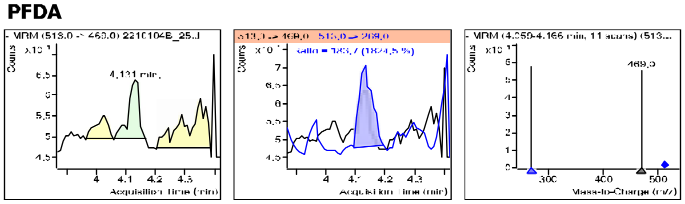

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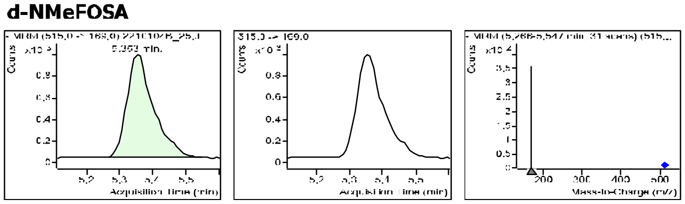

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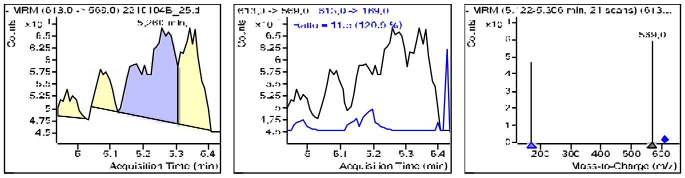

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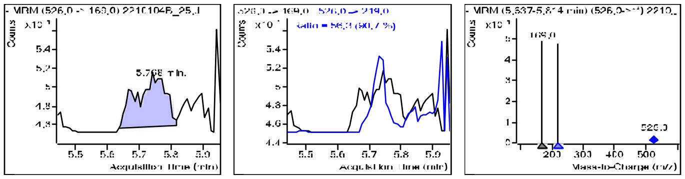

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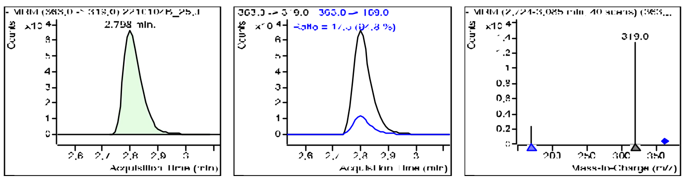

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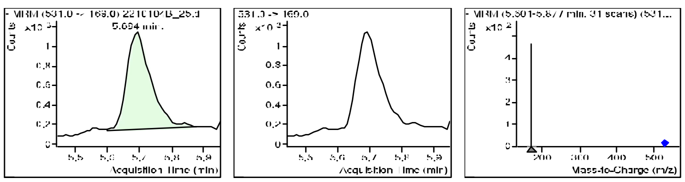

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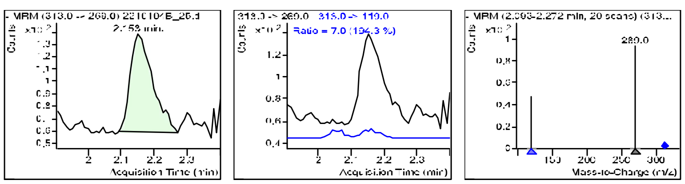

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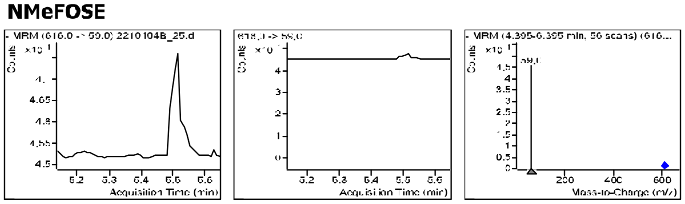

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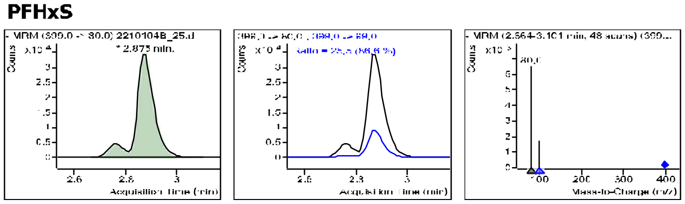

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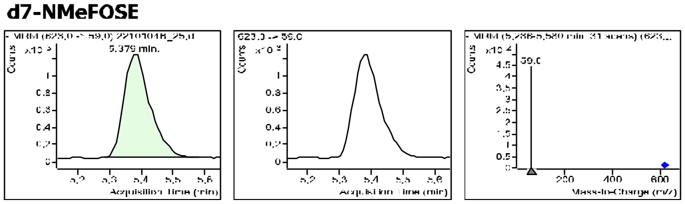

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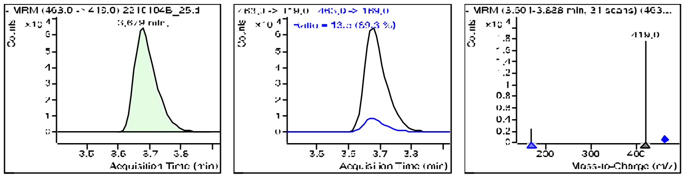

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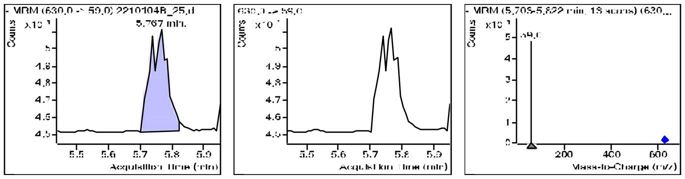

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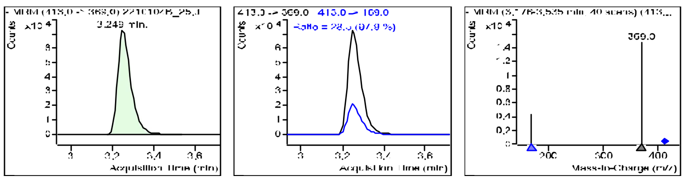

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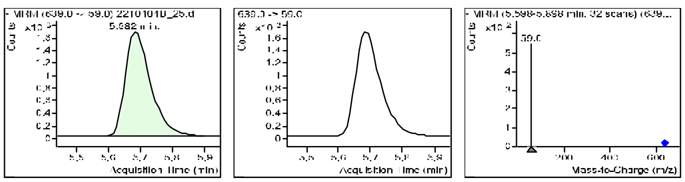

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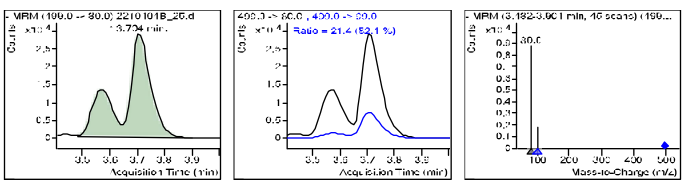

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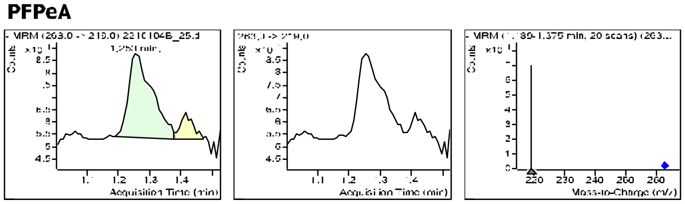

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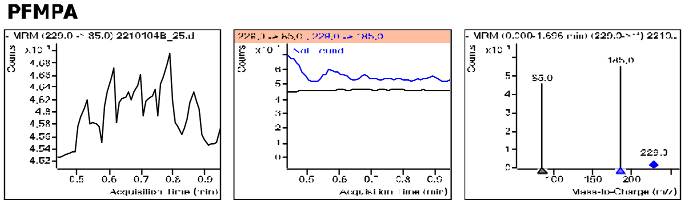

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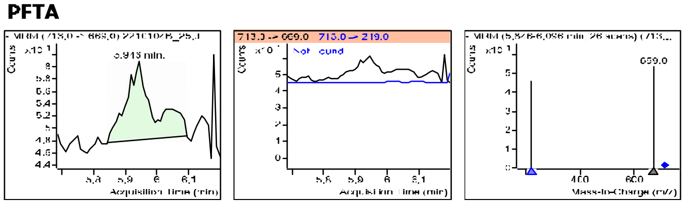

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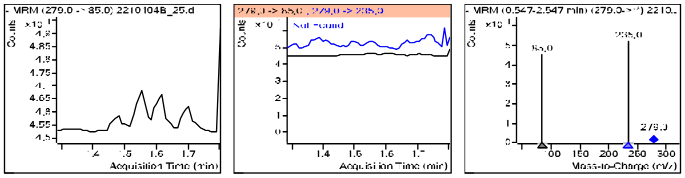

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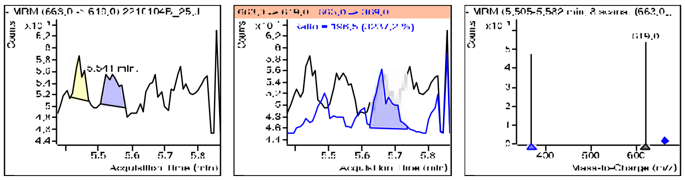

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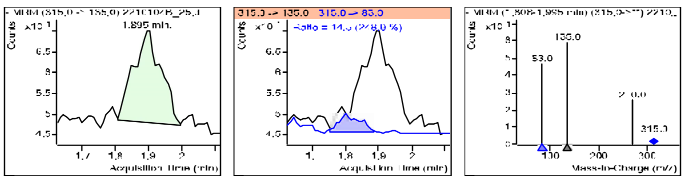

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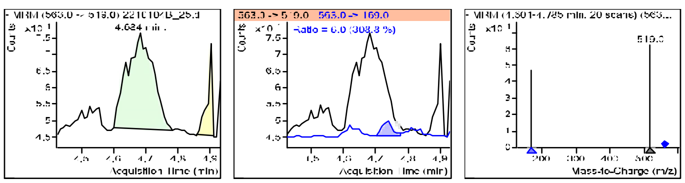

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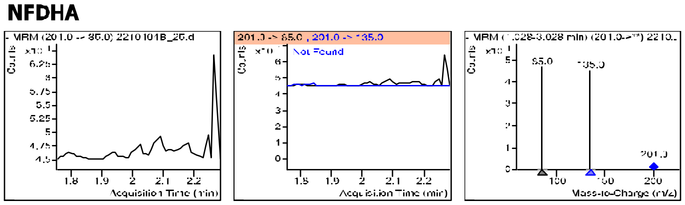
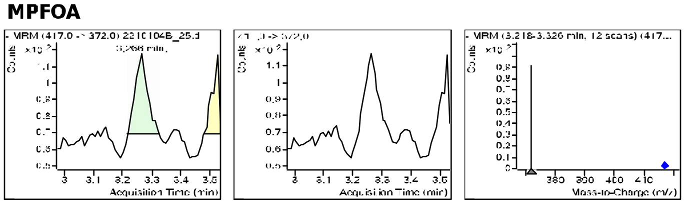


MPFOA



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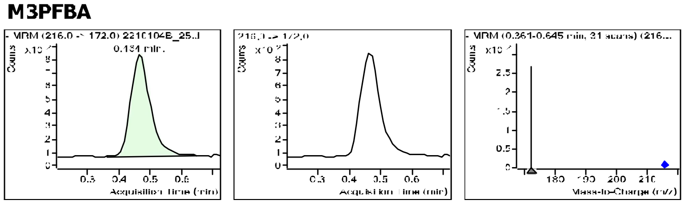


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 2, EXP 12T
Collect Date:	05/27/20 Time: 0200	GCAL Sample ID:	22012227902
Matrix:	Solid % Moisture: NA	Instrument ID:	QQQ2
Sample Amt:	.51 g	Lab File ID:	2210104B_28.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	500000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	01/04/21 Time: 2242
Prep Batch:	700444	Analytical Batch:	701166
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ug/kg

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
27619-97-2	6:2 Fluorotelomersulfonic acid	1960	U	833	1960	4900
39108-34-4	8:2 Fluorotelomersulfonic acid	1960	U	1270	1960	4900
375-73-5	Perfluorobutanesulfonic acid	62500		588	1960	4900
375-22-4	Perfluorobutanoic acid	1960	U	637	1960	4900
335-76-2	Perfluorodecanoic acid	1960	U	588	1960	4900
375-85-9	Perfluoroheptanoic acid	1960	U	637	1960	4900
355-46-4	Perfluorohexanesulfonic acid	58500		686	1960	4900
307-24-4	Perfluorohexanoic acid	1960	U	735	1960	4900
375-95-1	Perfluorononanoic acid	1960	U	441	1960	4900
1763-23-1	Perfluorooctanesulfonic acid	51900		882	1960	4900
335-67-1	Perfluorooctanoic acid	1960	U	735	1960	4900
2706-90-3	Perfluoropentanoic acid	1960	U	735	1960	4900
2058-94-8	Perfluoroundecanoic acid	1960	U	686	1960	4900

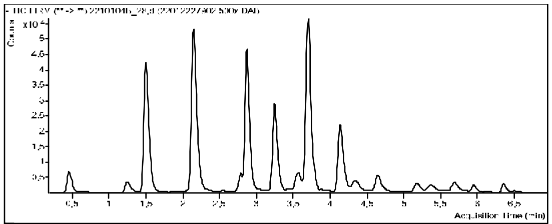
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_28.d	**Position**	P1-C6	**Samp Name**	22012227902	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ2;700444
Acq Date	1/4/2021 22:42						

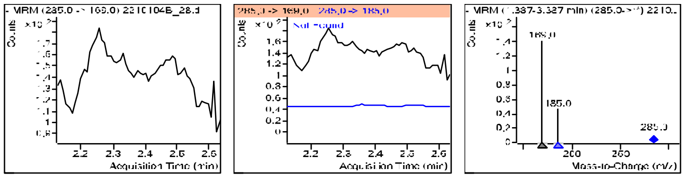
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	91857.886	4.149				132.28	26.4554		2262.35	1.42	
M2PFHxA	245330.158	2.152				126.29	50.5170		7052.89	1.44	
M2PFOA	98408.411	3.248				124.43	24.8855		4132.05	1.50	
M4PFOS	62469.389	3.703				123.58	24.7164		289.83	1.52	
MPFOA	400.833	3.238				0.00	35.8537		6.16	2.48	
M3PFBA	3822.139	0.464				0.00	5.2131		86.13	1.56	
4:2 FTS	9.889	2.169	M2 4:2 FTS	2528	2.095	102.42	0.0124		1.54	1.17	
6:2 FTS	65.656	3.254	M2 6:2 FTS	4716	3.226	104.33	0.0432		2.85	1.42	
ADONA	35.290	2.896	M8PFOA	23110	3.247	105.29	0.0023		0.72	1.07	
8:2 FTS	25.756	4.203	M2 8:2 FTS	4507	4.129	108.69	0.0159		7.28	0.77	
9Cl-PF3ONS	20.245	4.118	M8PFOS	10812	3.711	104.93	0.0020		0.47	1.18	
PFHpS	1932.449	3.297	M8PFOA	23110	3.247	105.29	0.7420		65.95	1.29	
PFPeS	256.100	2.323	M5PFHxA	22260	2.151	107.43	0.1144		7.31	1.43	
PFODA	365.698	6.504	M2PFHxDA	12223	6.348	109.51	0.2514		21.39	1.88	
NEtFOSAA	8.419	4.819	d5-NEtFOSAA	12200	4.632	112.62	0.0024		1.11	1.50	
PFHxDA	137.501	6.351	M2PFHxDA	12223	6.348	109.51	0.0613		1.02	1.73	
NMeFOSAA	14.478	4.171	d3-NMeFOSAA	7421	4.365	96.16	0.0047		2.08	1.13	
PFBA	449.246	0.466	MPFBA	25048	0.463	102.17	0.0483		15.26	1.80	
PFBS	149560.589	1.497	M3PFBS	9703	1.505	100.55	63.7435		10378.09	1.50	
PFDA	195.300	4.141	M6PFDA	16770	4.139	107.71	0.0501		INF	0.69	
PFDoA	7.327	5.150	MPFDoA	14416	5.186	106.59	0.0027		0.93	0.82	
NEtFOSA	21.164	5.778	d-NEtFOSA	6476	5.684	103.37	0.0130		0.55	1.37	
PFHpA	185.391	2.826	M4PFHpA	22006	2.797	107.35	0.0354		0.47	0.70	
PFHxA	475.726	2.162	M5PFHxA	22260	2.151	107.43	0.0937		2.32	0.88	
PFHxS	154769.838	2.875	M3PFHxS	9552	2.874	100.05	59.6768		INF	1.35	m
PFNA	266.095	3.707	M9PFNA	22065	3.669	106.74	0.0545		INF	1.06	
PFOA	349.110	3.249	M8PFOA	23110	3.247	105.29	0.0695		2.41	1.04	
PFOS	182318.408	3.704	M8PFOS	10812	3.711	104.93	52.9383		957.85	1.37	m
PFPeA	276.022	1.253	M5PFPeA	17413	1.248	102.57	0.0496		1.71	1.47	m
PFTA	53.556	5.957	M2PFTA	10023	5.954	105.97	0.0310		1.73	0.70	
PFMBA	28.628	1.529	M5PFHxA	22260	2.151	107.43	0.0052		1.75	1.64	
PFTrDA	92.763	5.653	MPFDoA	14416	5.186	106.59	0.0425		0.22	1.00	
PFEESA	143.894	1.886	M3PFHxS	9552	2.874	100.05	0.0172		0.74	1.02	
PFUnA	127.815	4.729	M7PFUnA	18092	4.662	108.36	0.0336		3.11	1.51	
NFDHA	29.239	2.009	M4PFHpA	22006	2.797	107.35	0.0067		0.32	1.59	

HFPO-DA



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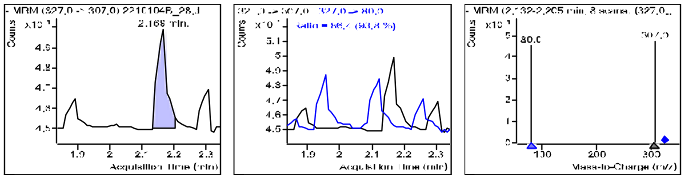

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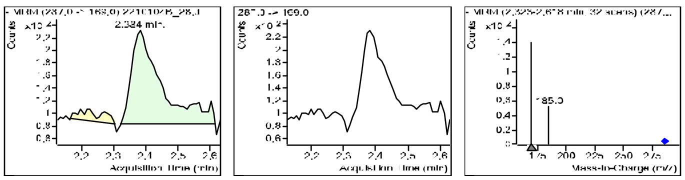
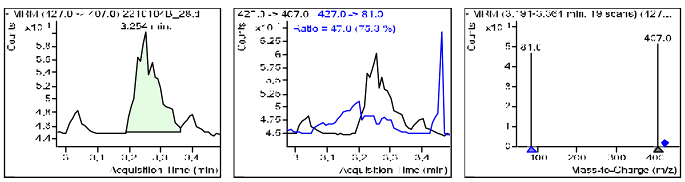


6:2 FTS



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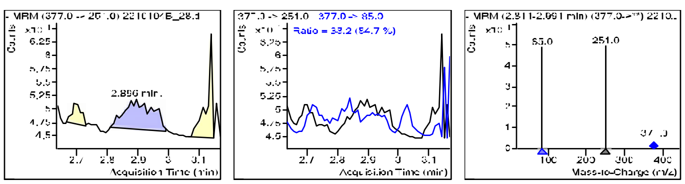

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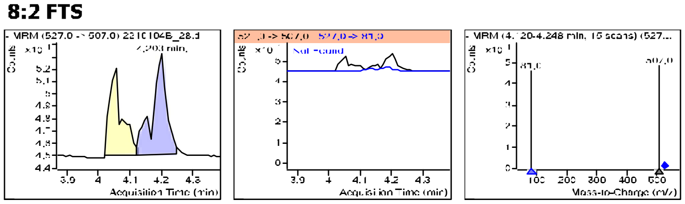

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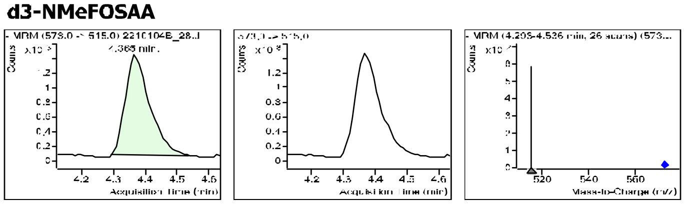

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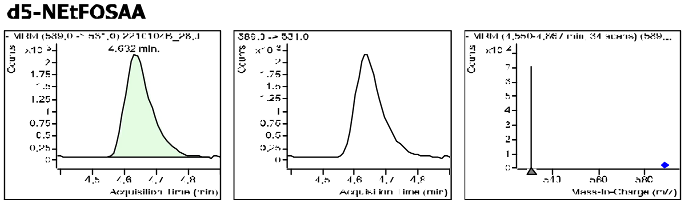

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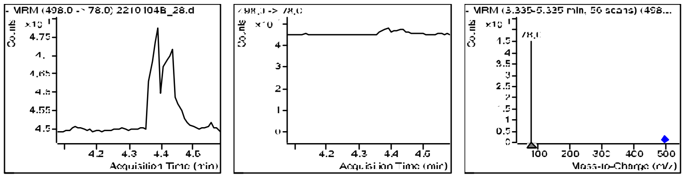

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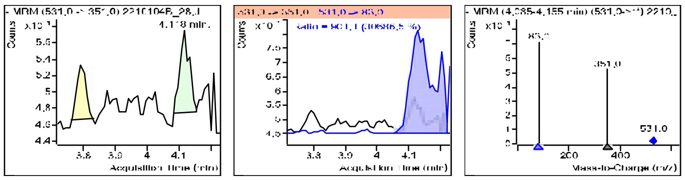

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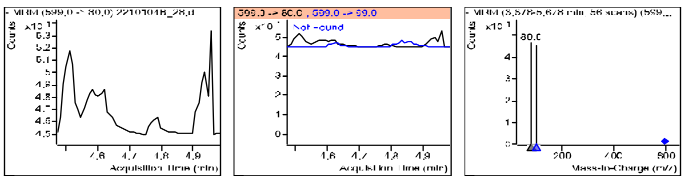

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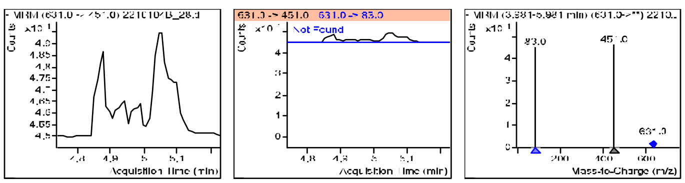

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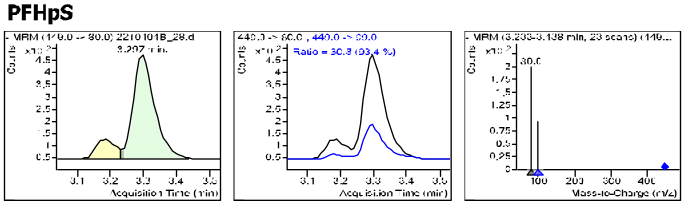

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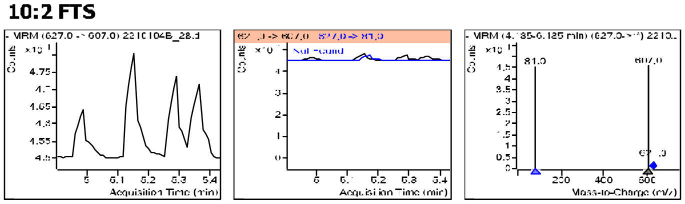

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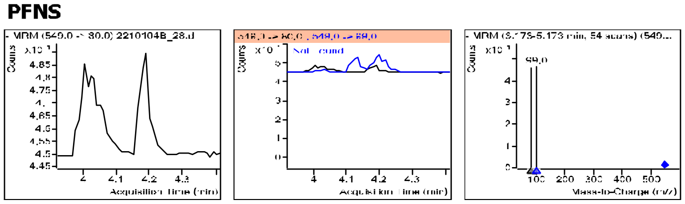

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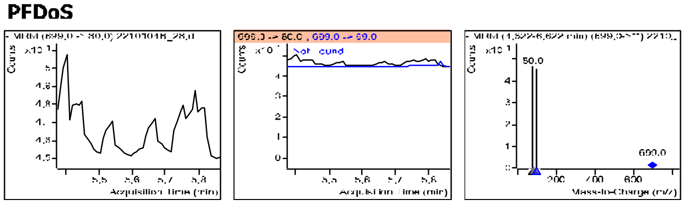

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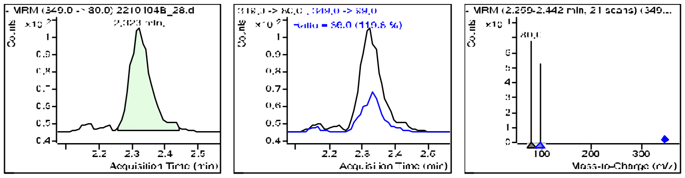

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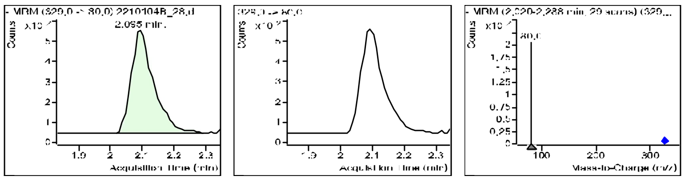

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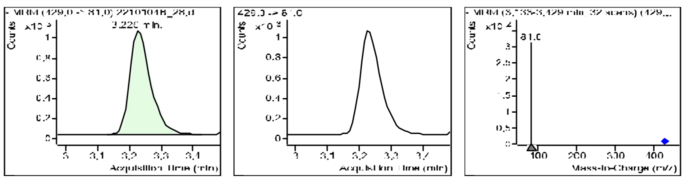

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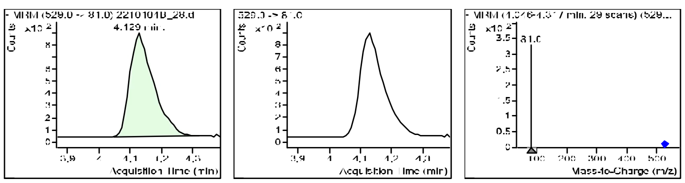

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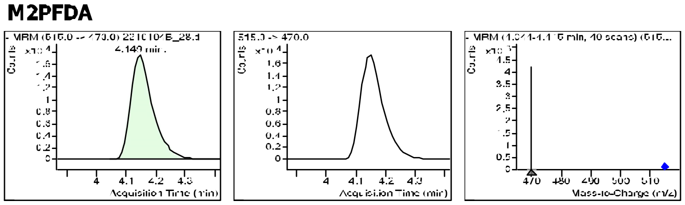

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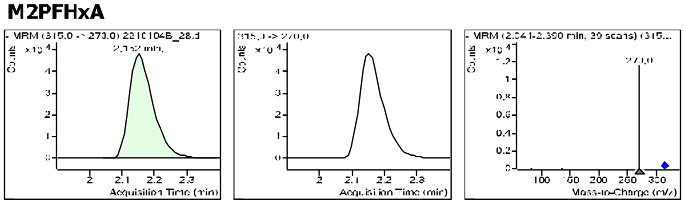

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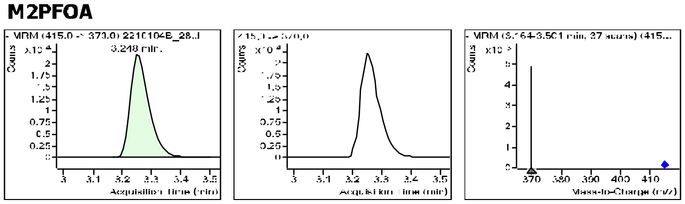

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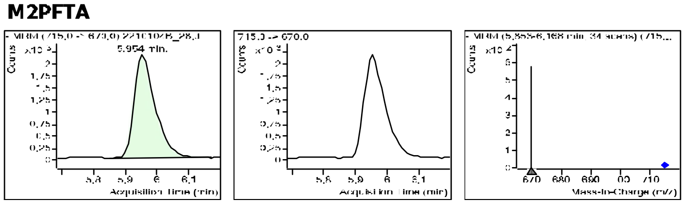

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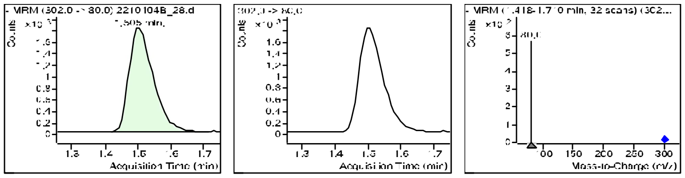

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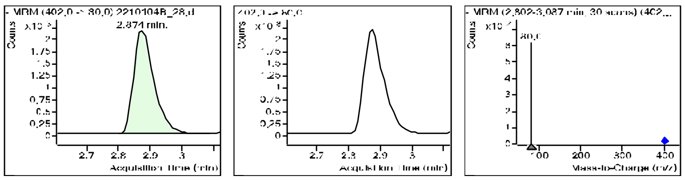

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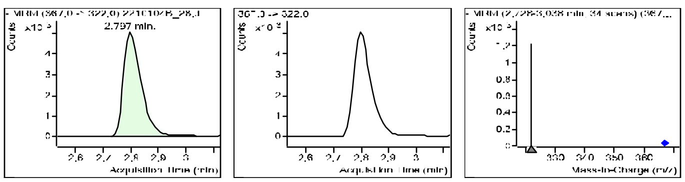

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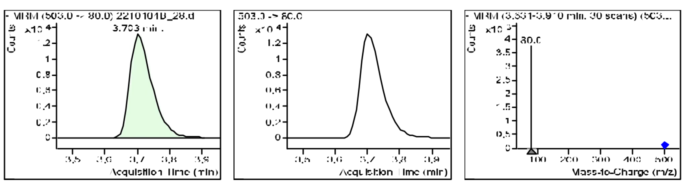

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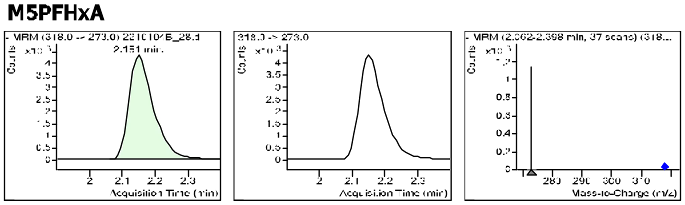

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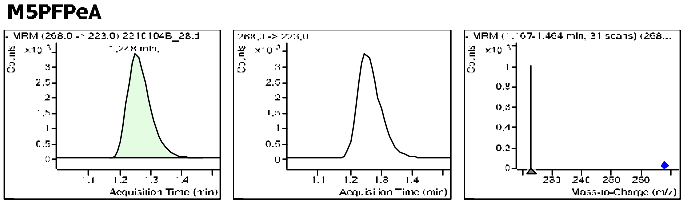

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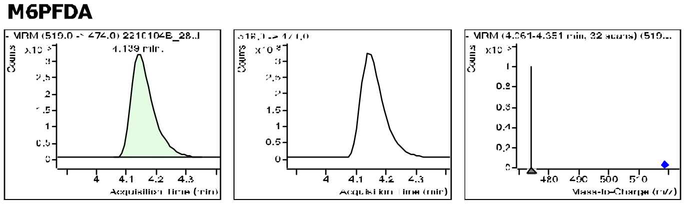

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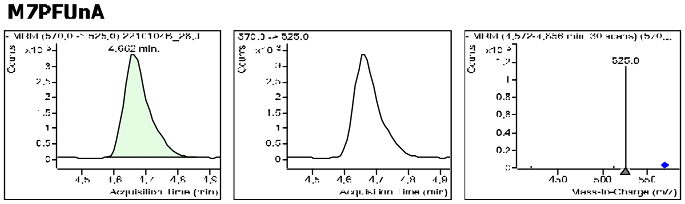

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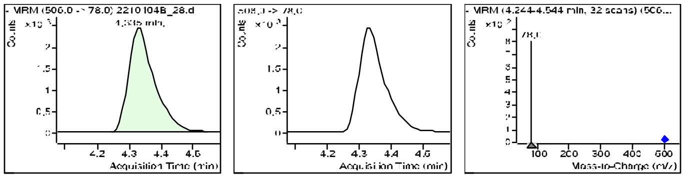

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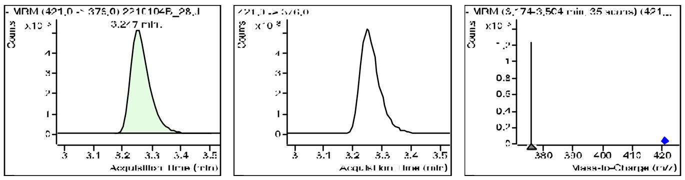

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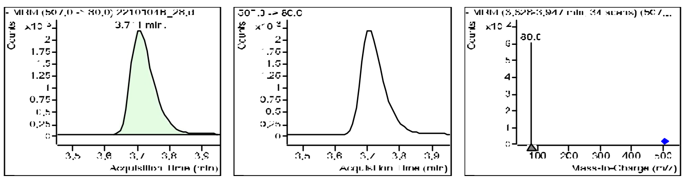

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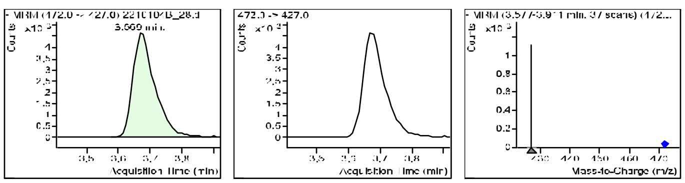

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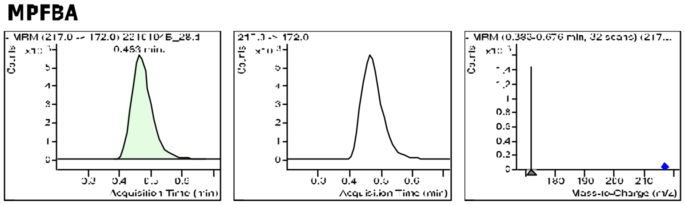

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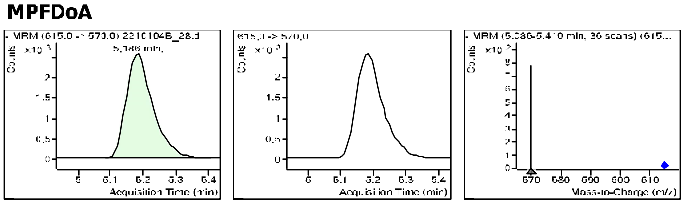

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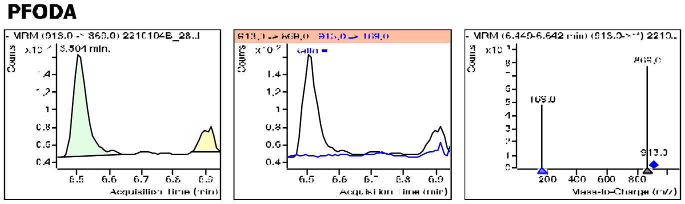

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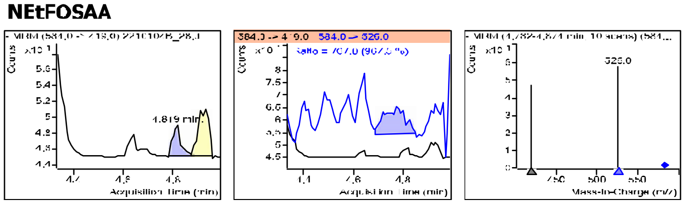

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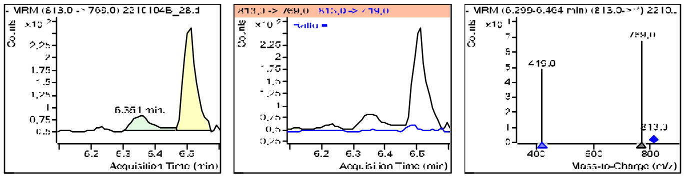

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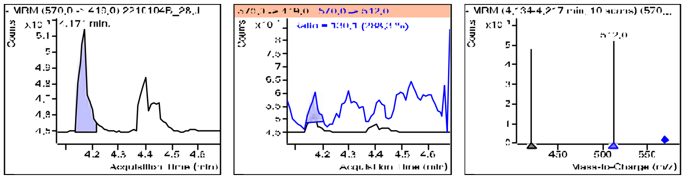

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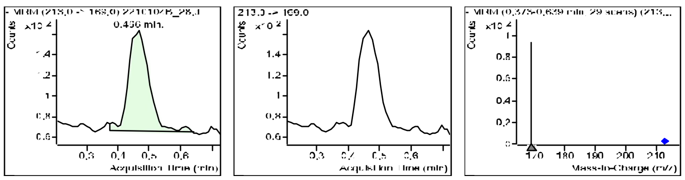

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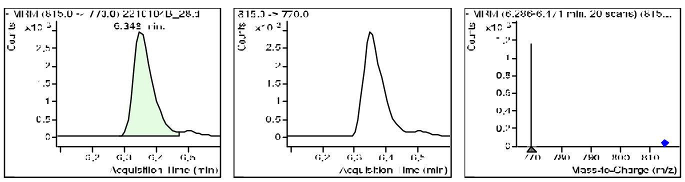

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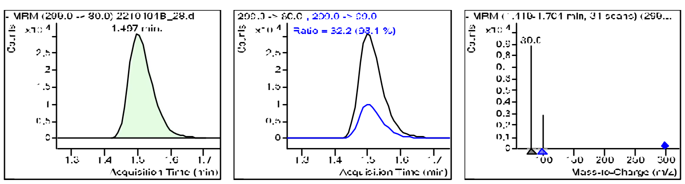

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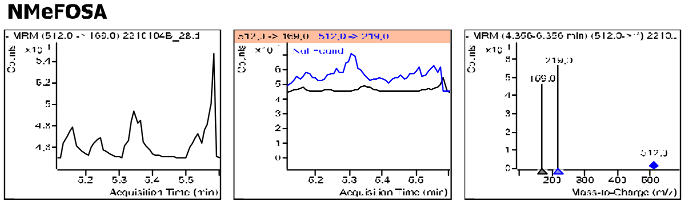

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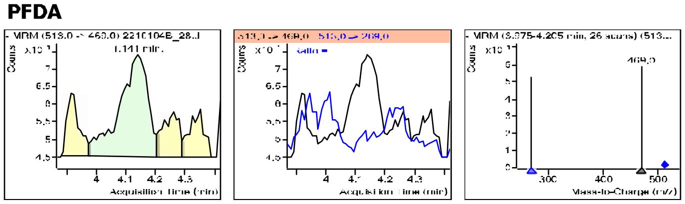

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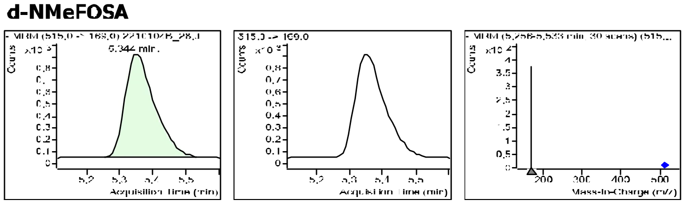

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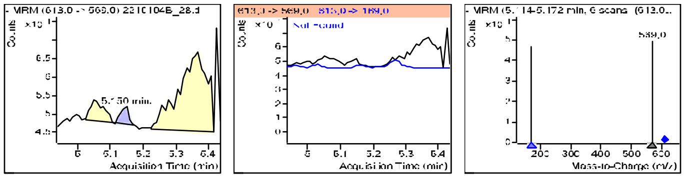

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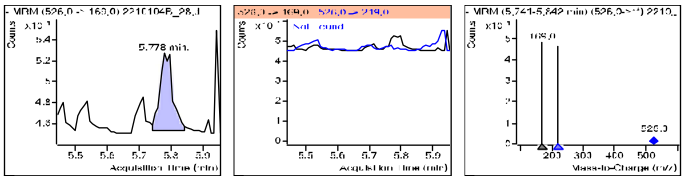

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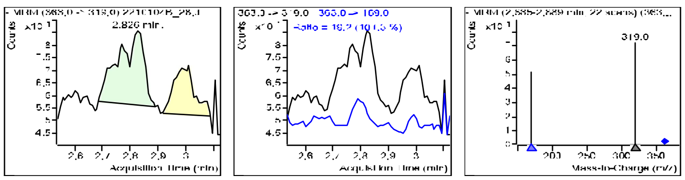

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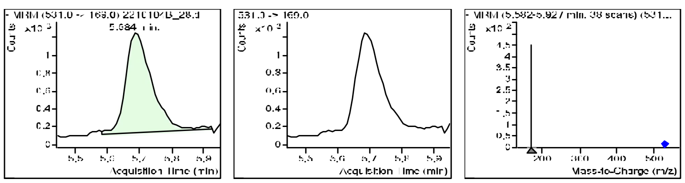

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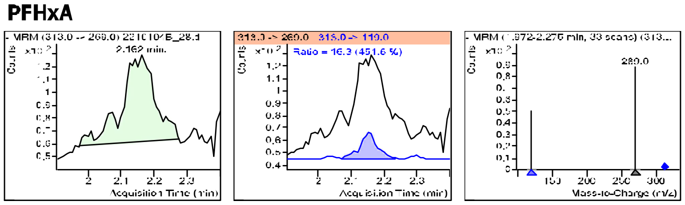

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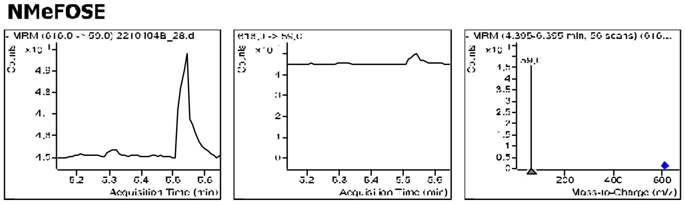

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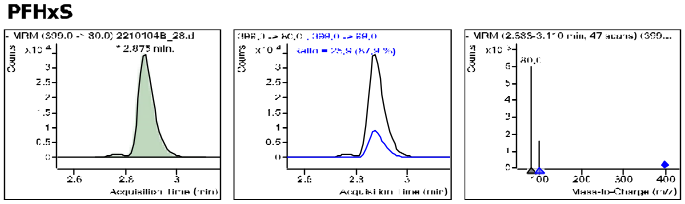

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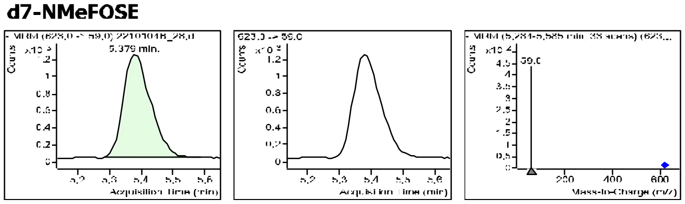

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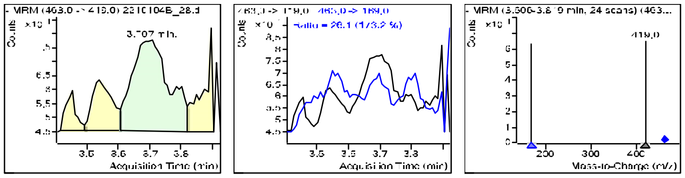

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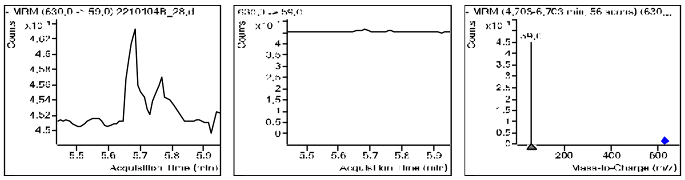

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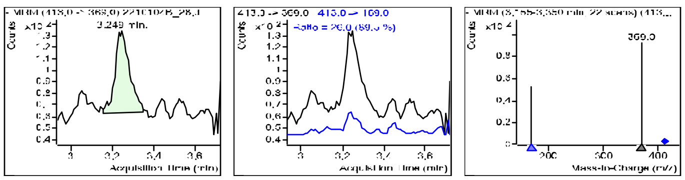

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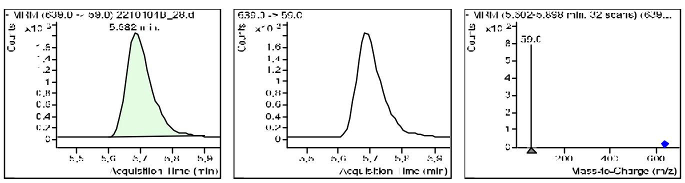

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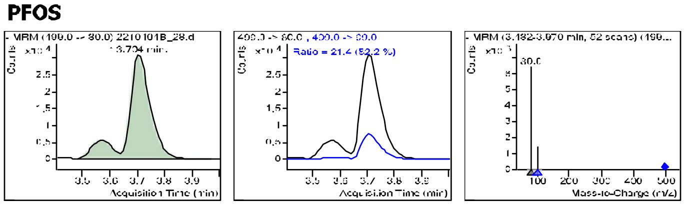

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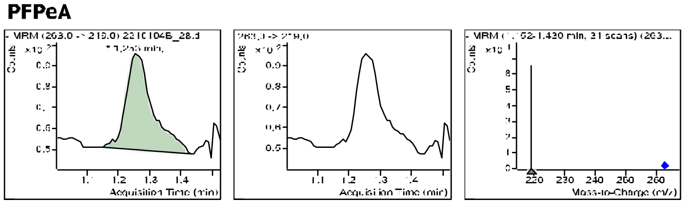

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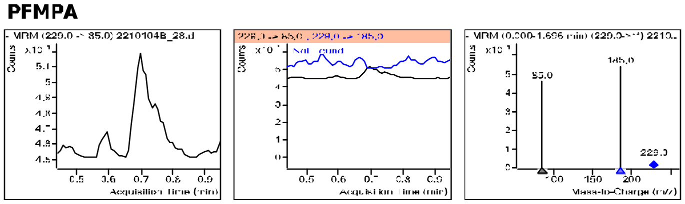

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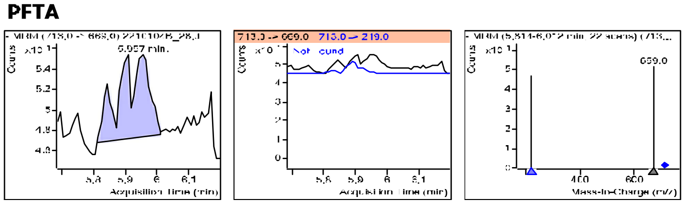

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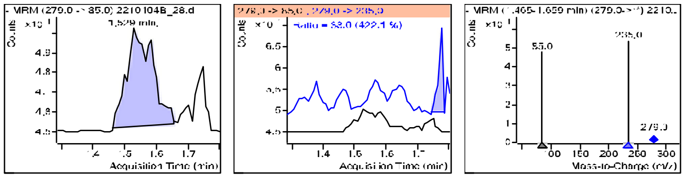

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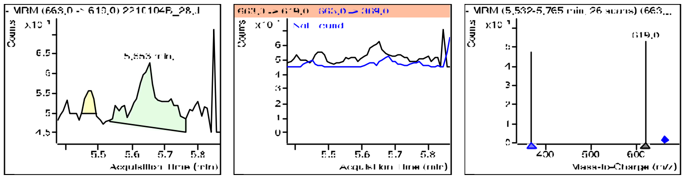

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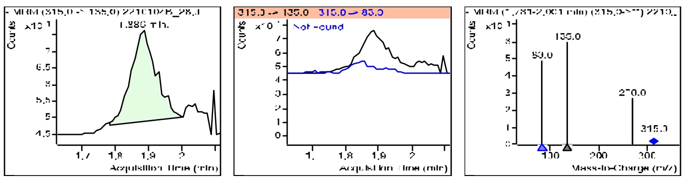

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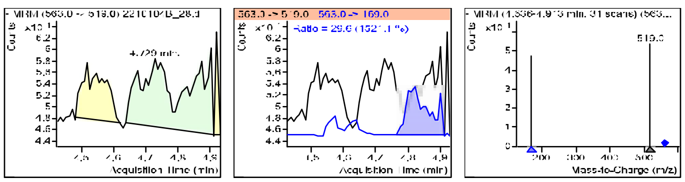

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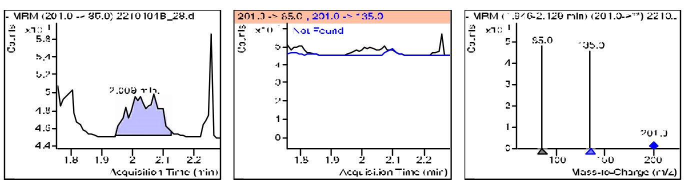

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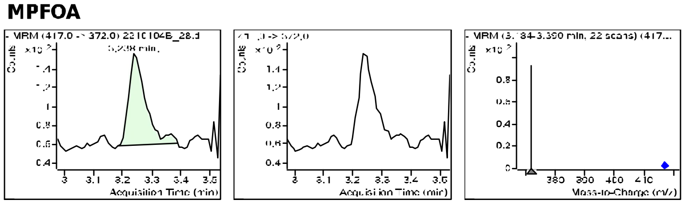

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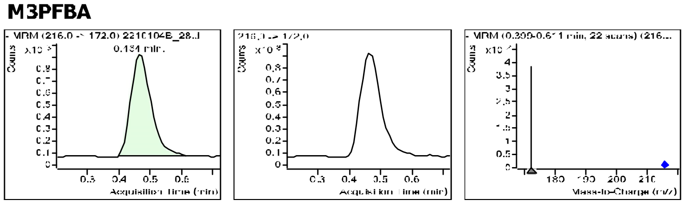


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 3, EXP 13C
Collect Date:	06/04/20 Time: 1100	GCAL Sample ID:	22012227903
Matrix:	Solid % Moisture: NA	Instrument ID:	QQQ2
Sample Amt:	.73 g	Lab File ID:	2210104B_32.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	5000000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	01/04/21 Time: 2334
Prep Batch:	700444	Analytical Batch:	701166
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ug/kg

CAS	*ANALYTE*	*RESULT*	*Q*	*DL*	*LOD*	*LOQ*
27619-97-2	6:2 Fluorotelomersulfonic acid	13700	U	5820	13700	34200
39108-34-4	8:2 Fluorotelomersulfonic acid	13700	U	8900	13700	34200
375-73-5	Perfluorobutanesulfonic acid	712000		4110	13700	34200
375-22-4	Perfluorobutanoic acid	13700	U	4450	13700	34200
335-76-2	Perfluorodecanoic acid	13700	U	4110	13700	34200
375-85-9	Perfluoroheptanoic acid	625000		4450	13700	34200
355-46-4	Perfluorohexanesulfonic acid	685000		4790	13700	34200
307-24-4	Perfluorohexanoic acid	13700	U	5140	13700	34200
375-95-1	Perfluorononanoic acid	668000		3080	13700	34200
1763-23-1	Perfluorooctanesulfonic acid	668000		6160	13700	34200
335-67-1	Perfluorooctanoic acid	684000		5140	13700	34200
2706-90-3	Perfluoropentanoic acid	13700	U	5140	13700	34200
2058-94-8	Perfluoroundecanoic acid	13700	U	4790	13700	34200

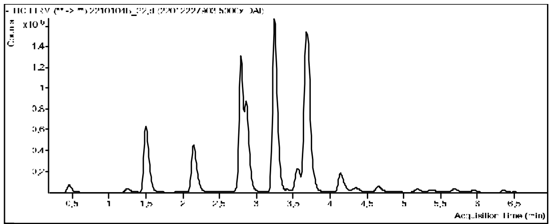
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_32.d	**Position**	P1-D1	**Samp Name**	22012227903	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ2;700444
Acq Date	1/4/2021 23:34						

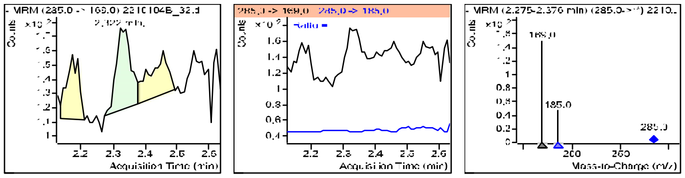
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	74222.332	4.149				106.88	21.3763		3832.11	1.66	
M2PFHxA	205683.624	2.152				105.88	42.3532		8832.02	1.44	
M2PFOA	83600.611	3.248				105.70	21.1409		3934.06	1.70	
M4PFOS	50580.101	3.703				100.06	20.0124		3202.15	1.60	
MPFOA	496.132	3.266				0.00	44.3779		1.88	2.39	
M3PFBA	3953.945	0.464				0.00	5.3929		39.27	1.56	
HFPO-DA	182.928	2.322	M3HFPODA	610	2.393	91.22	1.9762		3.05	1.22	
4:2 FTS	22.722	2.095	M2 4:2 FTS	2864	2.104	116.07	0.0251		1.94	1.34	
6:2 FTS	77.460	3.226	M2 6:2 FTS	4603	3.225	101.83	0.0522		3.60	2.63	
ADONA	90.765	2.924	M8PFOA	22887	3.247	104.28	0.0059		1.16	1.06	
8:2 FTS	26.399	4.212	M2 8:2 FTS	4474	4.138	107.91	0.0164		0.97	0.75	
FOSA	24.923	4.326	M8FOSA	13971	4.335	103.56	0.0065		5.54	2.83	
9Cl-PF3ONS	45.198	3.970	M8PFOS	10556	3.711	102.44	0.0045		1.86	1.61	
PFDS	29.504	4.676	M6PFDA	16484	4.149	105.87	0.0110		5.34	3.87	
11Cl-PF3OUdS	87.737	4.998	M8PFOS	10556	3.711	102.44	0.0092		1.95	1.28	
PFHpS	3137.846	3.297	M8PFOA	22887	3.247	104.28	1.2166		46.81	1.33	
PFNS	25.101	4.200	M9PFNA	21084	3.678	101.99	0.0094		2.00	1.10	
PFPeS	330.296	2.314	M5PFHxA	21649	2.151	104.48	0.1517		4.35	1.58	
PFODA	416.070	6.514	M2PFHxDA	10756	6.358	96.37	0.3750		9.44	1.40	
NEtFOSAA	3.756	4.689	d5-NEtFOSAA	12004	4.641	110.81	0.0011		0.32	1.62	m
PFHxDA	88.369	6.351	M2PFHxDA	10756	6.358	96.37	0.0447		3.63	1.38	
NMeFOSAA	15.664	4.384	d3-NMeFOSAA	8434	4.374	109.28	0.0045		0.45	1.27	m
PFBA	439.092	0.466	MPFBA	24808	0.463	101.19	0.0477		3.48	1.56	
PFBS	234985.850	1.497	M3PFBS	8865	1.505	96.86	103.9670		4568.95	1.50	
NMeFOSA	15.891	5.364	d-NMeFOSA	6047	5.363	100.56	0.0127		0.12	0.79	
PFDA	293.190	4.196	M6PFDA	16484	4.149	105.87	0.0766		5.69	0.62	
PFDoA	45.925	5.205	MPFDoA	15185	5.186	112.28	0.0158		2.90	0.83	
PFHpA	455341.232	2.798	M4PFHpA	20960	2.797	102.24	91.2886		10611.22	1.42	
PFHxA	318.924	2.153	M5PFHxA	21649	2.151	104.48	0.0646		9.71	1.80	
PFHxS	261442.293	2.875	M3PFHxS	9632	2.874	100.88	99.9740		11565.17	1.23	m
PFNA	455431.676	3.679	M9PFNA	21084	3.678	101.99	97.5962		11891.44	1.52	
PFOA	496883.005	3.249	M8PFOA	22887	3.247	104.28	99.8632		22072.22	1.50	
PFOS	328084.435	3.704	M8PFOS	10556	3.711	102.44	97.5745		567.14	0.78	m
PFPeA	287.712	1.253	M5PFPeA	17767	1.248	104.66	0.0507		6.17	1.46	
PFTA	18.714	5.927	M2PFTA	10164	5.954	107.47	0.0107		1.15	2.55	
PFMBA	25.957	1.538	M5PFHxA	21649	2.151	104.48	0.0048		1.72	0.89	
PFEESA	245.733	1.876	M3PFHxS	9632	2.874	100.88	0.0292		9.27	1.02	
PFUnA	301.753	4.656	M7PFUnA	18546	4.672	111.08	0.0774		3.15	1.22	
NFDHA	24.726	2.018	M4PFHpA	20960	2.797	102.24	0.0060		0.27	0.85	

HFPO-DA



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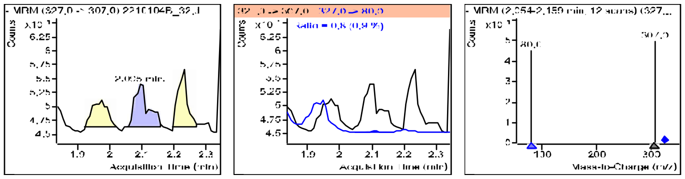

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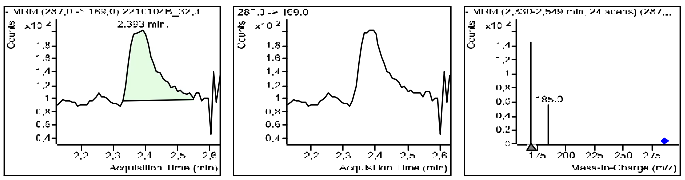

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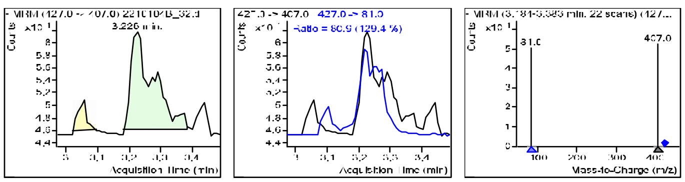

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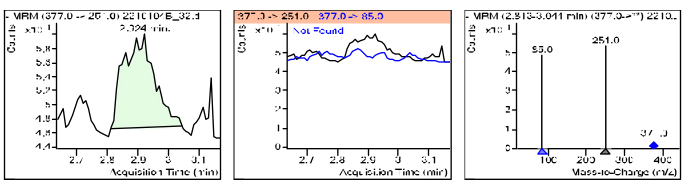

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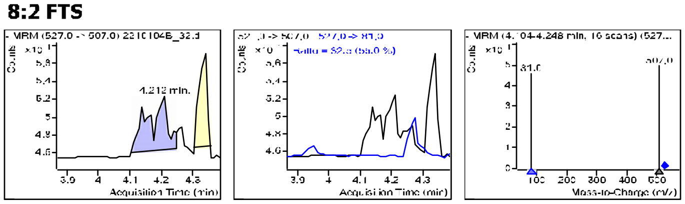

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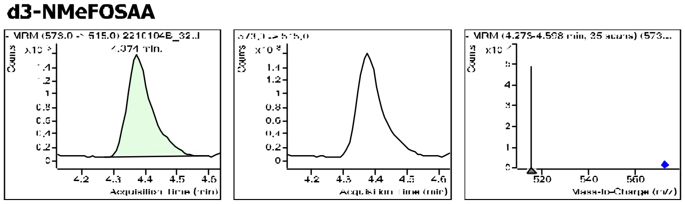

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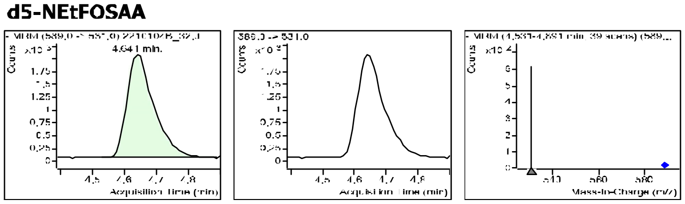

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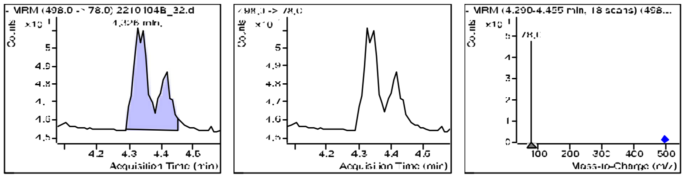

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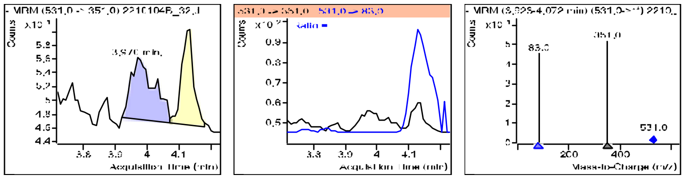

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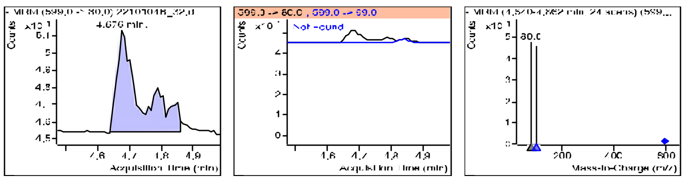

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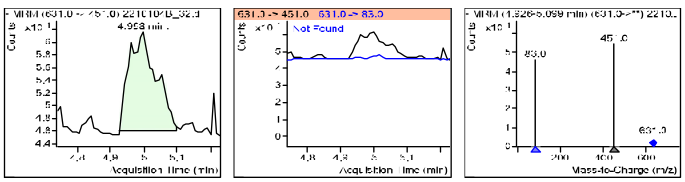

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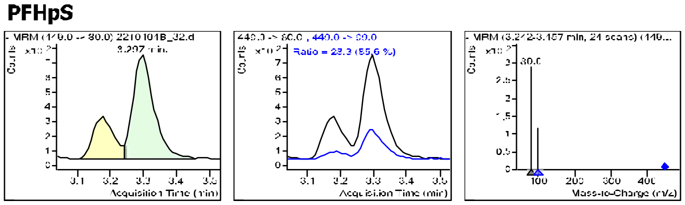

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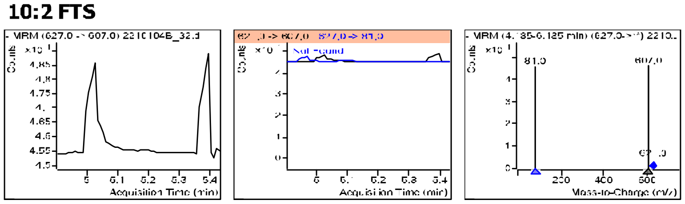

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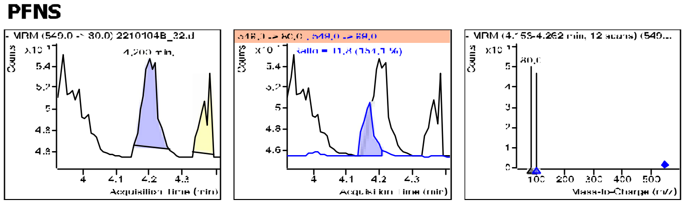

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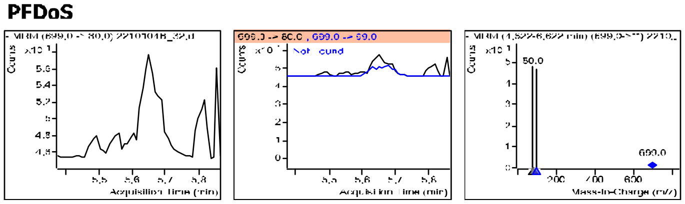

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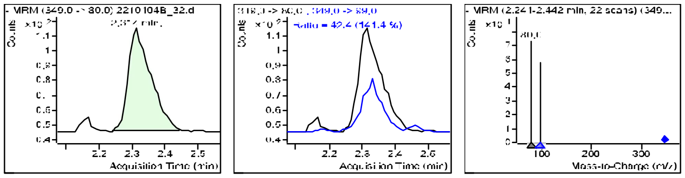

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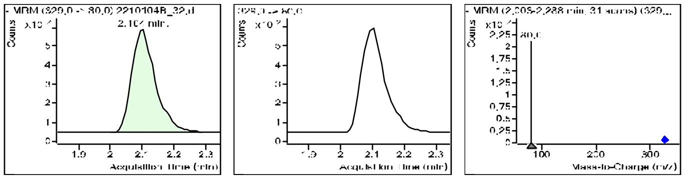
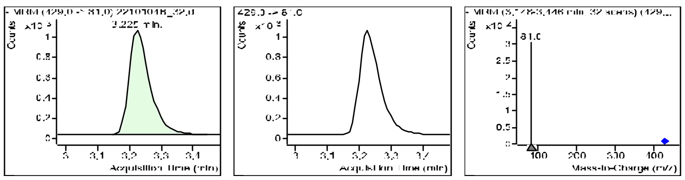


M2 6:2 FTS



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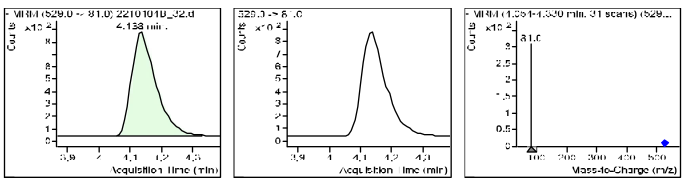

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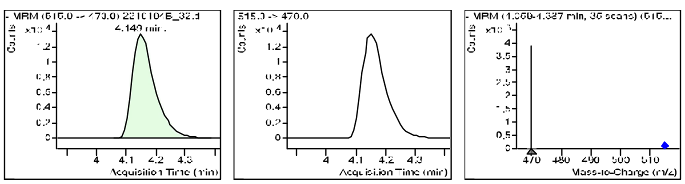

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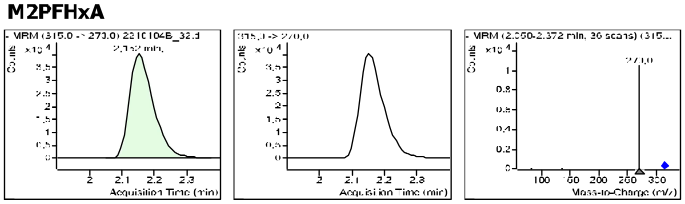

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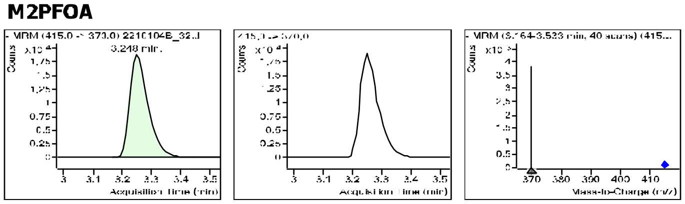

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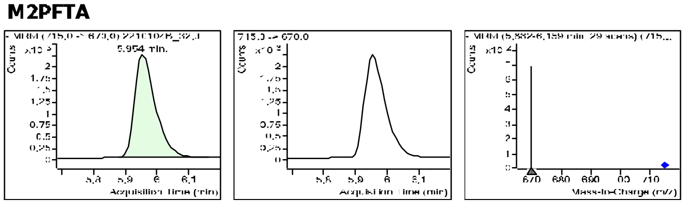

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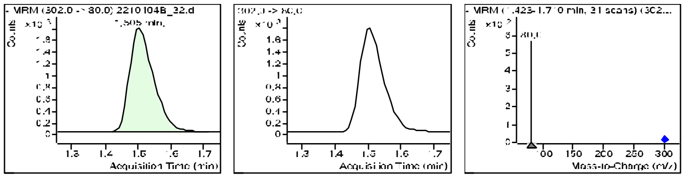

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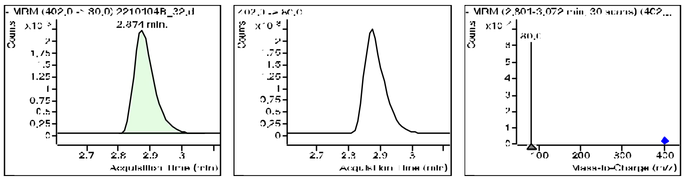

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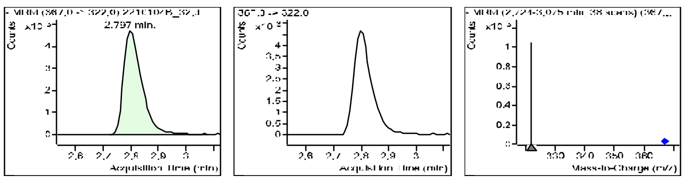

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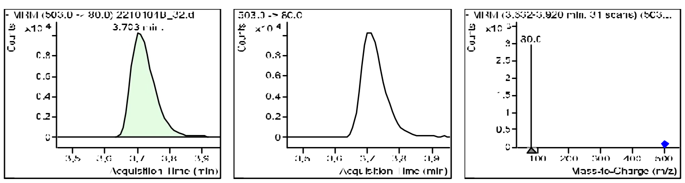

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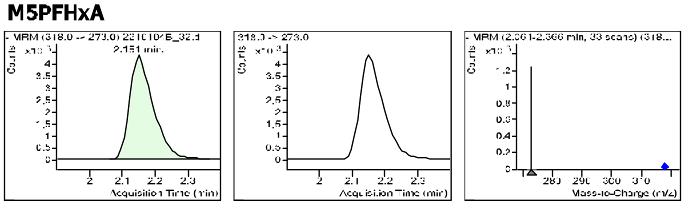

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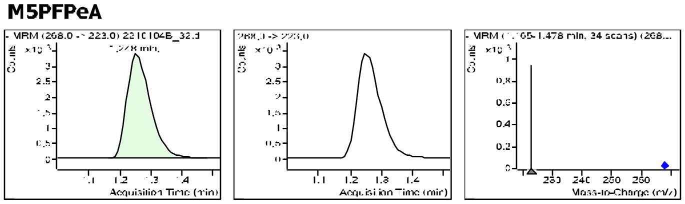

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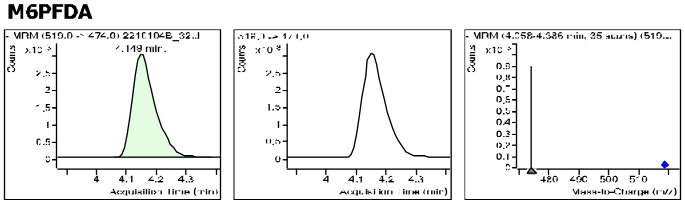

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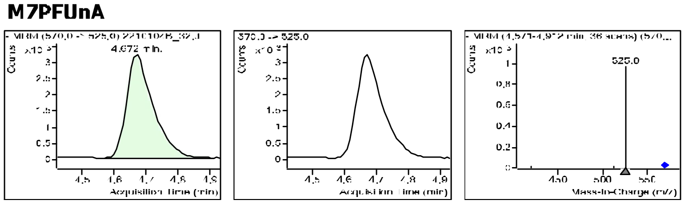

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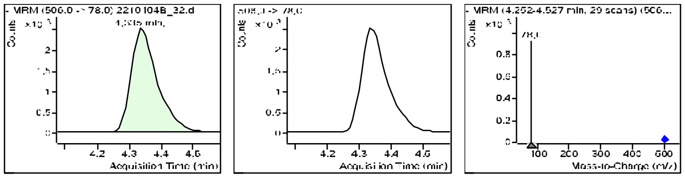

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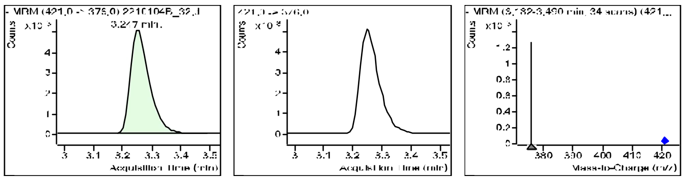

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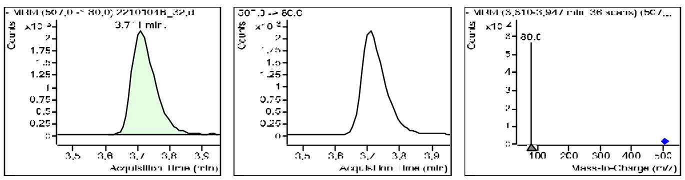

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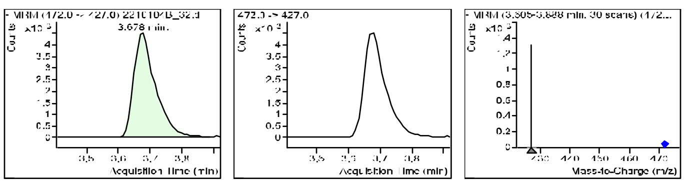

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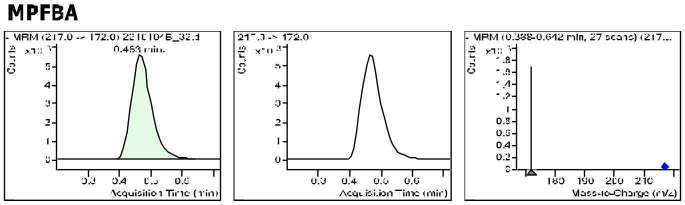

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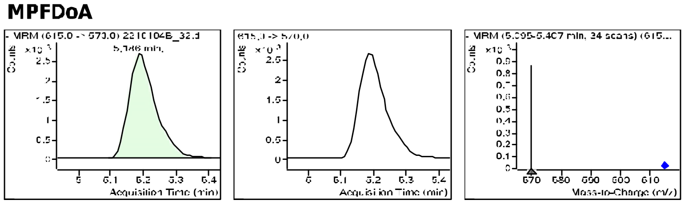

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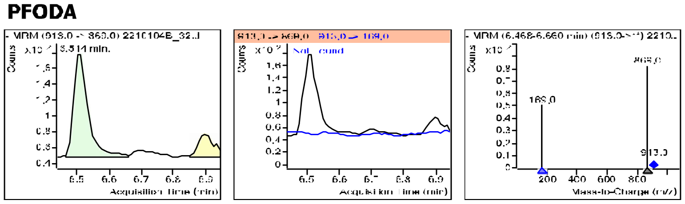

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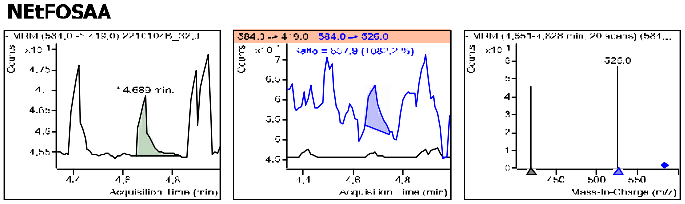

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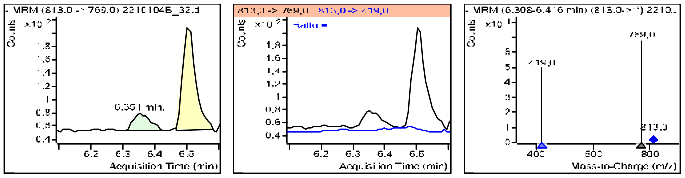

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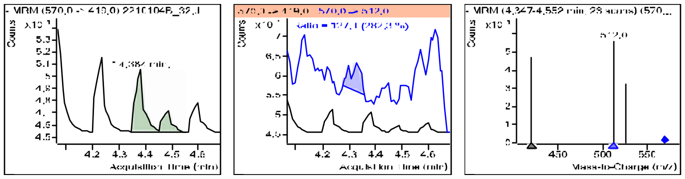

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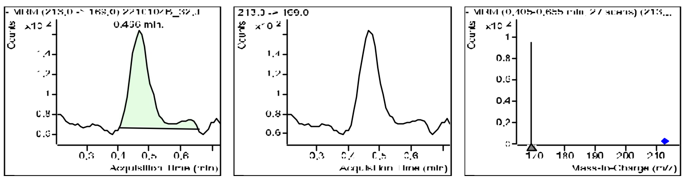

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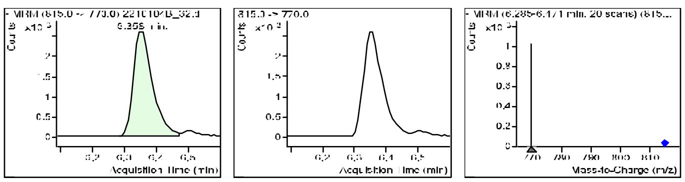

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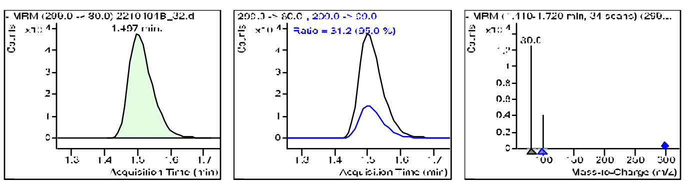

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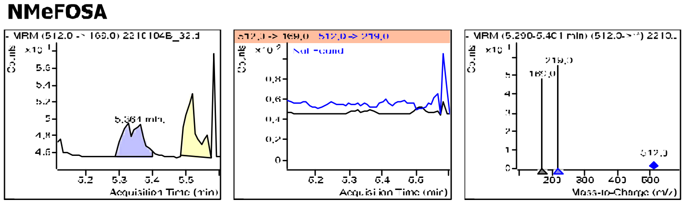

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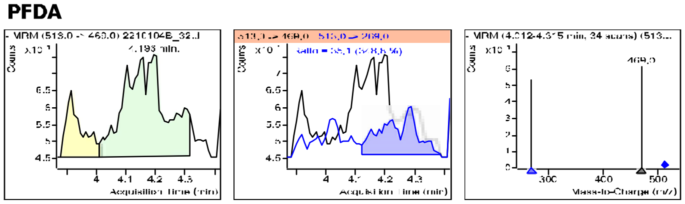

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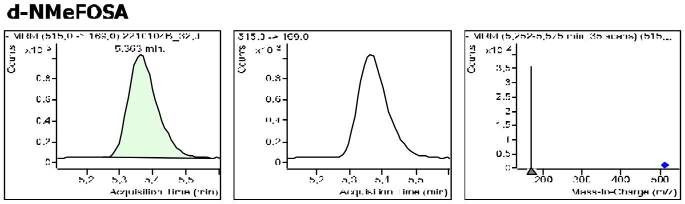

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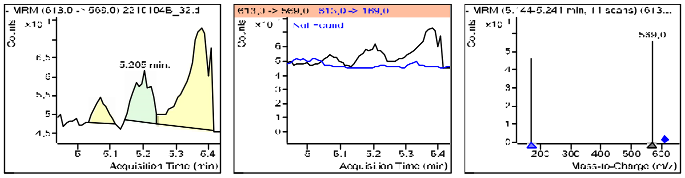

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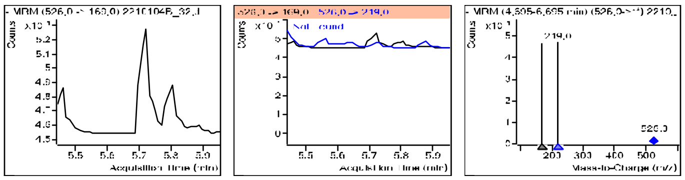

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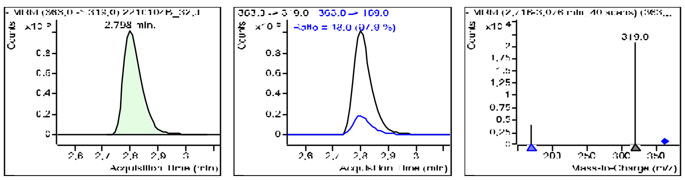

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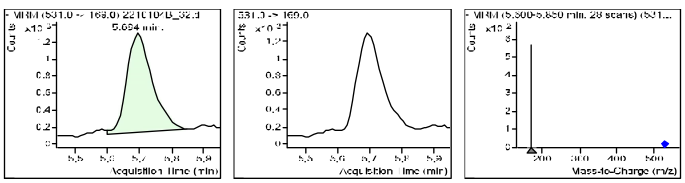

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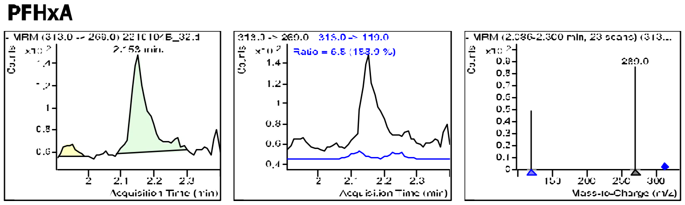

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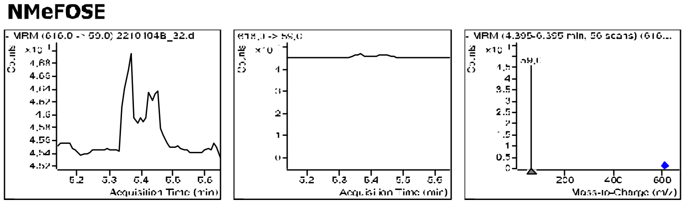

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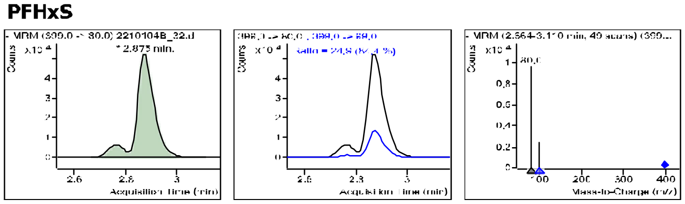

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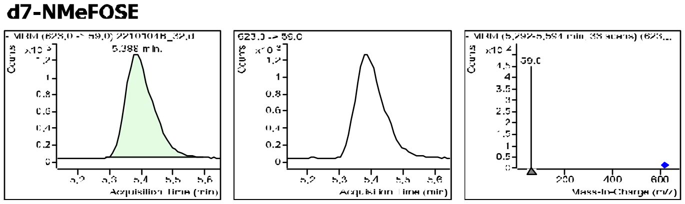

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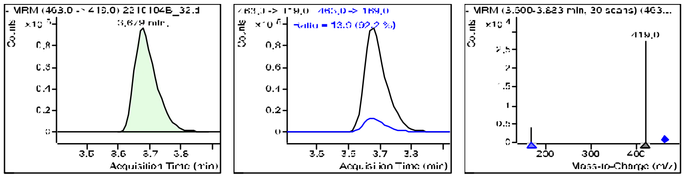

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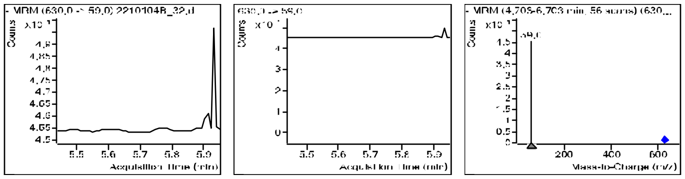

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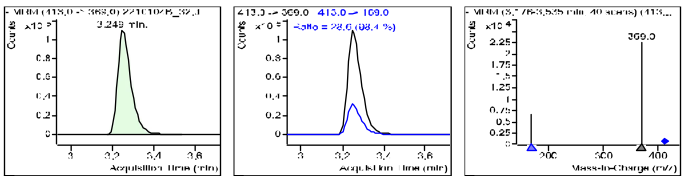

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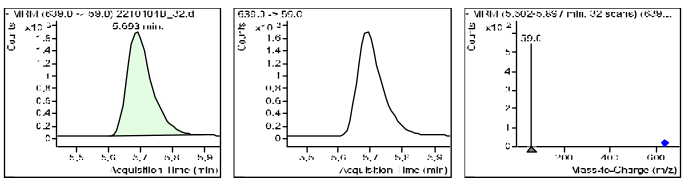

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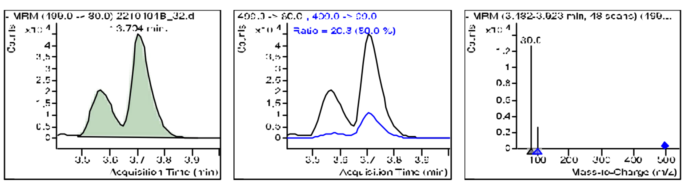

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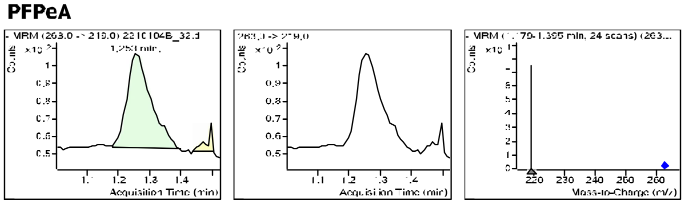

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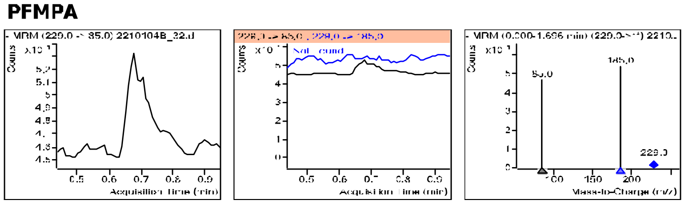

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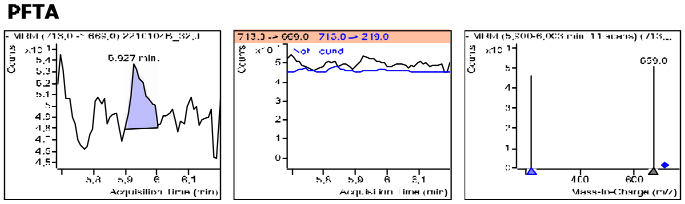

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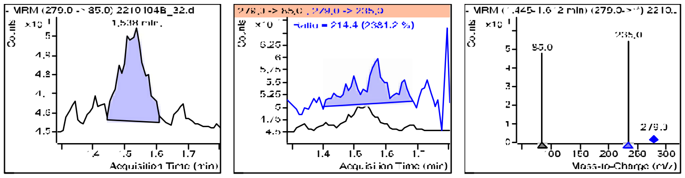

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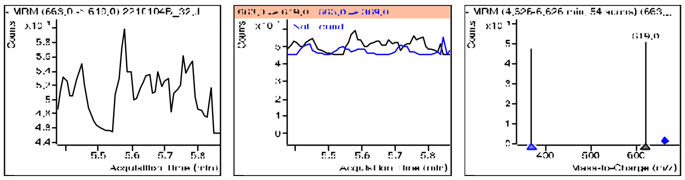

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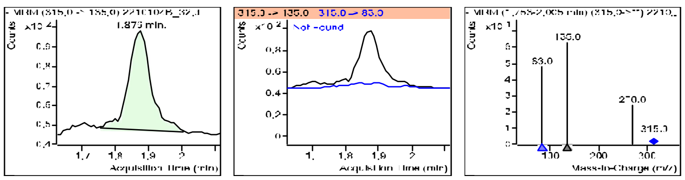

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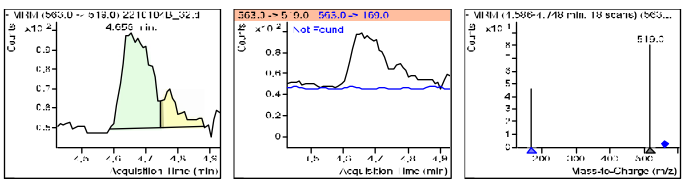

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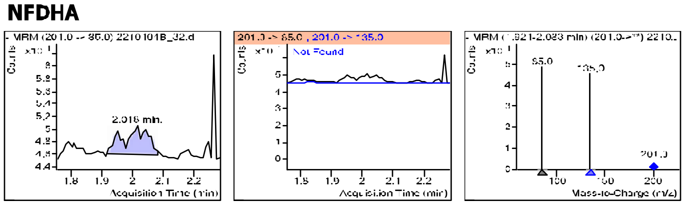

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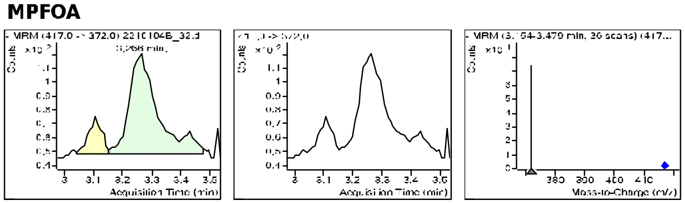

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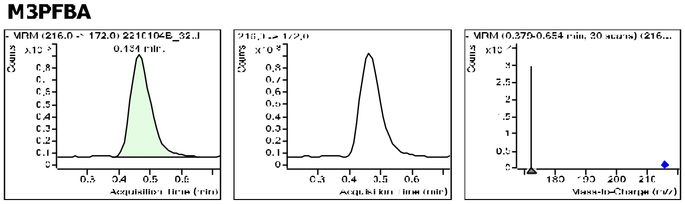


1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 4, EXP 13T
Collect Date:	06/04/20 Time: 1200	GCAL Sample ID:	22012227904
Matrix:	Solid % Moisture: NA	Instrument ID:	QQQ2
Sample Amt:	.57 g	Lab File ID:	2210104B_35.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	50 Analyst: MRA
Prep Date:		Analysis Date:	01/05/21 Time: 0013
Prep Batch:	700444	Analytical Batch:	701166
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ug/kg

CAS	*ANALYTE*	*RESULT*	*Q*	*DL*	*LOD*	*LOQ*
27619-97-2	6:2 Fluorotelomersulfonic acid	175	U	74.6	175	439
39108-34-4	8:2 Fluorotelomersulfonic acid	175	U	114	175	439
375-73-5	Perfluorobutanesulfonic acid	10200		52.6	175	439
375-22-4	Perfluorobutanoic acid	175	U	57.0	175	439
335-76-2	Perfluorodecanoic acid	175	U	52.6	175	439
375-85-9	Perfluoroheptanoic acid	175	U	57.0	175	439
355-46-4	Perfluorohexanesulfonic acid	5870		61.4	175	439
307-24-4	Perfluorohexanoic acid	175	U	65.8	175	439
375-95-1	Perfluorononanoic acid	175	U	39.5	175	439
1763-23-1	Perfluorooctanesulfonic acid	7460		78.9	175	439
335-67-1	Perfluorooctanoic acid	175	U	65.8	175	439
2706-90-3	Perfluoropentanoic acid	175	U	65.8	175	439
2058-94-8	Perfluoroundecanoic acid	175	U	61.4	175	439

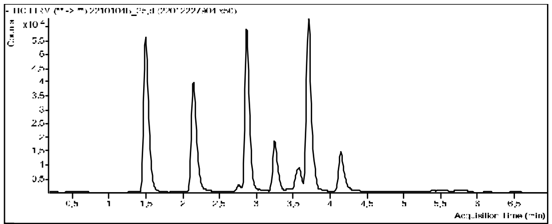
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path	D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update	1/5/2021 14:27

Data File	2210104B_35.d	**Position**	P1-D4	**Samp Name**	2201222790	**Dilution**	50
Acq Method	PFAS40Poroshell093020	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ2;700444
Acq Date	1/5/2021 0:13						

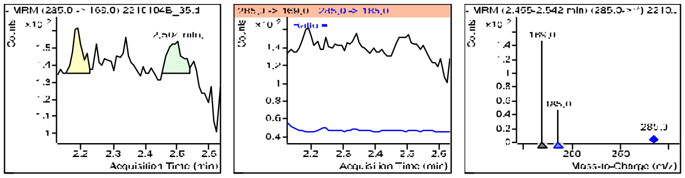
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	71318.596	4.158				102.70	20.5400		INF	1.42	
M2PFHxA	197172.059	2.152				101.50	40.6006		7288.53	1.36	
M2PFOA	79103.650	3.248				100.02	20.0037		259.60	1.70	
M4PFOS	48868.838	3.712				96.68	19.3353		5526.48	1.52	
MPFOA	59.888	3.248				0.00	5.3568		2.53	2.45	
M3PFBA	53.618	0.492				0.00	0.0731		1.59	1.75	
HFPO-DA	57.575	2.504	M3HFPODA	276	2.348	41.18	1.3779		1.07	0.92	
6:2 FTS	48.002	3.226	M2 6:2 FTS	134	3.235	2.97	1.1093		2.44	1.25	
ADONA	77.008	2.841	M8PFOA	479	3.247	2.18	0.2408		0.37	1.63	
8:2 FTS	22.353	4.166	M2 8:2 FTS	57	4.138	1.37	1.0945		2.23	1.50	
11Cl-PF3OUdS	14.816	4.989	M8PFOS	185	3.711	1.79	0.0887		1.35	0.92	
PFHpS	2634.915	3.297	M8PFOA	479	3.247	2.18	48.7721		43.03	1.29	
PFDoS	13.750	5.632	M8PFOS	185	3.711	1.79	0.2467		1.31	1.28	
PFPeS	283.064	2.323	M5PFHxA	352	2.142	1.70	8.0019		8.01	1.12	
PFODA	414.670	6.504	M2PFHxDA	230	6.339	2.06	15.1475		17.15	1.63	
NEtFOSAA	3.218	4.716	d5-NEtFOSAA	418	4.632	3.86	0.0272		0.26	0.73	m
PFHxDA	476.197	6.510	M2PFHxDA	230	6.339	2.06	11.2735		11.79	1.30	
NMeFOSAA	45.109	4.422	d3-NMeFOSAA	174	4.374	2.26	0.6296		6.18	3.78	
PFBA	631.895	0.466	MPFBA	451	0.453	1.84	3.7774		INF	1.21	
PFBS	208054.102	1.497	M3PFBS	140	1.505	1.53	5814.4907		12270.86	1.50	
NMeFOSA	22.956	5.456	d-NMeFOSA			100.00			2.26	1.62	
PFDoA	85.331	5.233	MPFDoA	248	5.195	1.84	1.7958		1.54	1.86	
NEtFOSA	14.860	5.933	d-NEtFOSA			100.00			1.15	0.50	
PFHpA	116.470	2.798	M4PFHpA	369	2.797	1.80	1.3274		0.67	1.25	
PFHxA	381.559	2.153	M5PFHxA	352	2.142	1.70	4.7536		5.17	1.60	
PFHxS	215661.467	2.866	M3PFHxS	237	2.874	2.49	3345.8730		INF	0.97	m
PFNA	220.888	3.688	M9PFNA	469	3.687	2.27	2.1296		0.90	1.20	m
PFOA	513.194	3.259	M8PFOA	479	3.247	2.18	4.9242		7.90	0.76	m
PFOS	250274.631	3.713	M8PFOS	185	3.711	1.79	4249.4261		INF	1.26	m
PFPeA	95.838	1.265	M5PFPeA	281	1.239	1.66	1.0669		0.39	1.46	
PFTA	26.725	6.021	M2PFTA	220	5.944	2.33	0.7046		0.53	0.66	
PFTrDA	19.177	5.652	MPFDoA	248	5.195	1.84	0.5105		1.32	0.92	
PFEESA	205.966	1.876	M3PFHxS	237	2.874	2.49	0.9925		3.96	0.94	
PFUnA	11.186	4.581	M7PFUnA	322	4.672	1.93	0.1654		0.69	0.69	
NFDHA	27.010	1.917	M4PFHpA	369	2.797	1.80	0.3706		2.28	0.73	

HFPO-DA



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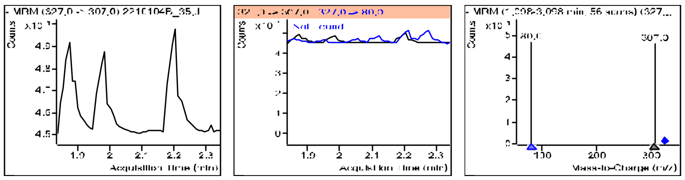

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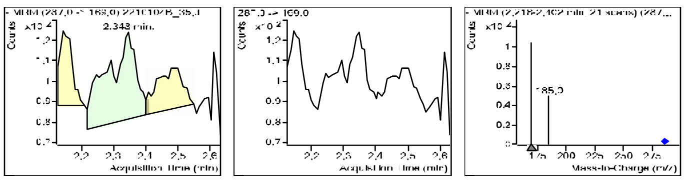

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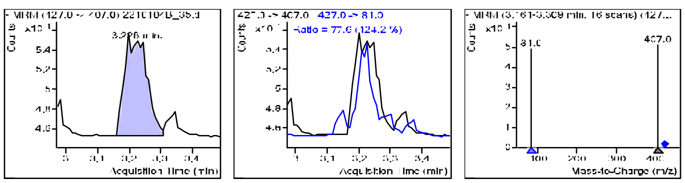

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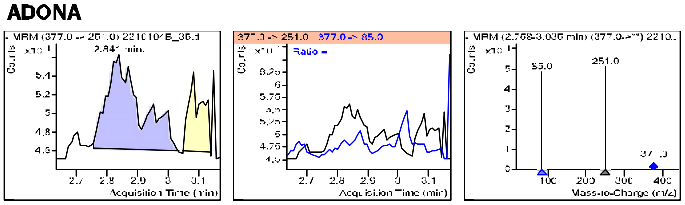

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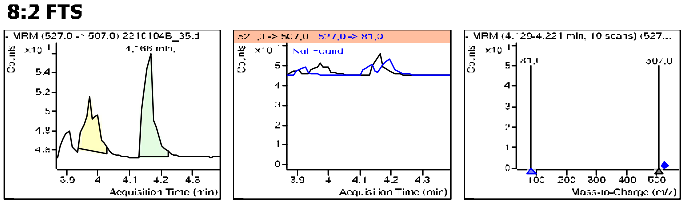

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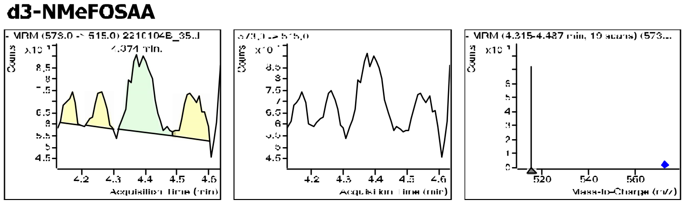

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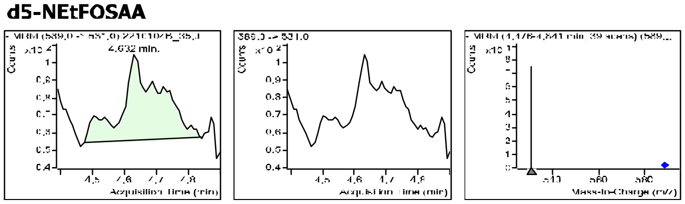

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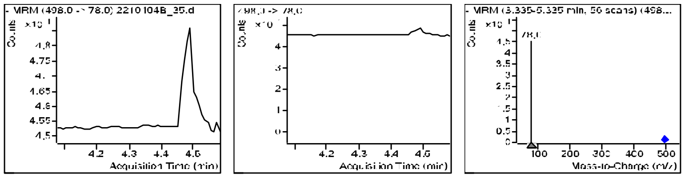

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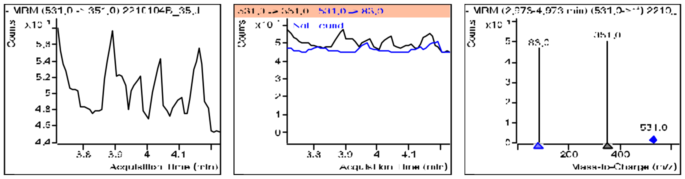

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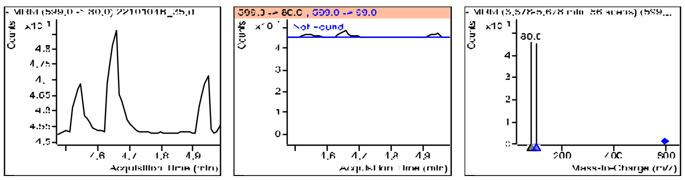

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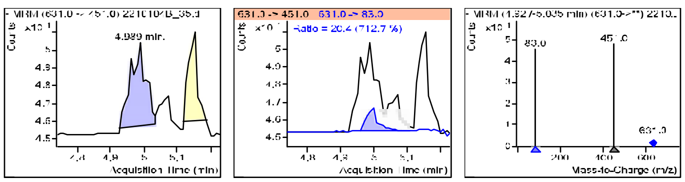

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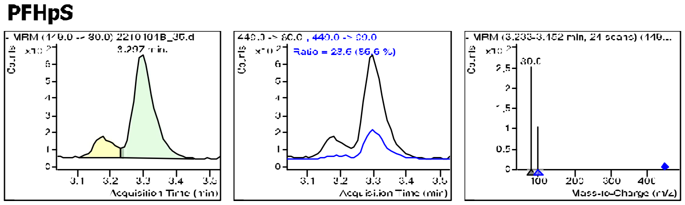

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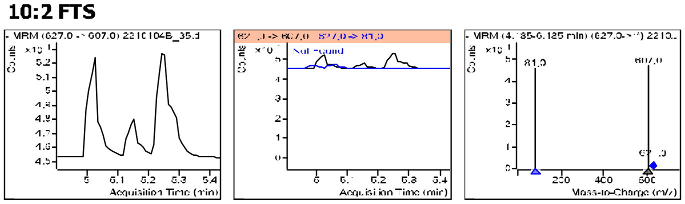

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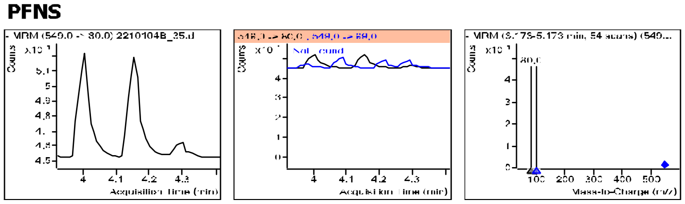

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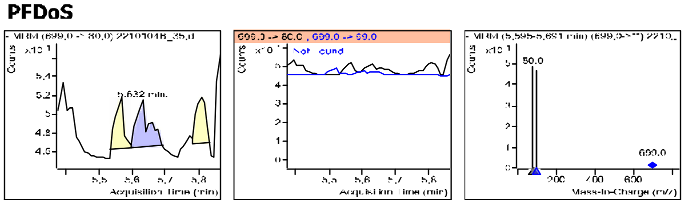

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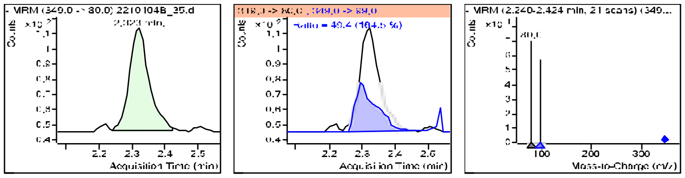

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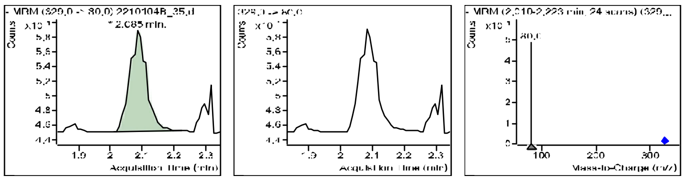
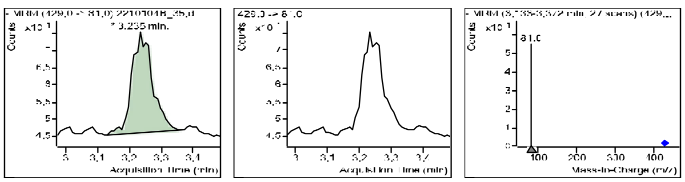


M2 6:2 FTS



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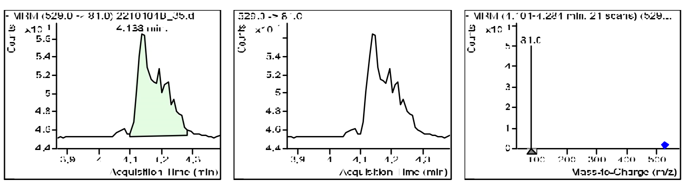

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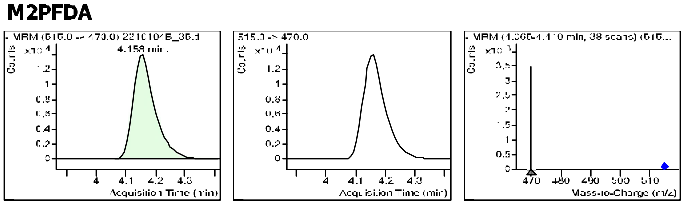

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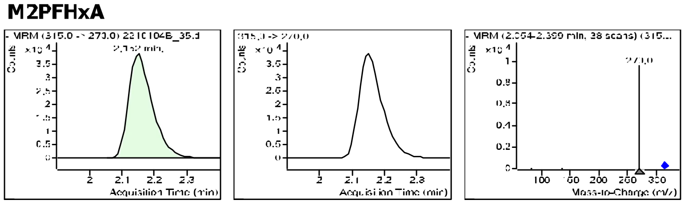

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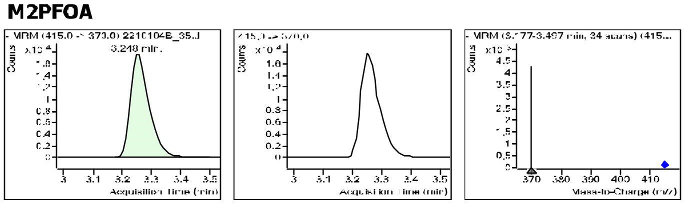

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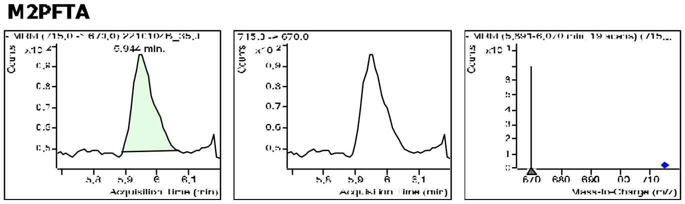

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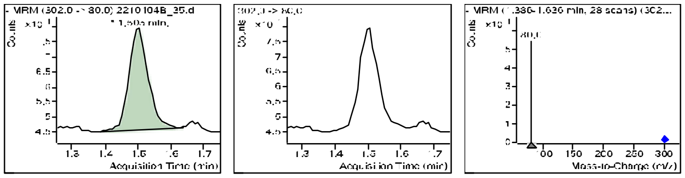

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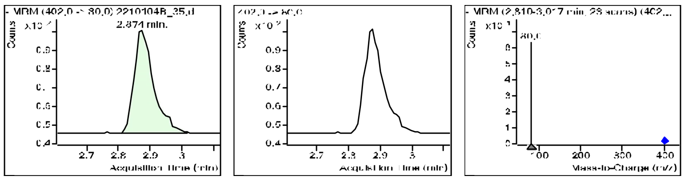

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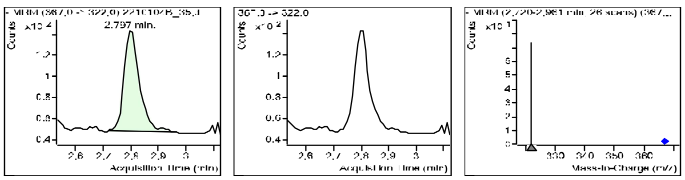

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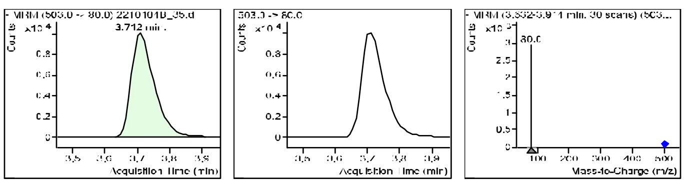

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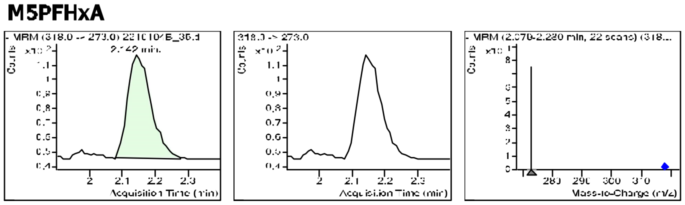

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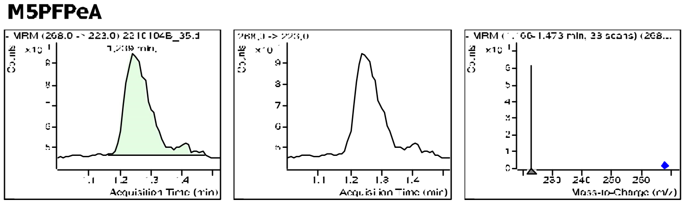

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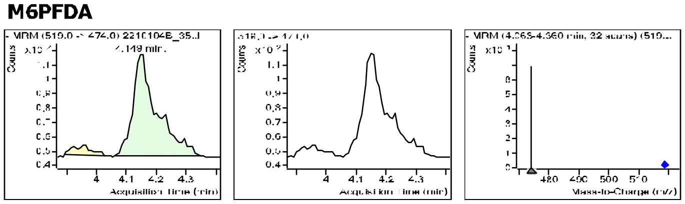

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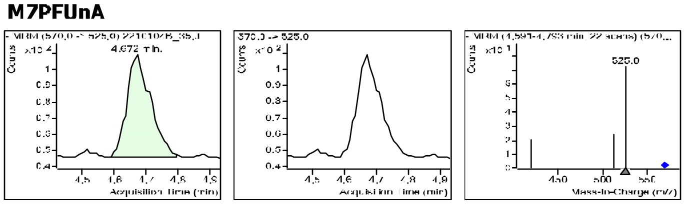

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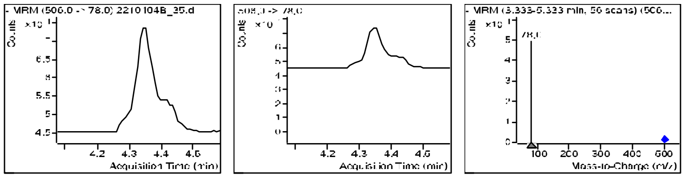

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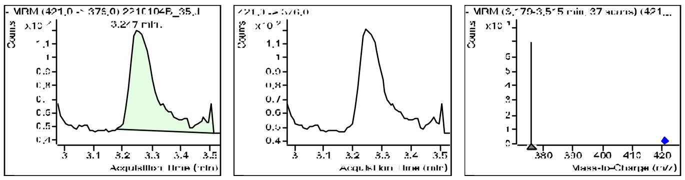

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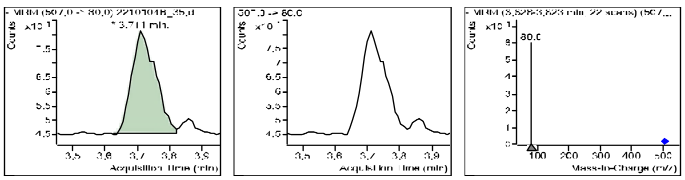

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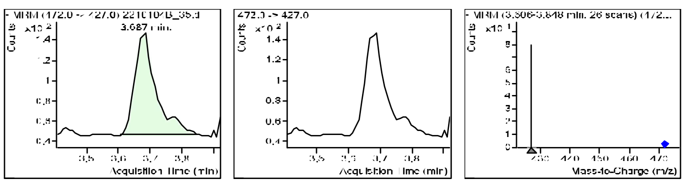

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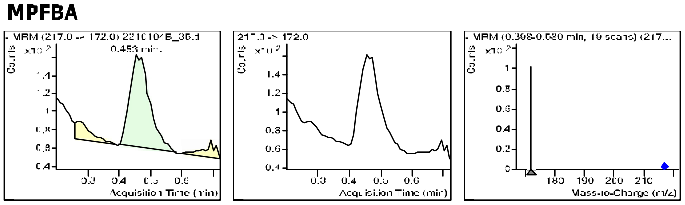

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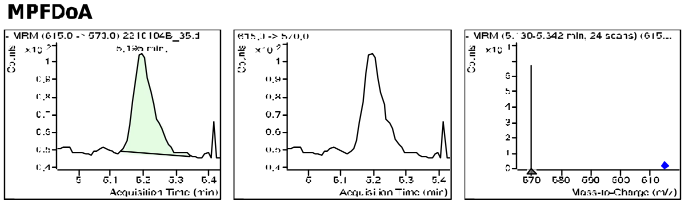

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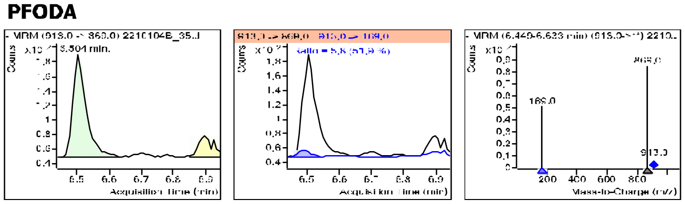

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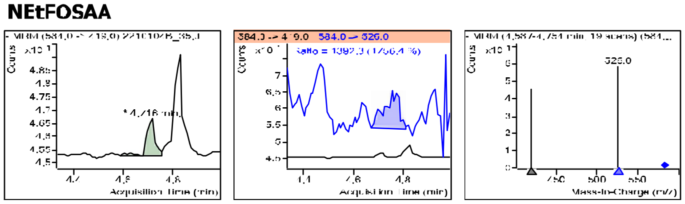

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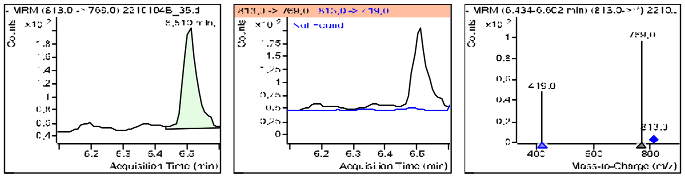

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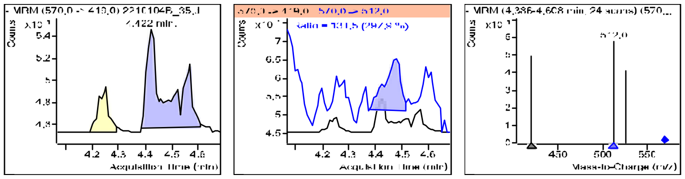

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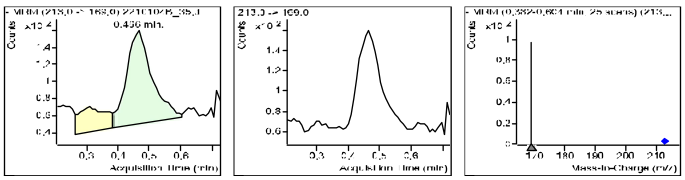

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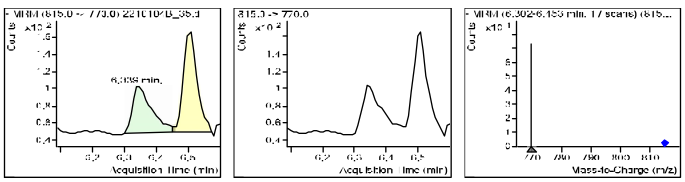

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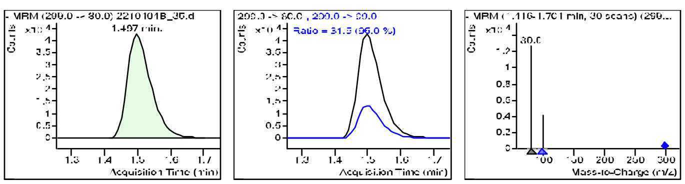

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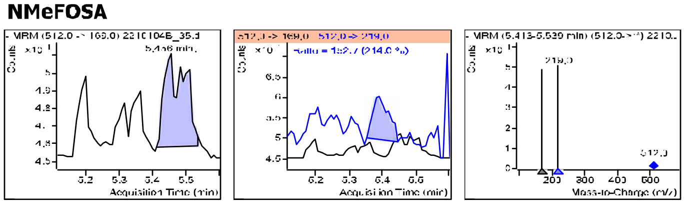

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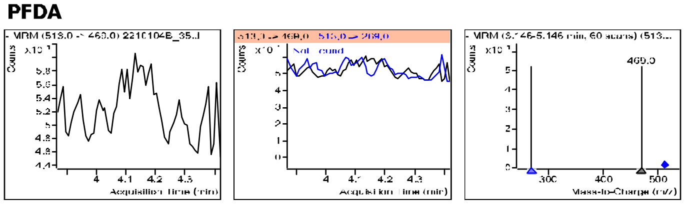

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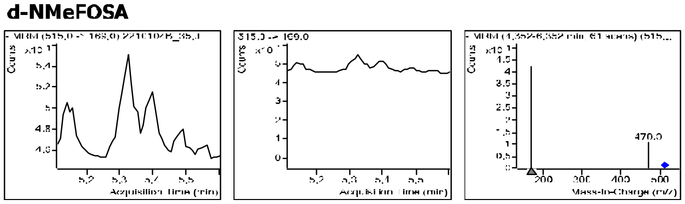

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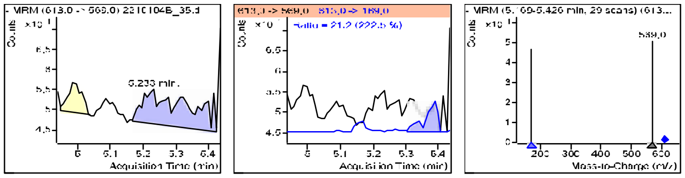

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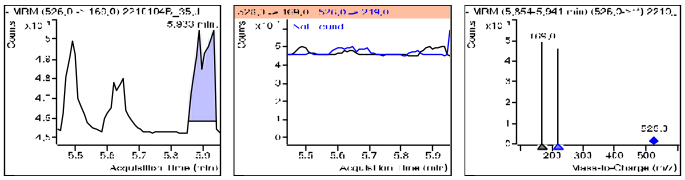

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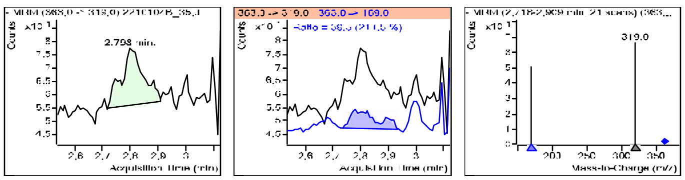

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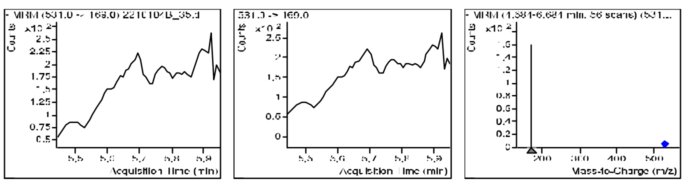

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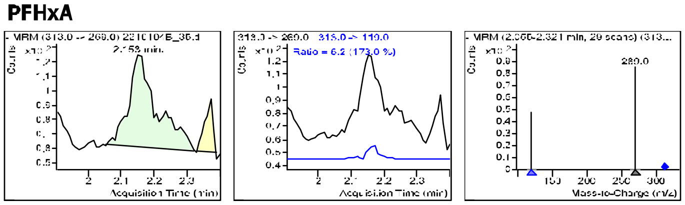

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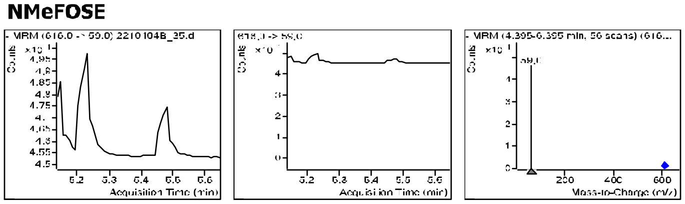

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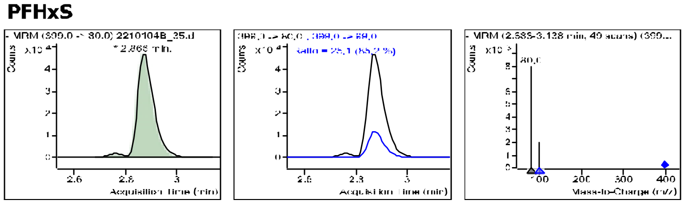

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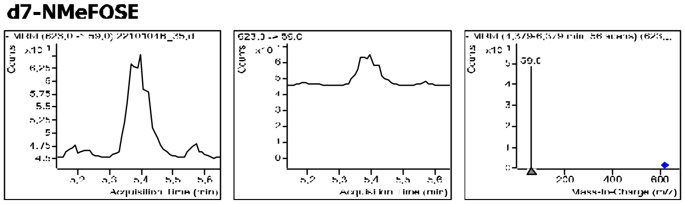

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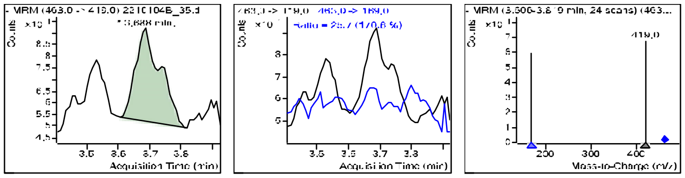

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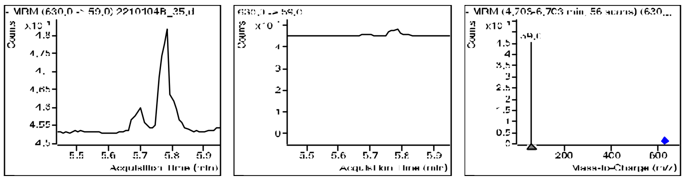

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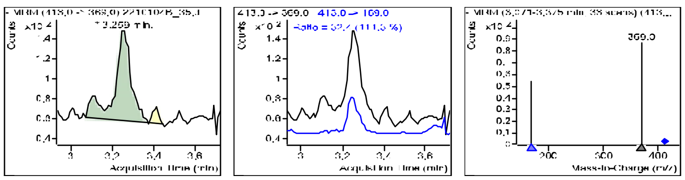

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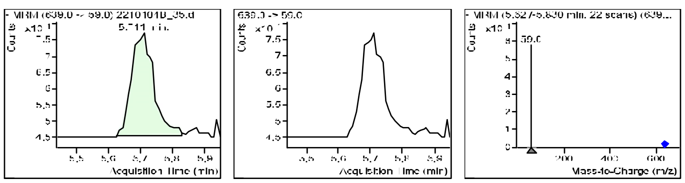

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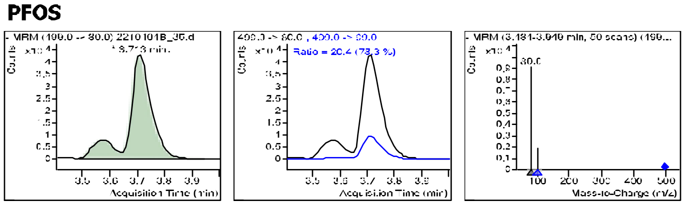

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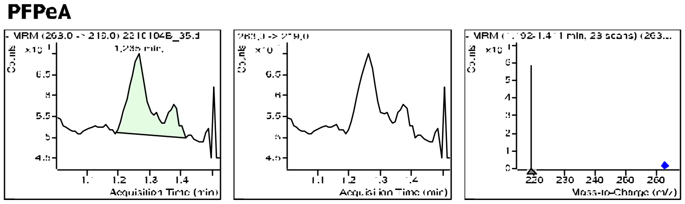

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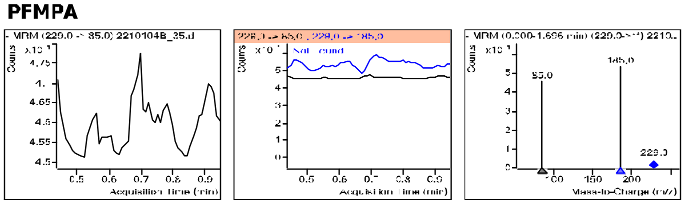

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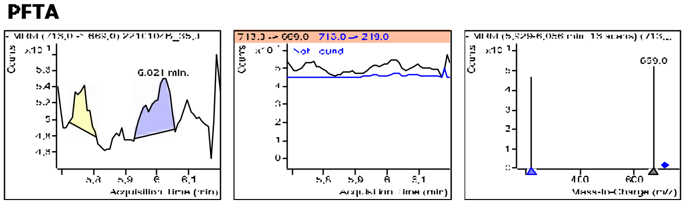

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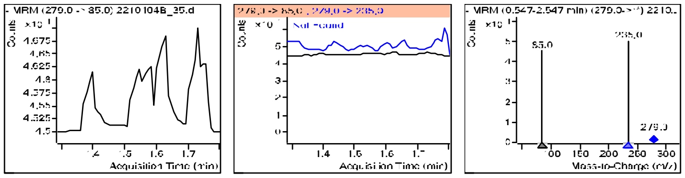

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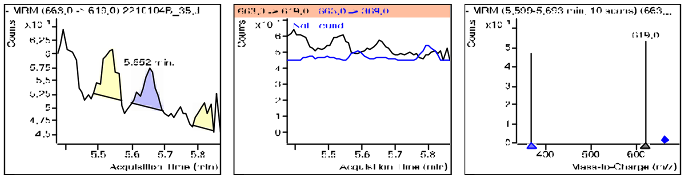

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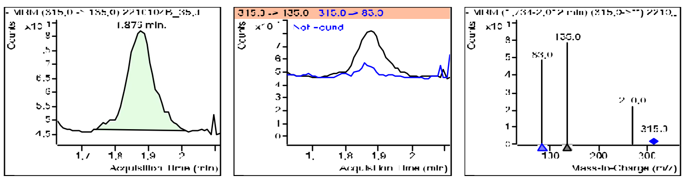

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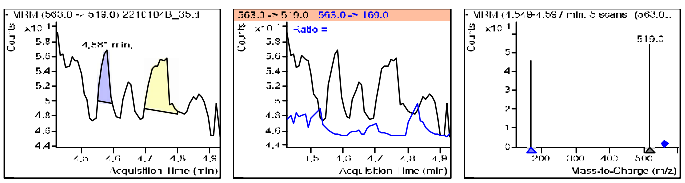

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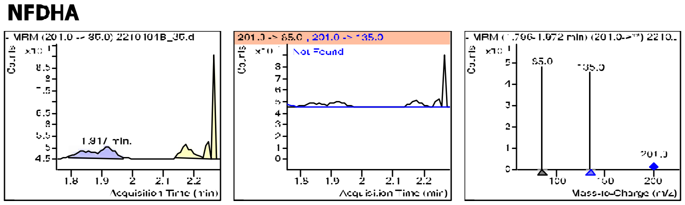

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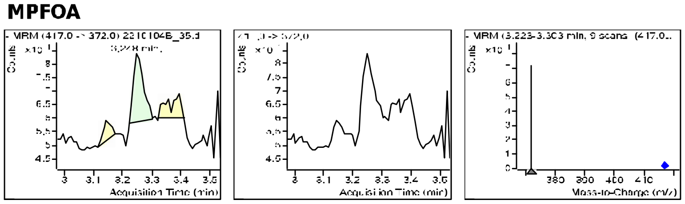

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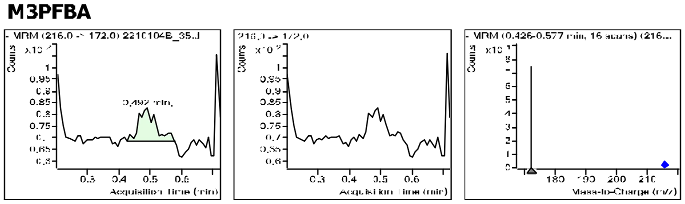


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 5, EXP 12, IMP 1A REP A,B
Collect Date:	05/27/20 Time: 0100	GCAL Sample ID:	22012227905
Matrix:	Water % Moisture: NA	Instrument ID:	QQQ1
Sample Amt:	125 mL	Lab File ID:	2201224A_44.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	12/24/20 Time: 2253
Prep Batch:	700361	Analytical Batch:	700789
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
27619-97-2	6:2 Fluorotelomersulfonic acid	4.00	U	1.79	4.00	10.0
39108-34-4	8:2 Fluorotelomersulfonic acid	4.00	U	1.63	4.00	10.0
375-73-5	Perfluorobutanesulfonic acid	4.00	U	1.47	4.00	10.0
375-22-4	Perfluorobutanoic acid	12.7		2.13	4.00	10.0
335-76-2	Perfluorodecanoic acid	4.00	U	1.65	4.00	10.0
375-85-9	Perfluoroheptanoic acid	3.92	J	1.85	4.00	10.0
355-46-4	Perfluorohexanesulfonic acid	4.00	U	1.64	4.00	10.0
307-24-4	Perfluorohexanoic acid	4.12	J	1.94	4.00	10.0
375-95-1	Perfluorononanoic acid	4.00	U	1.68	4.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	4.00	U	1.70	4.00	10.0
335-67-1	Perfluorooctanoic acid	4.00	U	1.80	4.00	10.0
2706-90-3	Perfluoropentanoic acid	6.33	J	2.35	4.00	10.0
2058-94-8	Perfluoroundecanoic acid	4.00	U	1.86	4.00	10.0

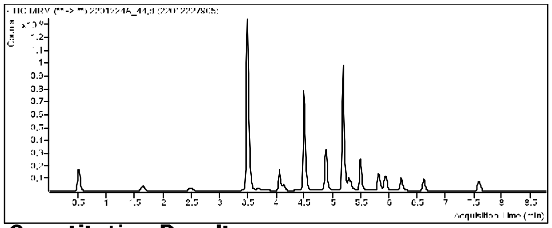
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_44.d	**Position**	Vial 37	**Samp Name**	22012227905	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ1;700361
Acq Date	12/24/2020 22:53						

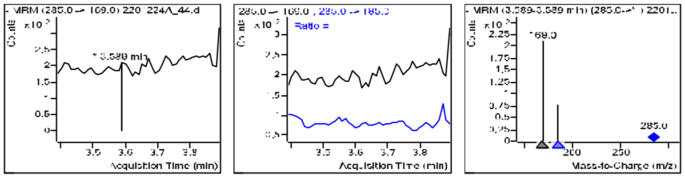
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	228055.183	5.186				133.28	26.6557		12335.70	1.86	
M2PFHxA	370802.356	3.491				139.09	55.6378		3929.80	1.97	
M2PFOA	173123.137	4.499				137.02	27.4045		21785.63	1.84	
M4PFOS	65325.771	4.893				134.22	26.8446		5000.88	1.29	
M3PFBA	6908.793	0.503				0.00	5.3764		195.69	1.78	
MPFOA	560.339	4.499				0.00	27.5023		9.04	1.79	
HFPO-DA	0.000	3.589	M3HFPODA	3023	3.693	103.08			3.83	1.00	m
4:2 FTS	104.371	3.458	M2 4:2 FTS	12117	3.458	109.42	0.0220		2.59	1.61	
6:2 FTS	544.677	4.477	M2 6:2 FTS	22747	4.487	103.67	0.0693		15.05	1.70	
ADONA	232.570	4.148	M8PFOA	23675	4.499	112.87	0.0112		9.33	0.65	m
8:2 FTS	132.596	5.175	M2 8:2 FTS	10753	5.185	104.42	0.0186		4.76	1.74	
FOSA	139.236	5.293	M8FOSA	23656	5.291	107.52	0.0126		112.67	1.19	
9Cl-PF3ONS	352.074	5.080	M8PFOS	5639	4.893	119.67	0.0064		15.20	1.23	
PFDS	11.421	5.525	M6PFDA	36535	5.186	118.21	0.0059		6.54	1.08	
11Cl-PF3OUdS	122.119	5.658	M8PFOS	5639	4.893	119.67	0.0097		30.80	0.89	
PFHpS	71.203	4.529	M8PFOA	23675	4.499	112.87	0.0198		5.94	1.24	
10:2 FTS	102.770	5.827	M2 8:2 FTS	10753	5.185	104.42	0.0304		1.69	1.68	
PFNS	10.397	5.215	M9PFNA	28574	4.863	107.30	0.0066		1.38	1.01	
PFDoS	44.540	6.179	M8PFOS	5639	4.893	119.67	0.0160		3.99	1.58	
PFPeS	33.595	3.647	M5PFHxA	30494	3.490	113.52	0.0102		1.13	1.47	
PFODA	158.777	8.216	M2PFHxDA	31142	7.585	92.04	0.0455		6.15	1.75	
NEtFOSAA	94.032	5.495	d5-NEtFOSAA	13693	5.484	109.04	0.0245		10.97	1.06	
PFHxDA	363.590	7.589	M2PFHxDA	31142	7.585	92.04	0.1198		1.69	1.40	
NMeFOSAA	21.899	5.339	d3-NMeFOSAA	11585	5.328	121.58	0.0058		12.96	1.21	
PFBA	16494.992	0.505	MPFBA	40301	0.511	114.05	1.5877		203.62	1.67	
PFBS	39.371	2.485	M3PFBS	16040	2.483	135.98	0.0080		2.49	1.11	
NMeFOSA	87.560	6.000	d-NMeFOSA	15498	5.927	92.19	0.0607		2.66	2.14	
PFDA	418.082	5.187	M6PFDA	36535	5.186	118.21	0.0379		8.13	2.65	
PFDoA	94.351	5.849	MPFDoA	39655	5.818	105.32	0.0115		7.06	0.60	
NEtFOSA	27.116	6.237	d-NEtFOSA	10722	6.216	90.35	0.0184		3.50	1.46	
PFHpA	4117.960	4.067	M4PFHpA	41172	4.067	116.67	0.4896		72.05	1.63	
PFHxA	4139.899	3.493	M5PFHxA	30494	3.490	113.52	0.5145		84.26	1.96	
NMeFOSE	20.706	5.922	d7-NMeFOSE	25463	5.943	109.44	0.0078		2.41	1.57	
PFHxS	178.862	4.137	M3PFHxS	11042	4.136	110.58	0.0362		14.72	1.19	m
PFNA	325.649	4.864	M9PFNA	28574	4.863	107.30	0.0366		2.93	1.78	
NEtFOSE	7.504	6.130	d9-NEtFOSE	22384	6.223	107.67	0.0030		1.03	0.88	
PFOA	963.661	4.500	M8PFOA	23675	4.499	112.87	0.1444		16.20	2.23	m
PFOS	444.621	4.894	M8PFOS	5639	4.893	119.67	0.0866		29.91	1.43	m
PFPeA	3395.807	1.637	M5PFPeA	18245	1.635	108.51	0.7916		28.27	1.35	
PFMPA	87.423	0.786	M5PFPeA	18245	1.635	108.51	0.0211		3.25	0.95	
PFTA	198.257	6.614	M2PFTA	31751	6.613	99.90	0.0352		13.76	2.63	
PFMBA	72.406	2.541	M5PFHxA	30494	3.490	113.52	0.0175		2.79	0.72	
PFTrDA	333.971	6.201	MPFDoA	39655	5.818	105.32	0.0393		2.42	0.65	
PFEESA	111.695	3.253	M3PFHxS	11042	4.136	110.58	0.0110		INF	1.21	
PFUnA	293.626	5.496	M7PFUnA	58143	5.496	110.80	0.0236		4.75	1.12	
NFDHA	42.965	3.372	M4PFHpA	41172	4.067	116.67	0.0106		2.77	1.78	

HFPO-DA



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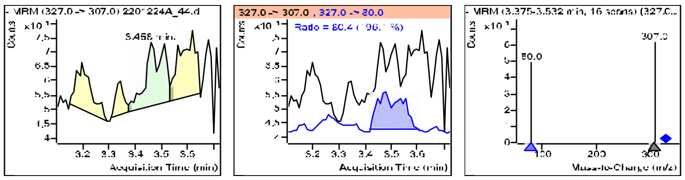

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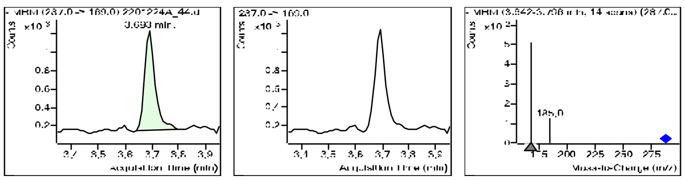
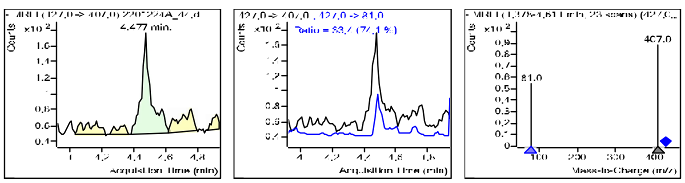
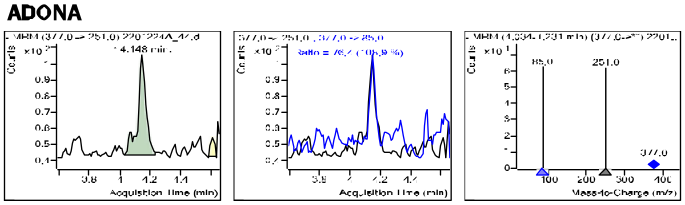


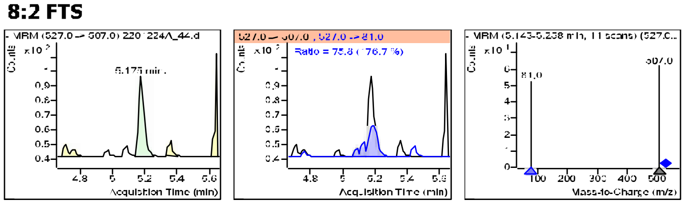
6:2 FTS



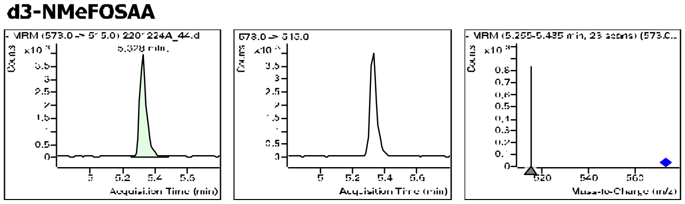
ADONA



8:2 FTS



d3-NMeFOSAA



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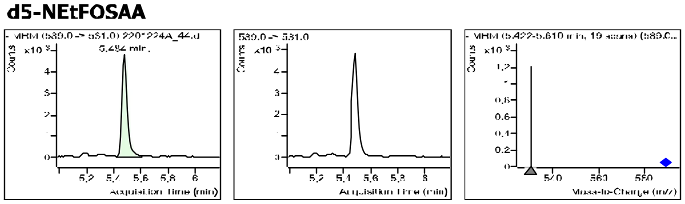

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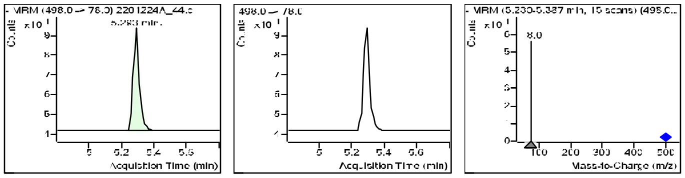
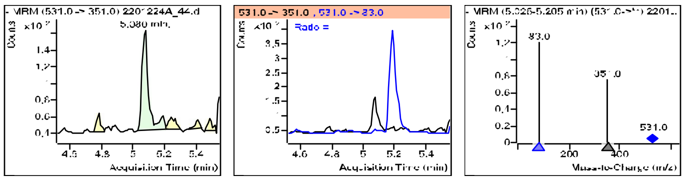


9Cl-PF3ONS



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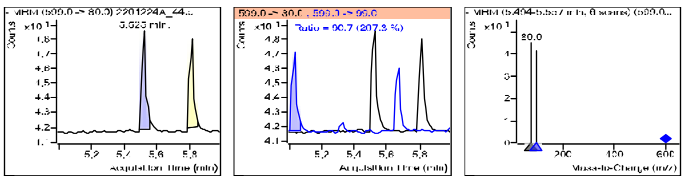

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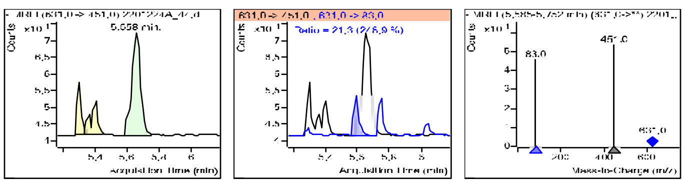

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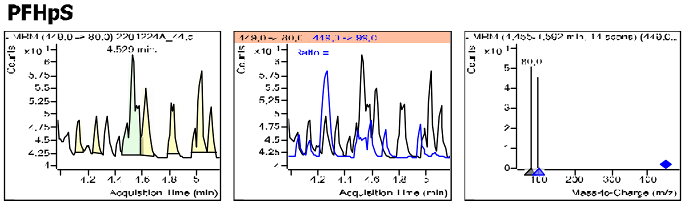
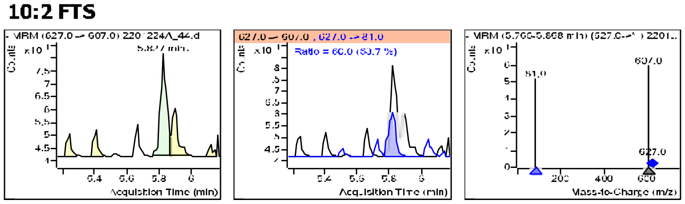


10:2 FTS



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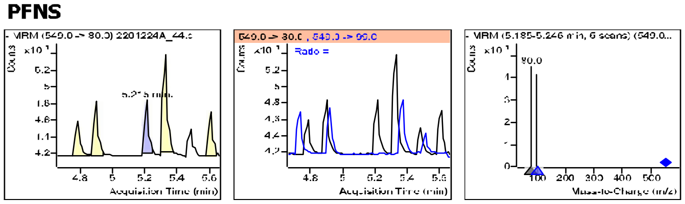

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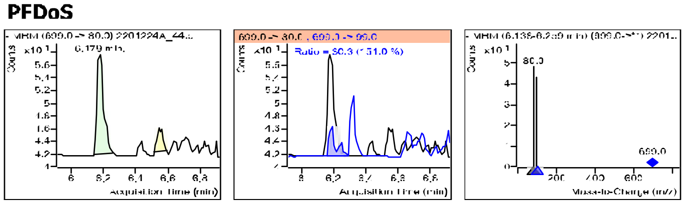

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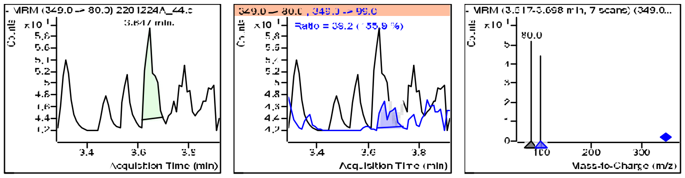

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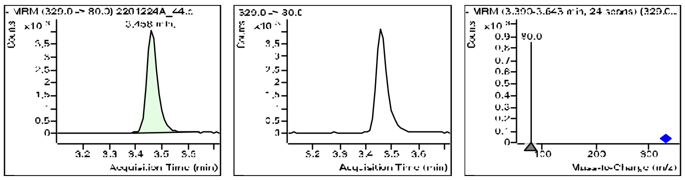

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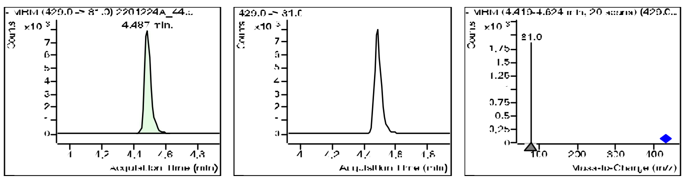

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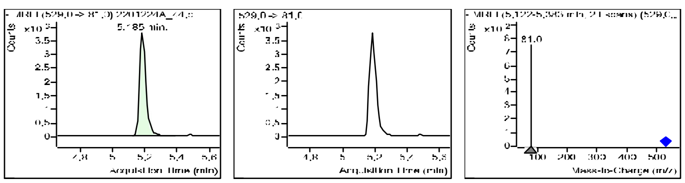

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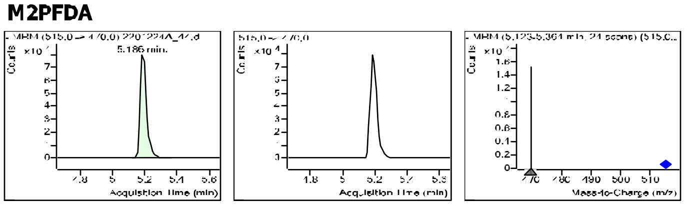

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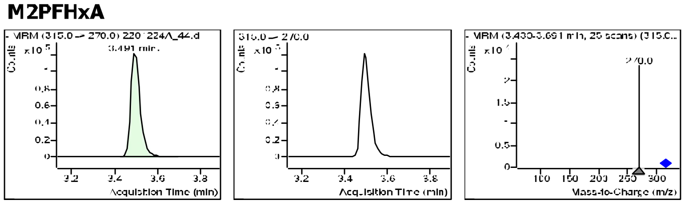

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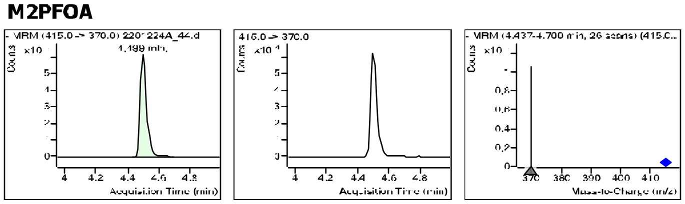

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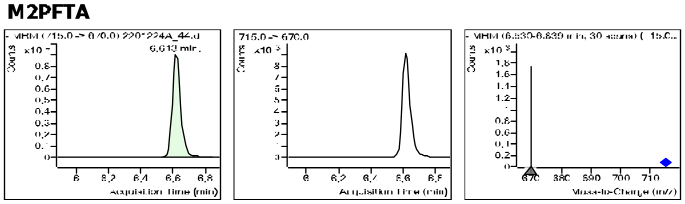
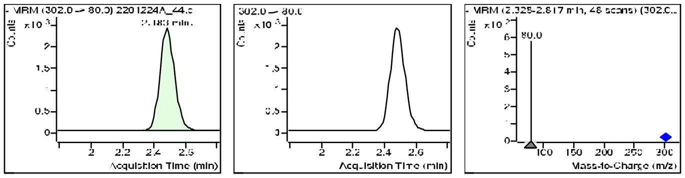


Quantitative Analysis Sample Report

M3PFBS



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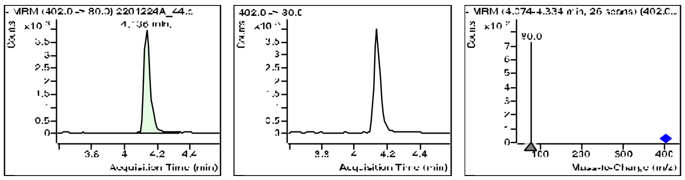

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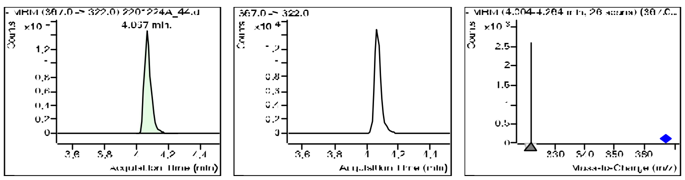

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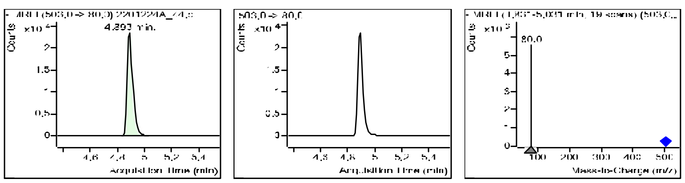

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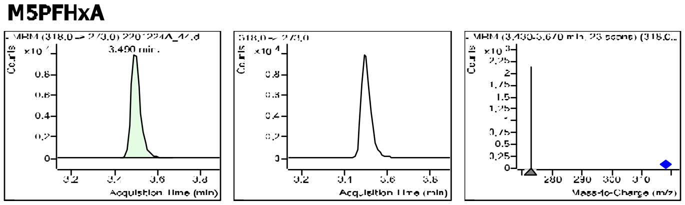

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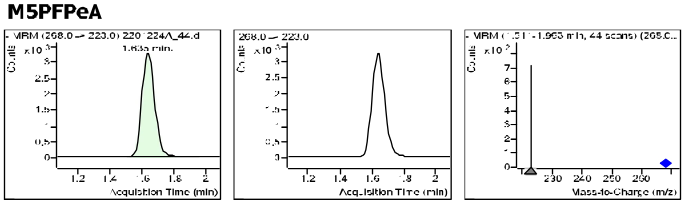

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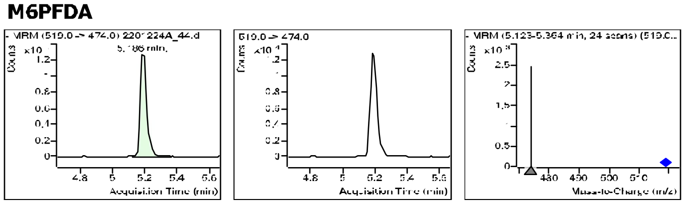

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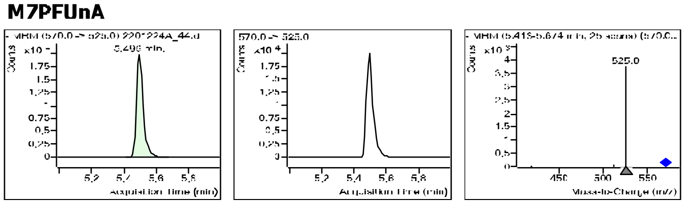

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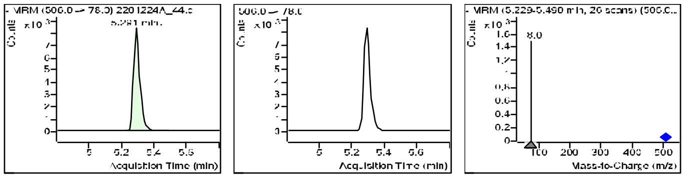

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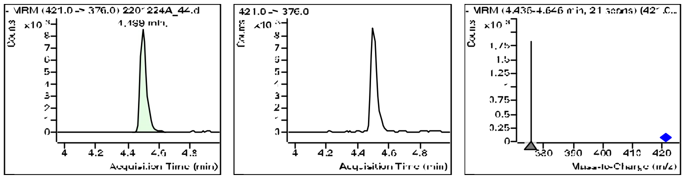

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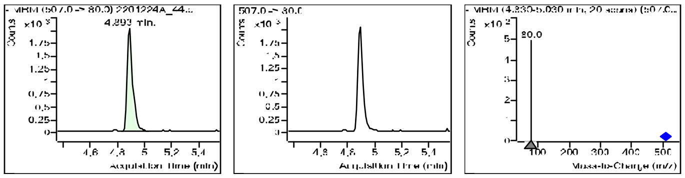

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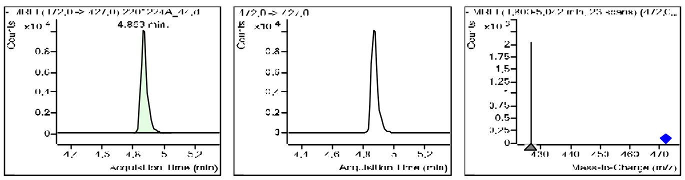

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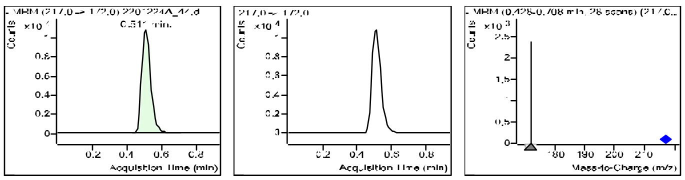

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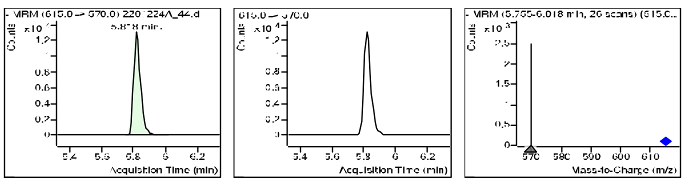

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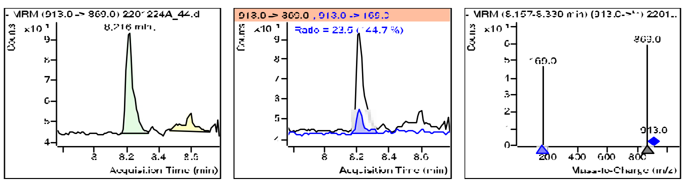

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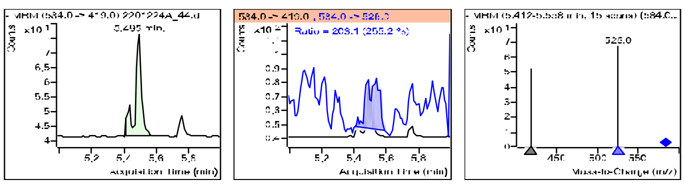

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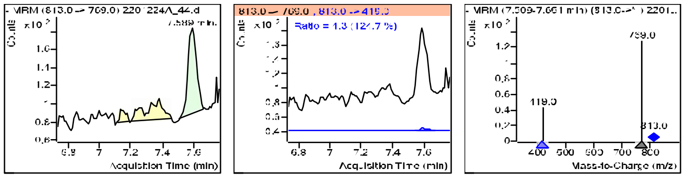

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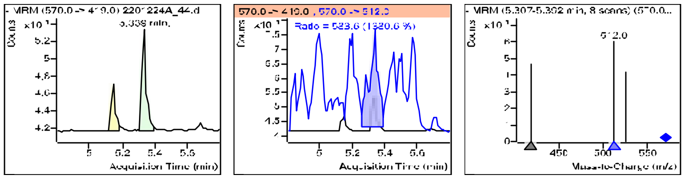

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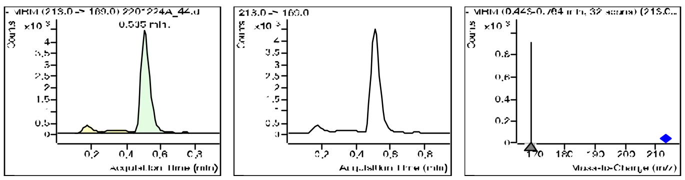

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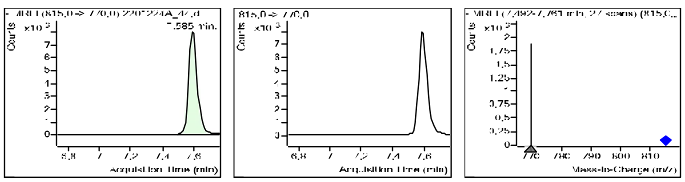

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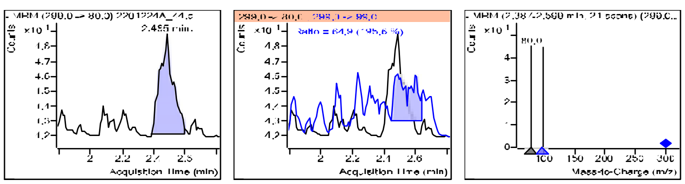

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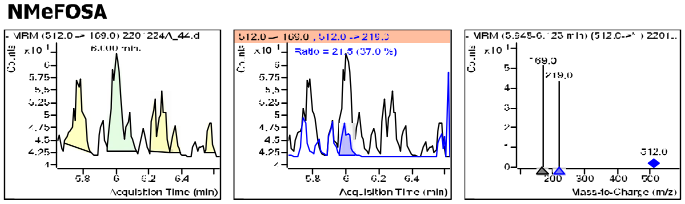

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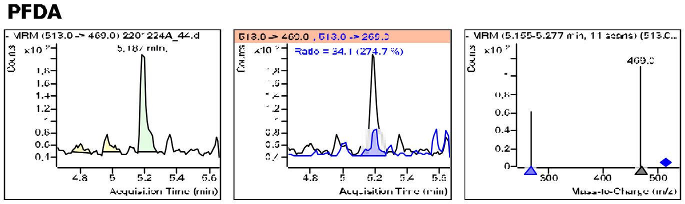

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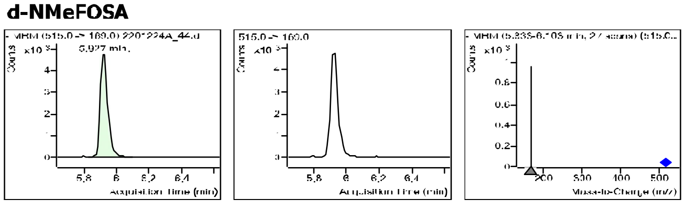

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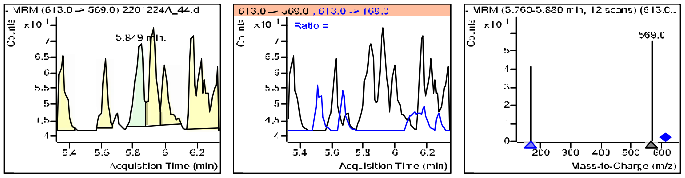

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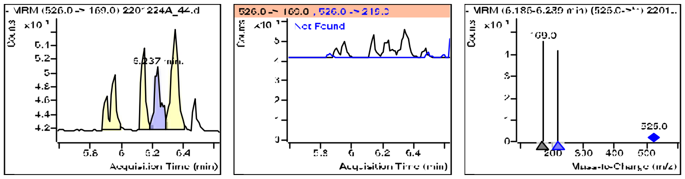

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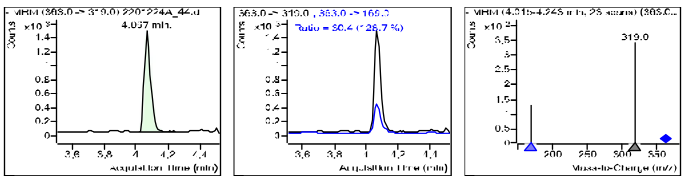

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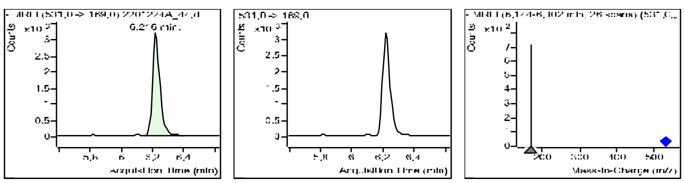

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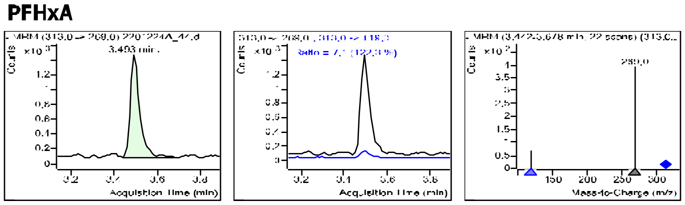

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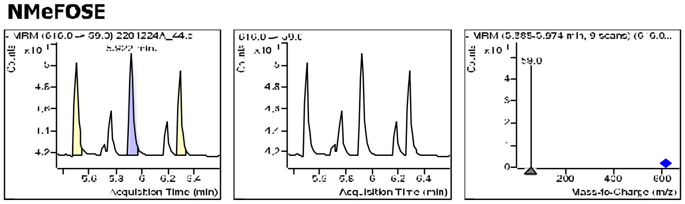

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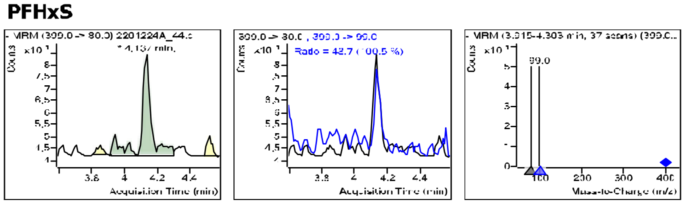

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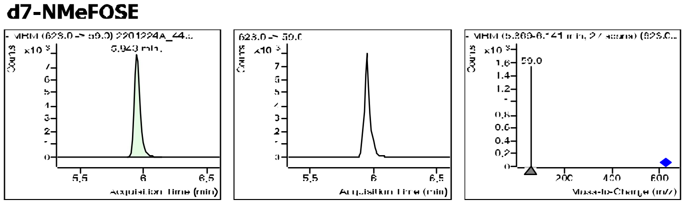

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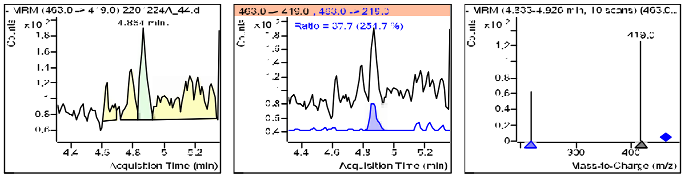

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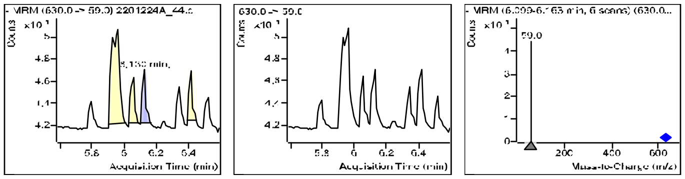

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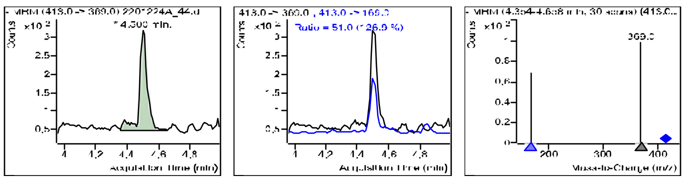

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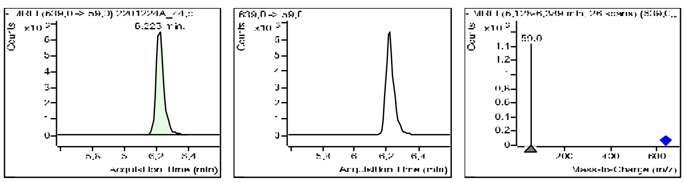

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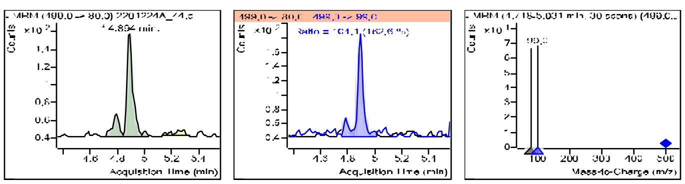

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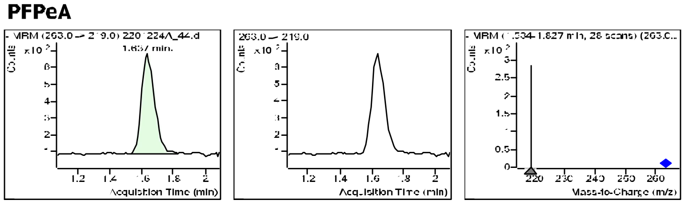

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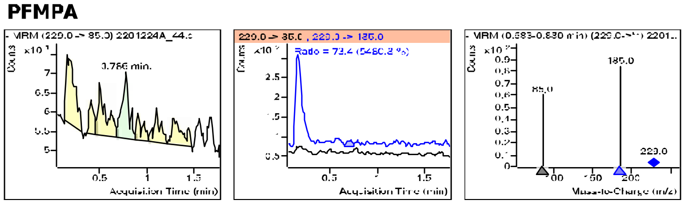

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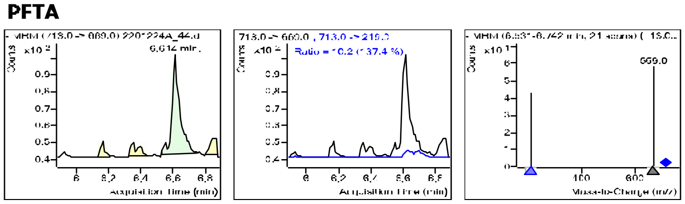

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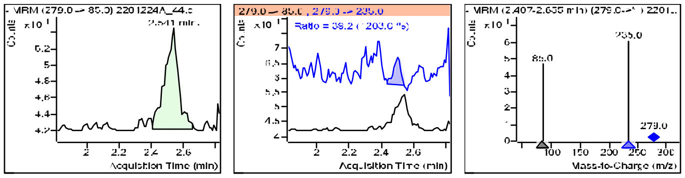

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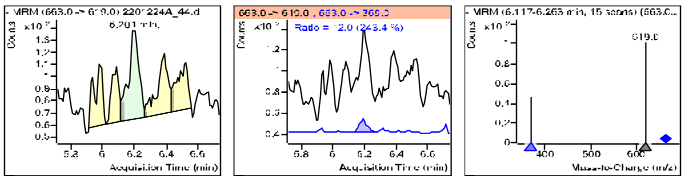

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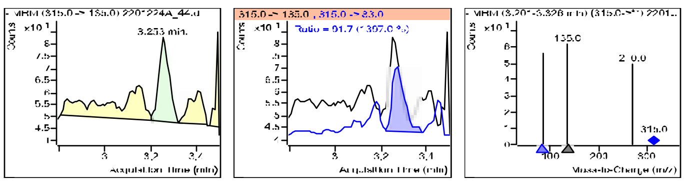

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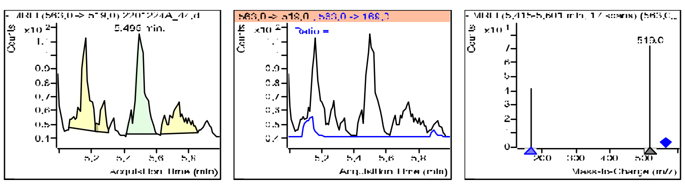

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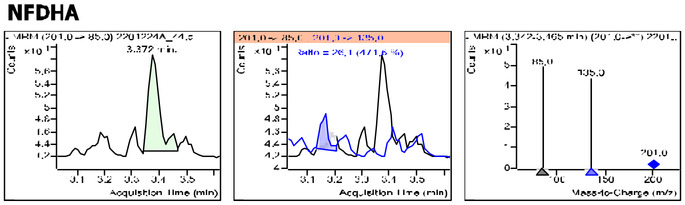

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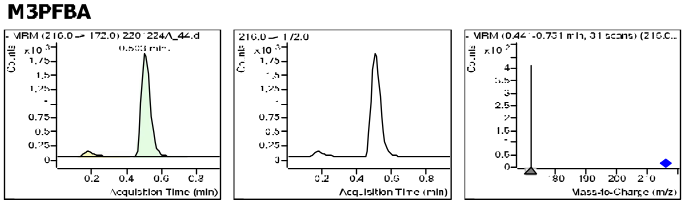

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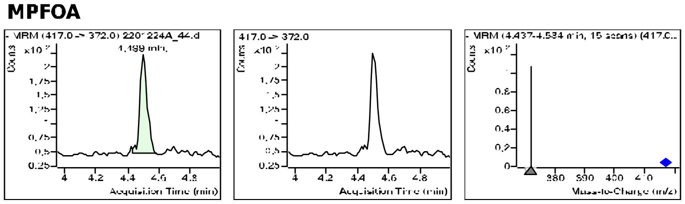


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 6, EXP 12, IMP 3A REP A-F
Collect Date:	05/27/20 Time: 0300	GCAL Sample ID:	22012227906
Matrix:	Water % Moisture: NA	Instrument ID:	QQQ1
Sample Amt:	125 mL	Lab File ID:	2201224A_45.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	12/24/20 Time: 2308
Prep Batch:	700361	Analytical Batch:	700789
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
27619-97-2	6:2 Fluorotelomersulfonic acid	4.00	U	1.79	4.00	10.0
39108-34-4	8:2 Fluorotelomersulfonic acid	4.00	U	1.63	4.00	10.0
375-73-5	Perfluorobutanesulfonic acid	4.00	U	1.47	4.00	10.0
375-22-4	Perfluorobutanoic acid	4.00	U	2.13	4.00	10.0
335-76-2	Perfluorodecanoic acid	4.00	U	1.65	4.00	10.0
375-85-9	Perfluoroheptanoic acid	4.00	U	1.85	4.00	10.0
355-46-4	Perfluorohexanesulfonic acid	4.00	U	1.64	4.00	10.0
307-24-4	Perfluorohexanoic acid	4.00	U	1.94	4.00	10.0
375-95-1	Perfluorononanoic acid	4.00	U	1.68	4.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	4.00	U	1.70	4.00	10.0
335-67-1	Perfluorooctanoic acid	4.00	U	1.80	4.00	10.0
2706-90-3	Perfluoropentanoic acid	4.00	U	2.35	4.00	10.0
2058-94-8	Perfluoroundecanoic acid	4.00	U	1.86	4.00	10.0

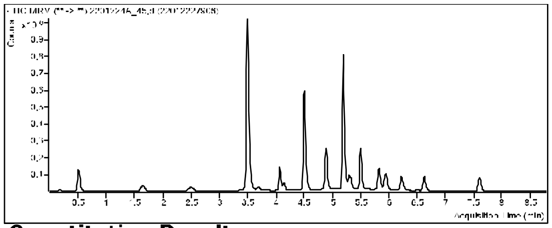
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_45.d	**Position**	Vial 38	**Samp Name**	2201222790€	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ1;700361
Acq Date	12/24/2020 23:08						

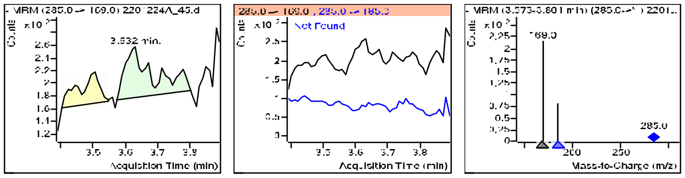
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	179052.240	5.197				104.64	20.9281		4115.63	1.31	
M2PFHxA	283729.609	3.501				106.43	42.5728		11914.64	1.27	
M2PFOA	129203.283	4.510				102.26	20.4522		5931.92	1.35	
M4PFOS	46984.095	4.893				96.54	19.3073		4122.23	1.59	
M3PFBA	6528.575	0.503				0.00	5.0805		213.33	1.63	
MPFOA	452.814	4.509				0.00	22.2248		14.32	1.30	
HFPO-DA	479.120	3.632	M3HFPODA	2803	3.693	95.59	1.3424		0.98	3.18	
4:2 FTS	34.161	3.468	M2 4:2 FTS	13004	3.458	117.43	0.0067		1.60	0.37	
6:2 FTS	781.018	4.477	M2 6:2 FTS	23233	4.487	105.88	0.0972		9.64	1.65	
ADONA	92.163	4.169	M8PFOA	21970	4.509	104.74	0.0048		4.12	0.59	
8:2 FTS	35.211	5.185	M2 8:2 FTS	11040	5.185	107.20	0.0048		0.85	0.07	m
FOSA	36.580	5.334	M8FOSA	22823	5.291	103.73	0.0034		4.99	0.58	
9Cl-PF3ONS	146.060	5.080	M8PFOS	4938	4.893	104.80	0.0031		1.74	1.56	
PFDS	15.789	5.515	M6PFDA	35524	5.196	114.94	0.0084		12.76	1.23	
11Cl-PF3OUdS	30.744	5.710	M8PFOS	4938	4.893	104.80	0.0028		22.24	0.98	
PFHpS	30.078	4.549	M8PFOA	21970	4.509	104.74	0.0090		1.82	0.99	
10:2 FTS	67.566	5.837	M2 8:2 FTS	11040	5.185	107.20	0.0195		16.24	1.29	
PFNS	11.632	5.205	M9PFNA	26826	4.874	100.74	0.0079		7.45	1.14	
PFDoS	42.220	6.189	M8PFOS	4938	4.893	104.80	0.0173		3.45	1.33	
PFPeS	78.503	3.699	M5PFHxA	28838	3.501	107.36	0.0252		2.25	0.85	
PFODA	94.880	8.216	M2PFHxDA	30717	7.596	90.79	0.0276		6.50	1.68	
NEtFOSAA	17.221	5.526	d5-NEtFOSAA	13186	5.484	105.00	0.0047		12.35	1.11	
PFHxDA	432.538	7.599	M2PFHxDA	30717	7.596	90.79	0.1444		11.60	1.35	
NMeFOSAA	11.942	5.339	d3-NMeFOSAA	11353	5.328	119.15	0.0032		3.02	1.13	
PFBA	1230.224	0.505	MPFBA	39111	0.501	110.68	0.1220		5.48	1.26	
PFBS	143.513	2.454	M3PFBS	16124	2.494	136.69	0.0289		7.07	1.69	
NMeFOSA	66.172	5.938	d-NMeFOSA	14786	5.927	87.95	0.0480		1.89	2.48	
PFDA	575.537	5.197	M6PFDA	35524	5.196	114.94	0.0537		26.77	1.51	
PFDoA	190.807	5.828	MPFDoA	38152	5.828	101.33	0.0242		2.86	3.10	
NEtFOSA	38.602	6.237	d-NEtFOSA	10515	6.226	88.61	0.0266		4.35	0.81	
PFHpA	645.252	4.078	M4PFHpA	39035	4.077	110.61	0.0809		10.18	1.17	
PFHxA	972.479	3.493	M5PFHxA	28838	3.501	107.36	0.1278		10.80	1.89	
NMeFOSE	121.172	5.974	d7-NMeFOSE	21240	5.953	91.29	0.0546		12.45	0.64	
PFHxS	125.072	4.137	M3PFHxS	10825	4.147	108.40	0.0258		14.72	1.90	m
PFNA	372.443	4.885	M9PFNA	26826	4.874	100.74	0.0446		3.70	1.01	
NEtFOSE	15.595	6.369	d9-NEtFOSE	18964	6.223	91.22	0.0075		0.95	0.39	
PFOA	518.146	4.510	M8PFOA	21970	4.509	104.74	0.0837		7.72	1.14	
PFOS	102.661	4.904	M8PFOS	4938	4.893	104.80	0.0228		5.40	0.59	
PFPeA	355.613	1.627	M5PFPeA	17983	1.635	106.95	0.0841		1.82	1.77	
PFMPA	102.406	0.735	M5PFPeA	17983	1.635	106.95	0.0250		1.98	1.17	
PFTA	141.426	6.624	M2PFTA	30251	6.623	95.18	0.0263		6.38	2.20	
PFMBA	57.657	2.531	M5PFHxA	28838	3.501	107.36	0.0148		2.91	1.03	
PFTrDA	606.211	6.190	MPFDoA	38152	5.828	101.33	0.0742		1.85	2.42	
PFEESA	54.014	3.450	M3PFHxS	10825	4.147	108.40	0.0054		2.01	0.43	
PFUnA	144.625	5.465	M7PFUnA	57764	5.496	110.08	0.0117		0.50	1.00	
NFDHA	73.204	3.372	M4PFHpA	39035	4.077	110.61	0.0190		3.24	2.35	

HFPO-DA



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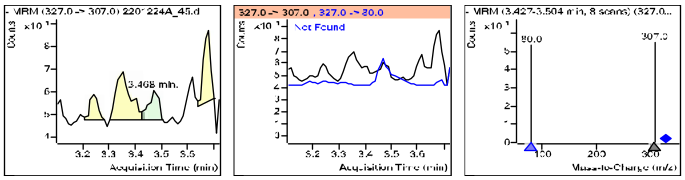
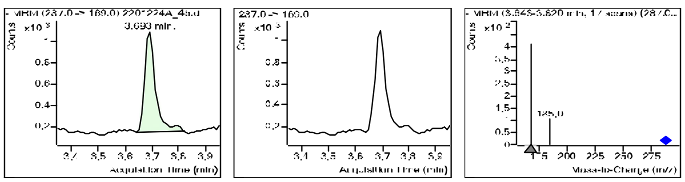
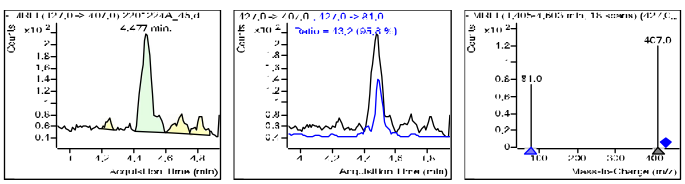


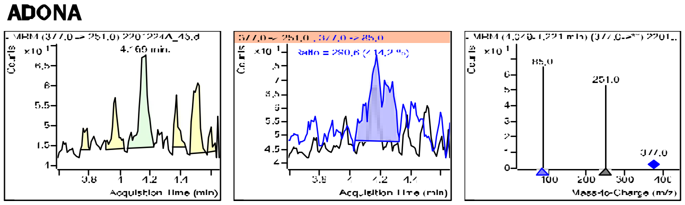
M3HFPODA



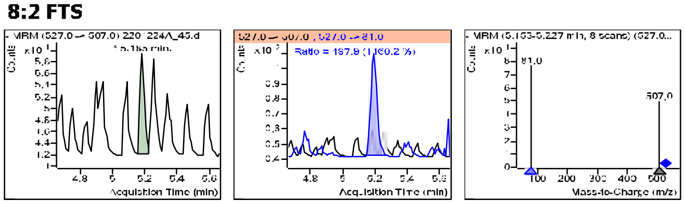
6:2 FTS



ADONA



8:2 FTS



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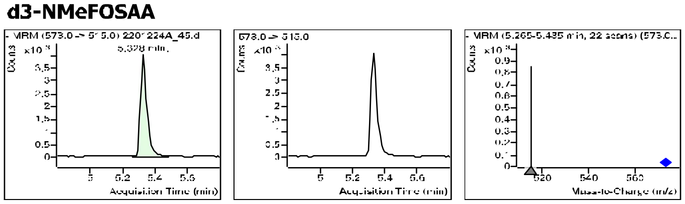

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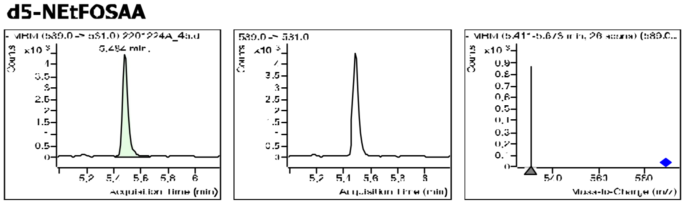
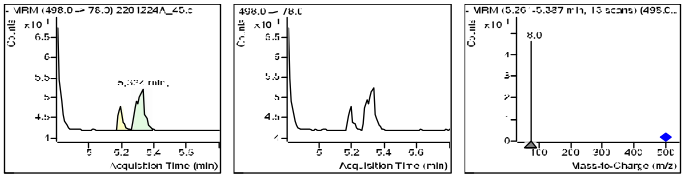
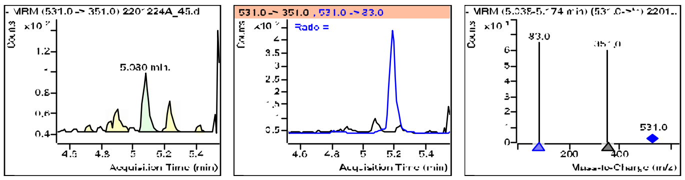


FOSA



9Cl-PF3ONS



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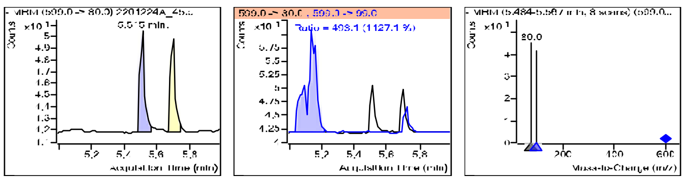

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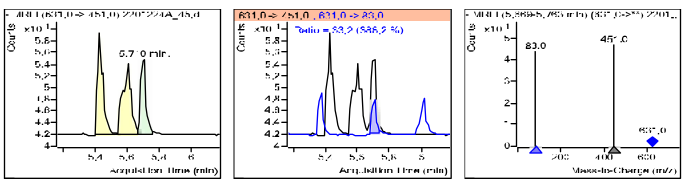

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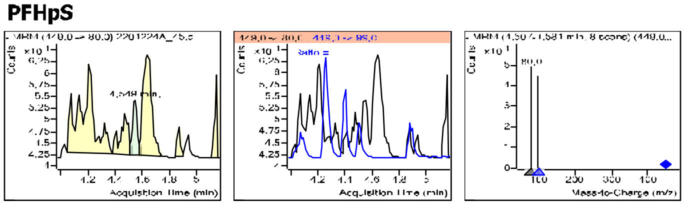
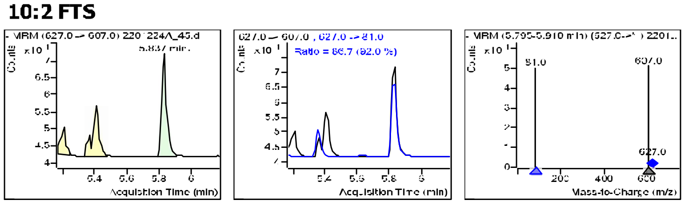


10:2 FTS



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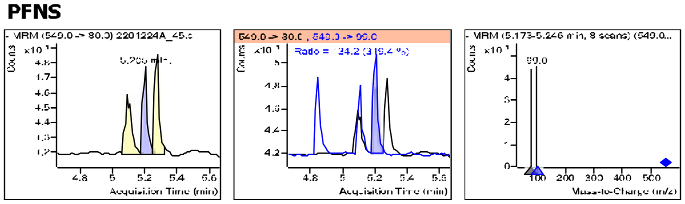

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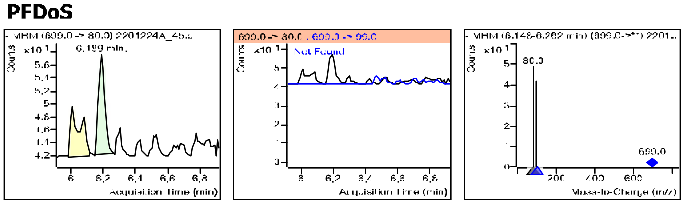

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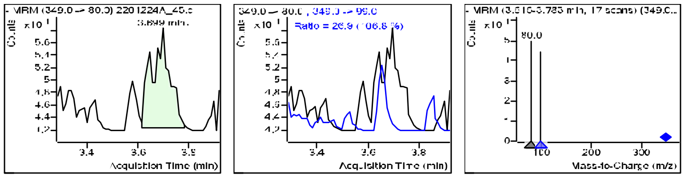

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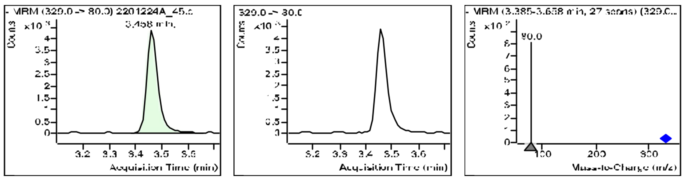
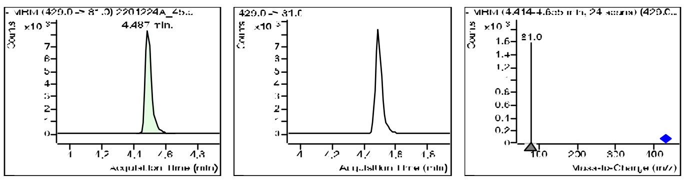
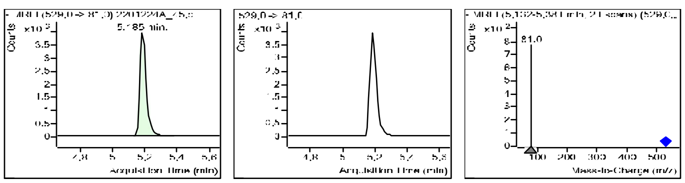


M2 6:2 FTS



M2 8:2 FTS



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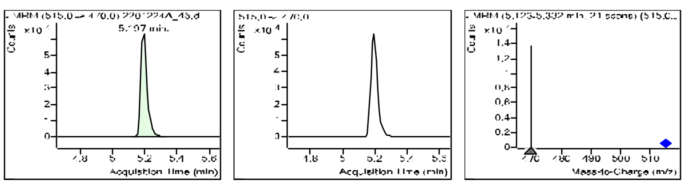

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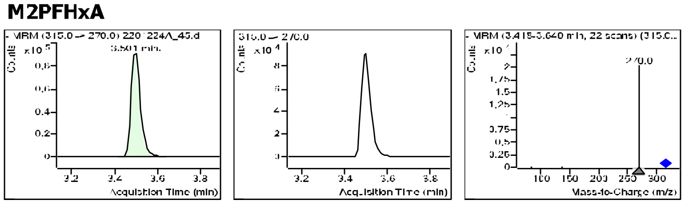

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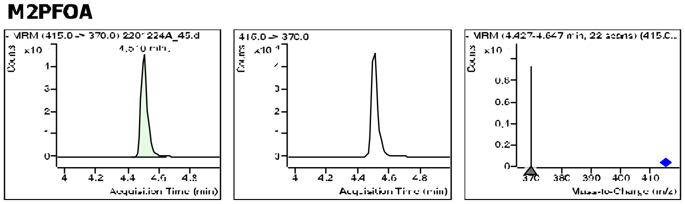

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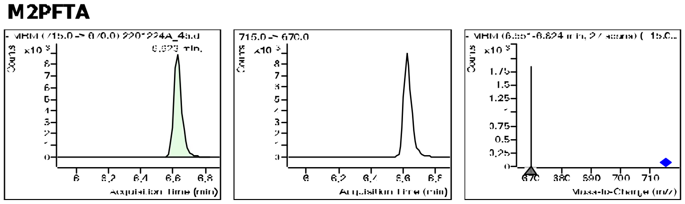

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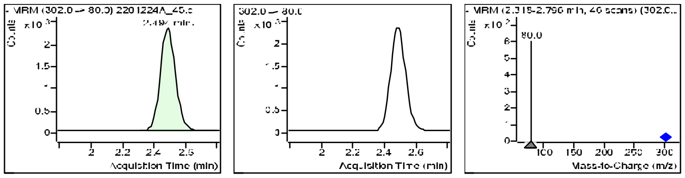

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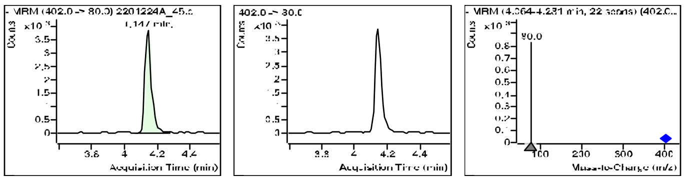

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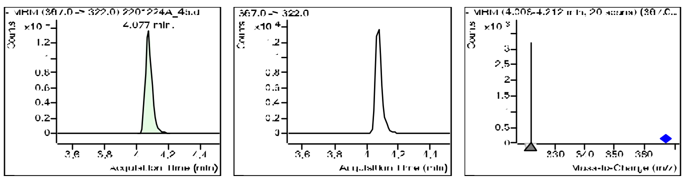

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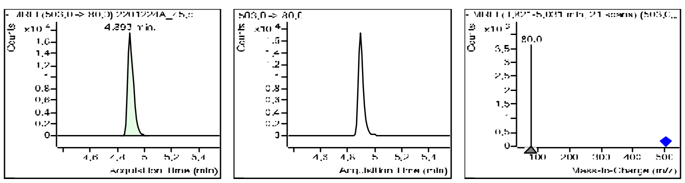

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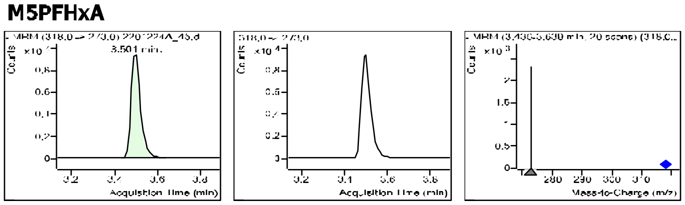

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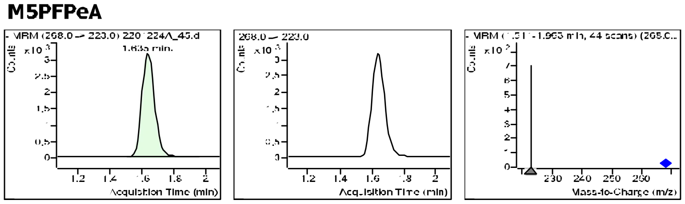

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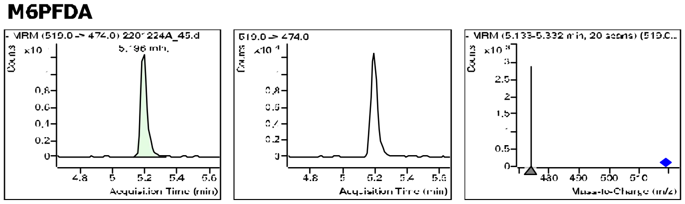

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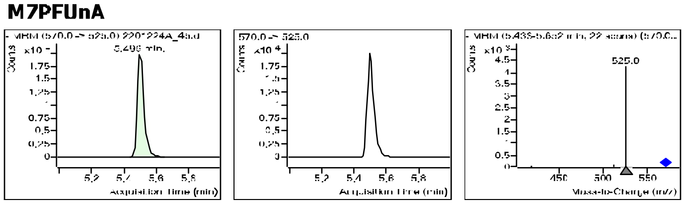

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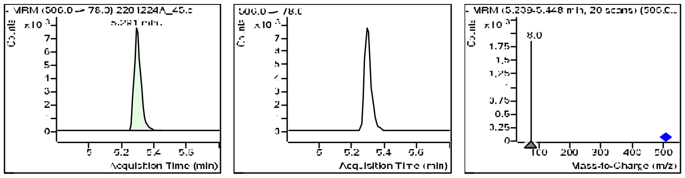

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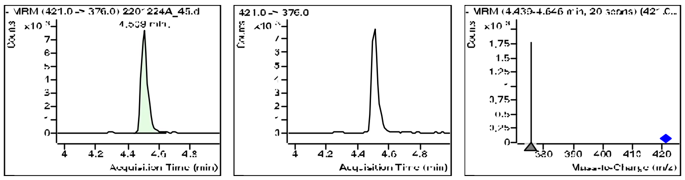

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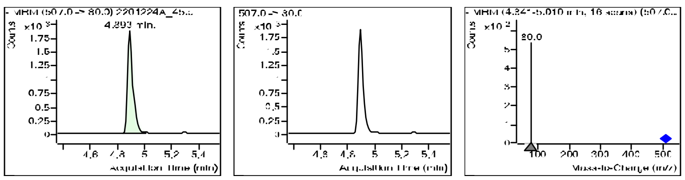

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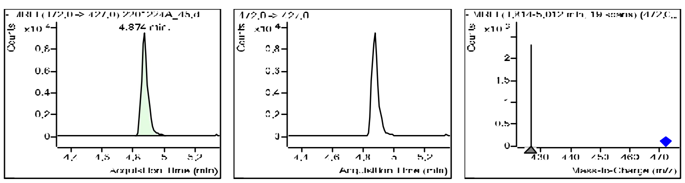

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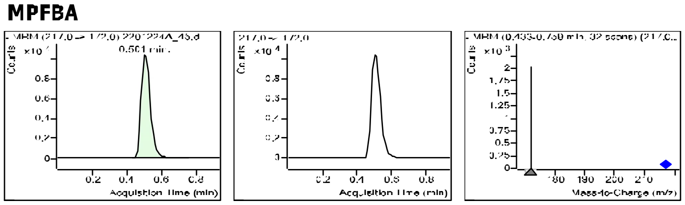

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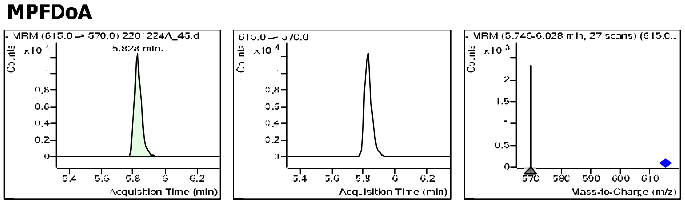

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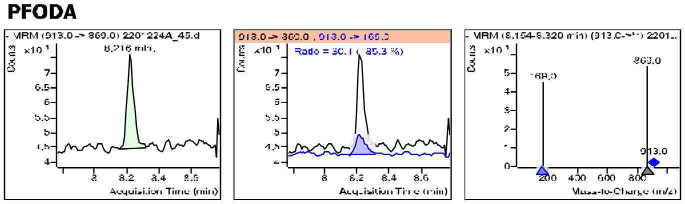

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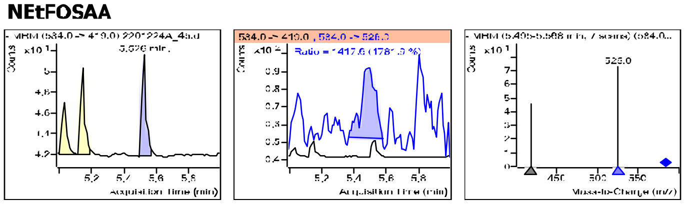

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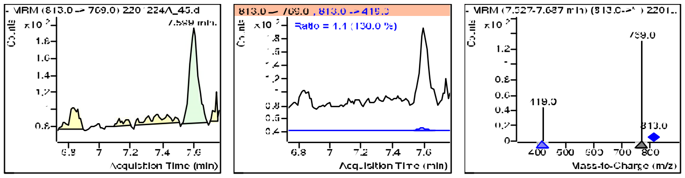

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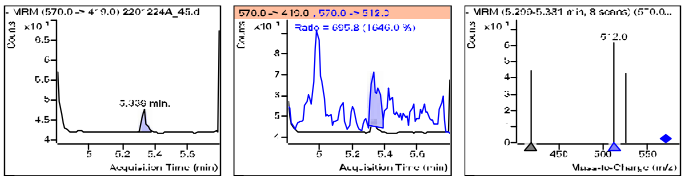

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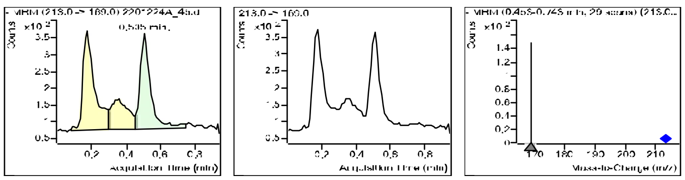

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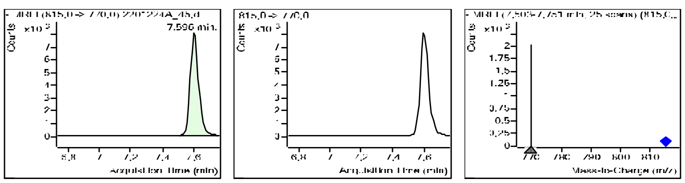

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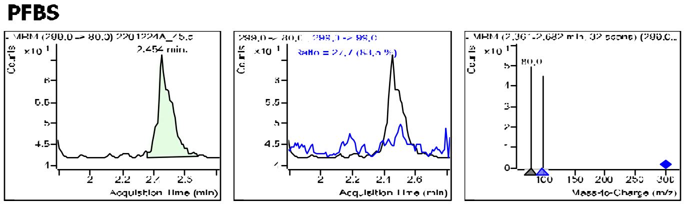

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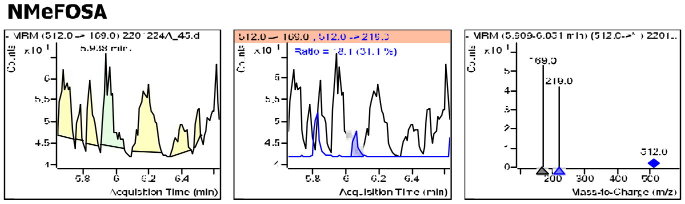

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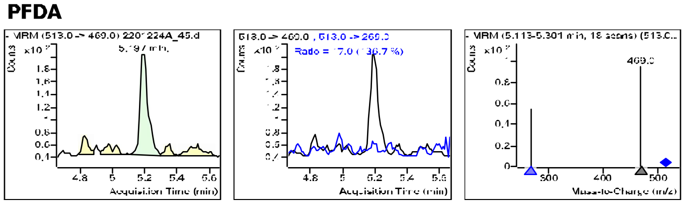

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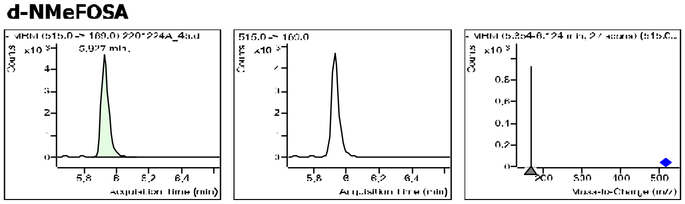

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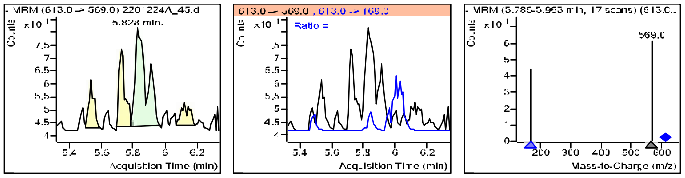

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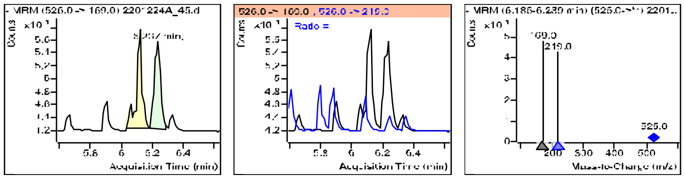

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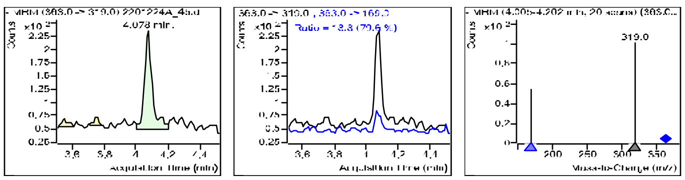

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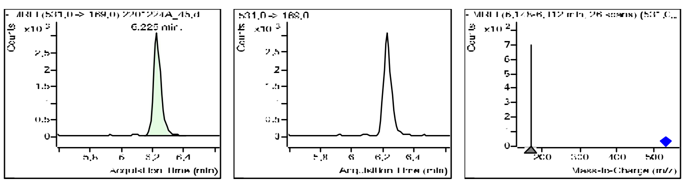

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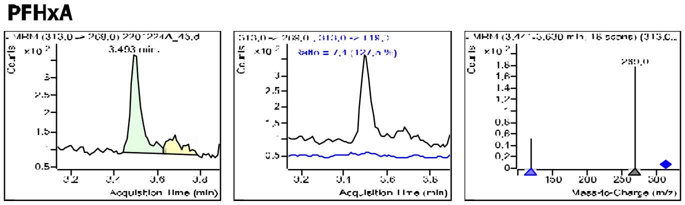

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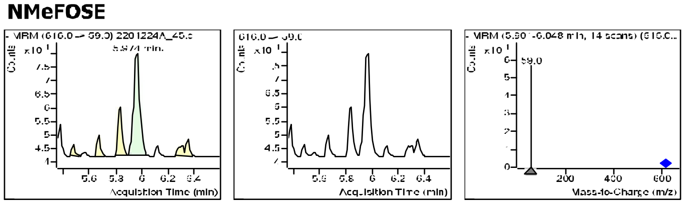

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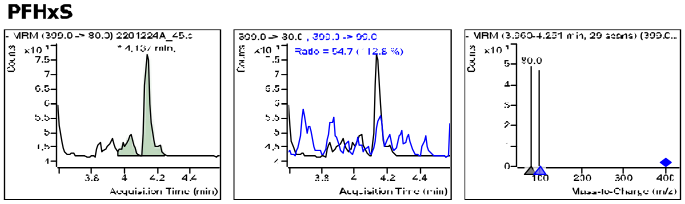

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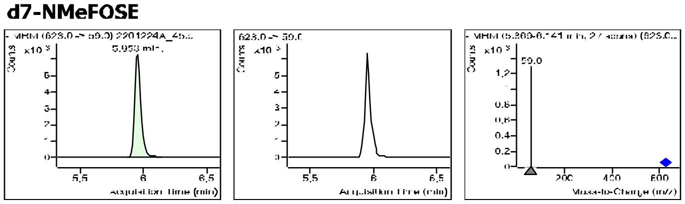

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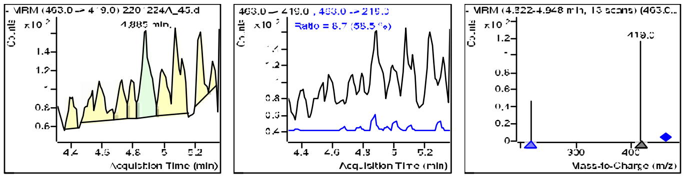

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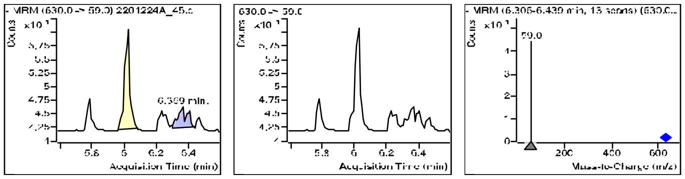

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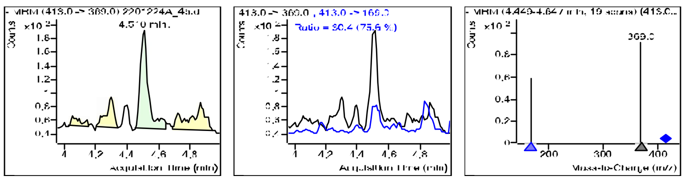

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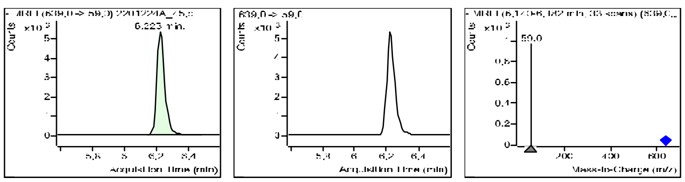

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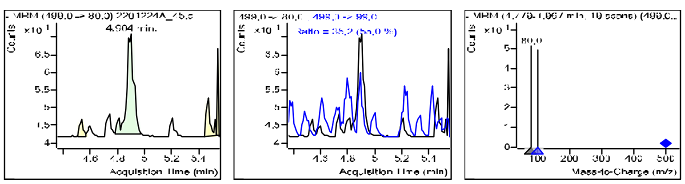

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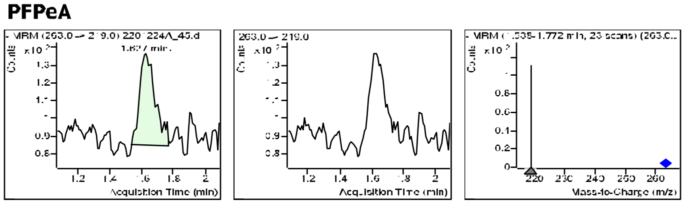

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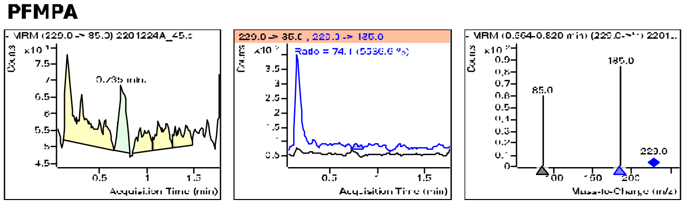

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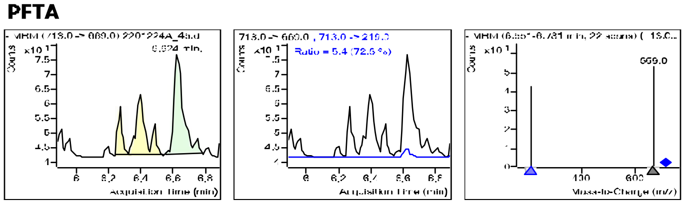

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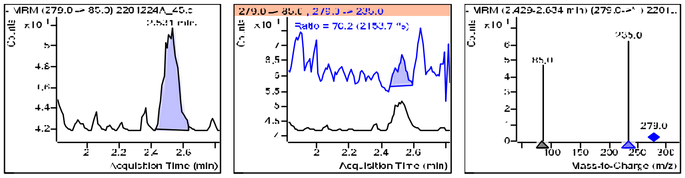

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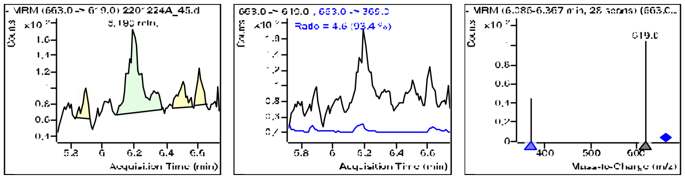

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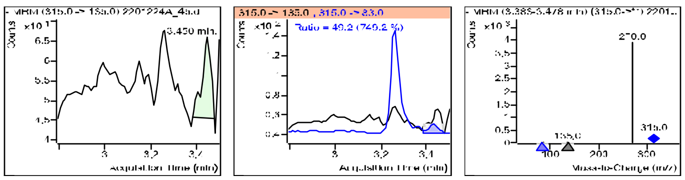

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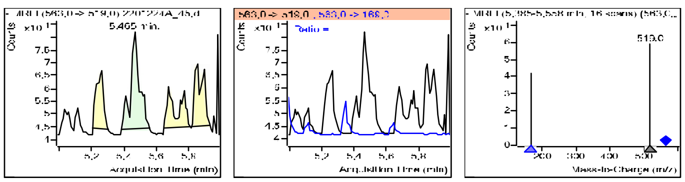

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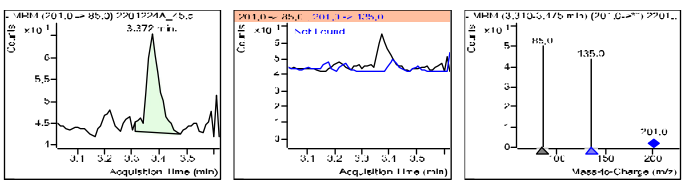

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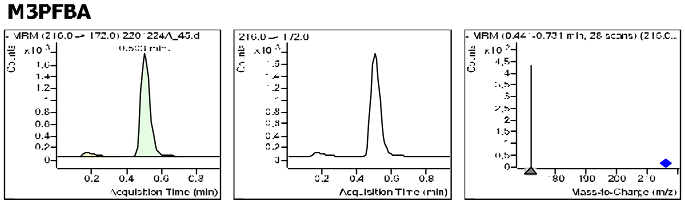

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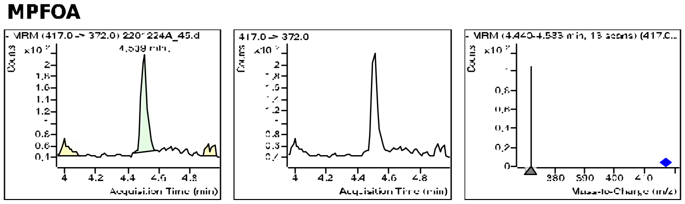


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 6, EXP 12, IMP 3A REP A-F-
Collect Date:	05/27/20 Time: 0300	GCAL Sample ID:	22012227907
Matrix:	Water % Moisture: NA	Instrument ID:	QQQ1
Sample Amt:	125 mL	Lab File ID:	2201224A_46.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	12/24/20 Time: 2322
Prep Batch:	700361	Analytical Batch:	700789
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
27619-97-2	6:2 Fluorotelomersulfonic acid	69.0		1.79	4.00	10.0
39108-34-4	8:2 Fluorotelomersulfonic acid	72.3		1.63	4.00	10.0
375-73-5	Perfluorobutanesulfonic acid	52.9		1.47	4.00	10.0
375-22-4	Perfluorobutanoic acid	69.1		2.13	4.00	10.0
335-76-2	Perfluorodecanoic acid	66.5		1.65	4.00	10.0
375-85-9	Perfluoroheptanoic acid	66.1		1.85	4.00	10.0
355-46-4	Perfluorohexanesulfonic acid	65.7		1.64	4.00	10.0
307-24-4	Perfluorohexanoic acid	68.3		1.94	4.00	10.0
375-95-1	Perfluorononanoic acid	65.9		1.68	4.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	70.3		1.70	4.00	10.0
335-67-1	Perfluorooctanoic acid	76.0		1.80	4.00	10.0
2706-90-3	Perfluoropentanoic acid	66.7		2.35	4.00	10.0
2058-94-8	Perfluoroundecanoic acid	66.4		1.86	4.00	10.0

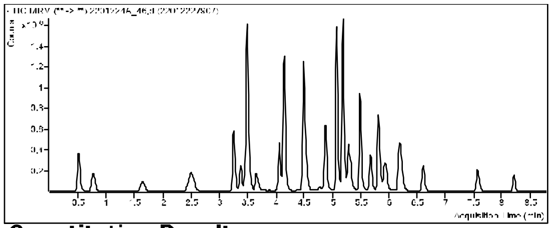
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_46.d	**Position**	Vial 39	**Samp Name**	22012227907	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	QC	**Comment**	MRA,QQQ1;700361
Acq Date	12/24/2020 23:22						

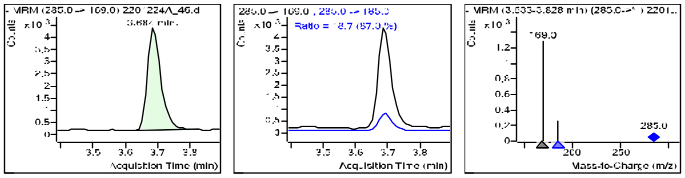
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	211600.121	5.186				123.66	24.7324	123.66	13525.04	1.52	
M2PFHxA	357544.112	3.491				134.12	53.6485	134.12	INF	1.67	
M2PFOA	160471.466	4.499				127.01	25.4018	127.01	6212.62	1.59	
M4PFOS	59185.759	4.883				121.61	24.3214	121.61	5898.90	1.82	
M3PFBA	6470.329	0.503				0.00	5.0352	100.70	177.98	1.77	
MPFOA	651.451	4.499				0.00	31.9742	127.90	57.52	2.06	
HFPO-DA	12175.602	3.684	M3HFPODA	3321	3.683	113.22	28.7999	96.00	296.40	1.86	
4:2 FTS	39062.189	3.458	M2 4:2 FTS	13192	3.458	119.12	7.5606	80.86	787.15	1.41	
6:2 FTS	68177.438	4.477	M2 6:2 FTS	22858	4.477	104.18	8.6269	90.81	600.04	1.95	
ADONA	182153.869	4.148	M8PFOA	22537	4.499	107.44	9.1806	91.81	14273.32	1.43	
8:2 FTS	65242.720	5.185	M2 8:2 FTS	10900	5.185	105.85	9.0416	94.18	1273.66	1.25	
FOSA	103404.268	5.293	M8FOSA	22922	5.291	104.18	9.6897	96.90	9173.33	1.28	
9Cl-PF3ONS	421046.378	5.069	M8PFOS	5209	4.882	110.53	8.3375	83.37	34347.62	1.80	
PFDS	16243.601	5.494	M6PFDA	34570	5.186	111.85	8.8991	92.22	324.21	1.39	
11Cl-PF3OUdS	91029.475	5.669	M8PFOS	5209	4.882	110.53	7.8662	78.66	2973.90	1.77	
PFHpS	36713.203	4.539	M8PFOA	22537	4.499	107.44	10.7334	112.98	2408.69	1.47	
10:2 FTS	53264.779	5.816	M2 8:2 FTS	10900	5.185	105.85	15.5375	80.59	2790.49	1.70	
PFNS	16140.465	5.194	M9PFNA	26864	4.863	100.88	10.8808	113.34	1917.39	1.62	
PFDoS	33379.109	6.168	M8PFOS	5209	4.882	110.53	12.9598	66.94	2696.52	1.63	
PFPeS	34177.055	3.647	M5PFHxA	30180	3.490	112.35	10.4978	111.68	685.71	1.64	
PFODA	40618.597	8.206	M2PFHxDA	29092	7.565	85.98	12.4681	62.34	2469.01	1.65	
NEtFOSAA	36371.947	5.484	d5-NEtFOSAA	13798	5.474	109.87	9.4010	94.01	2144.36	1.50	
PFHxDA	49873.497	7.568	M2PFHxDA	29092	7.565	85.98	17.5842	87.92	944.15	1.47	
NMeFOSAA	33643.312	5.329	d3-NMeFOSAA	9493	5.328	99.63	10.9480	109.48	3201.66	1.31	
PFBA	89252.755	0.505	MPFBA	40085	0.511	113.44	8.6375	86.37	763.54	1.62	
PFBS	32870.491	2.475	M3PFBS	16145	2.473	136.87	6.6094	74.68	1477.15	1.10	
NMeFOSA	26600.971	5.917	d-NMeFOSA	15761	5.917	93.75	18.1209	90.60	739.01	1.67	
PFDA	86727.842	5.187	M6PFDA	34570	5.186	111.85	8.3181	83.18	3168.91	1.53	
PFDoA	69441.706	5.818	MPFDoA	39084	5.818	103.80	8.5861	85.86	5706.74	1.25	
NEtFOSA	21658.781	6.216	d-NEtFOSA	8915	6.205	75.12	17.6327	88.16	998.88	1.64	
PFHpA	69846.064	4.067	M4PFHpA	41372	4.067	117.24	8.2639	82.64	1597.29	1.49	
PFHxA	67983.247	3.493	M5PFHxA	30180	3.490	112.35	8.5366	85.37	507.66	1.53	
NMeFOSE	38443.077	5.954	d7-NMeFOSE	23236	5.943	99.86	15.8237	79.12	4724.44	1.44	
PFHxS	42292.552	4.137	M3PFHxS	11499	4.136	115.16	8.2088	90.01	1229.82	1.48	m
PFNA	68934.316	4.864	M9PFNA	26864	4.863	100.88	8.2410	82.41	658.63	1.69	
NEtFOSE	35771.036	6.233	d9-NEtFOSE	21880	6.212	105.25	14.8388	74.19	1417.59	1.27	
PFOA	60309.289	4.500	M8PFOA	22537	4.499	107.44	9.4956	94.96	1175.62	1.62	
PFOS	41653.936	4.883	M8PFOS	5209	4.882	110.53	8.7815	94.88	1205.32	1.75	m
PFPeA	35751.143	1.637	M5PFPeA	18244	1.635	108.50	8.3344	83.34	224.17	1.22	
PFMPA	72073.174	0.755	M5PFPeA	18244	1.635	108.50	17.3669	86.83	2239.82	1.40	
PFTA	49011.897	6.603	M2PFTA	29745	6.603	93.59	9.2862	92.86	773.92	1.49	
PFMBA	67306.941	2.510	M5PFHxA	30180	3.490	112.35	16.4763	82.38	3012.91	1.27	
PFTrDA	82289.117	6.179	MPFDoA	39084	5.818	103.80	9.8306	98.31	1082.48	1.68	
PFEESA	174451.559	3.253	M3PFHxS	11499	4.136	115.16	16.4454	92.39	11049.66	1.34	
PFUnA	106369.601	5.486	M7PFUnA	59979	5.485	114.30	8.2964	82.96	2816.67	1.90	
NFDHA	70379.877	3.382	M4PFHpA	41372	4.067	117.24	17.2671	86.34	5825.71	1.30	

HFPO-DA



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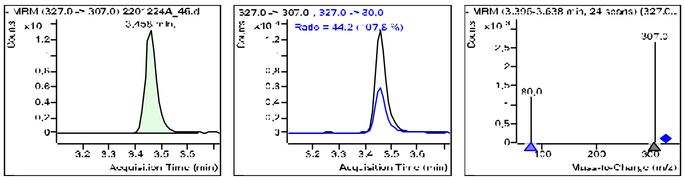

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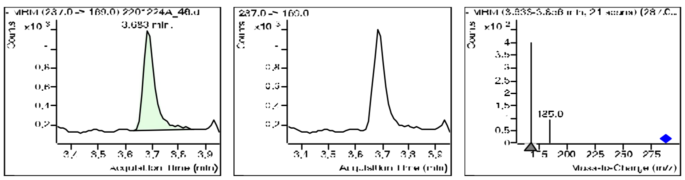

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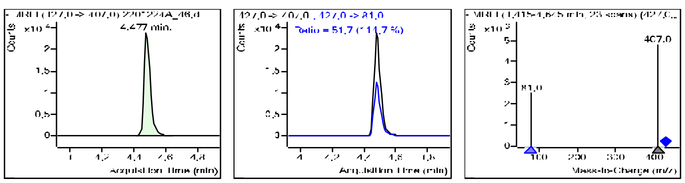
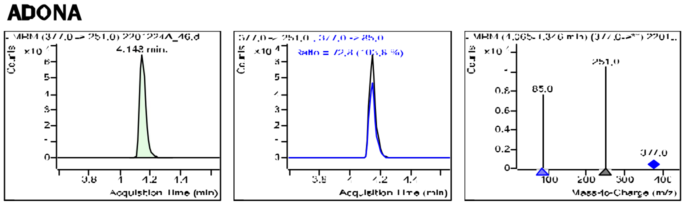


ADONA



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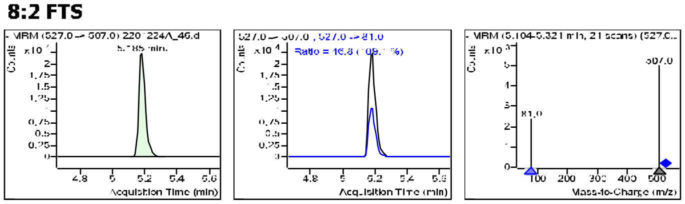

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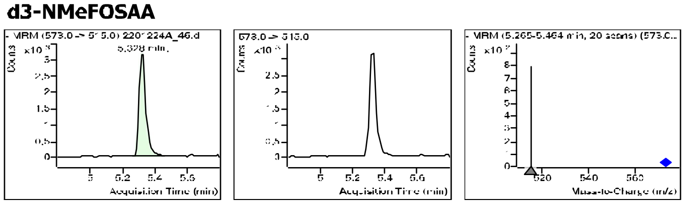

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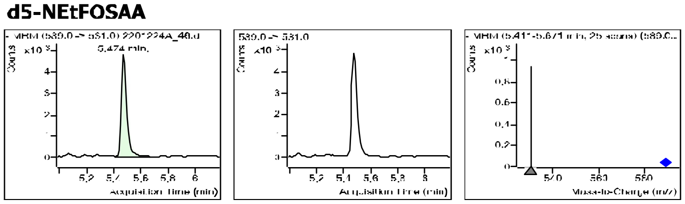

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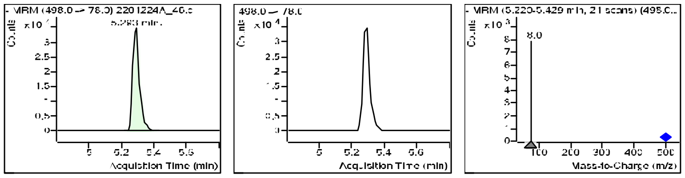

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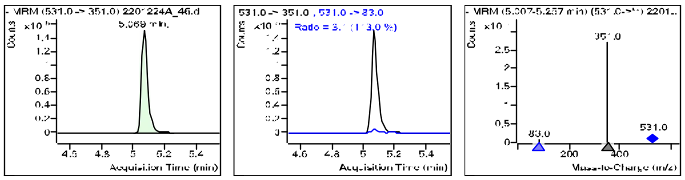

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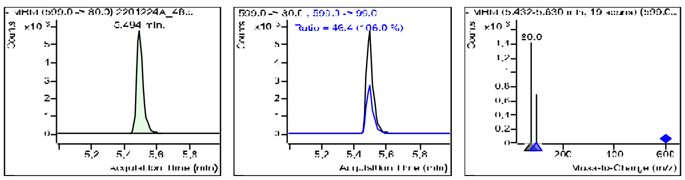

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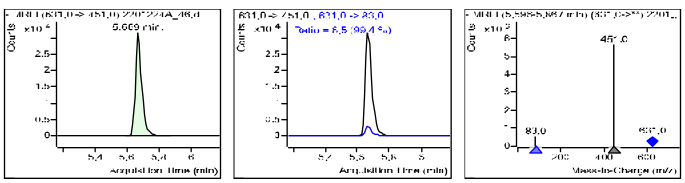

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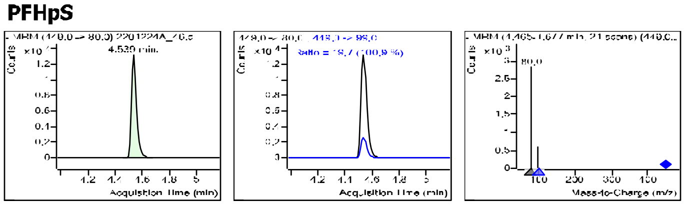
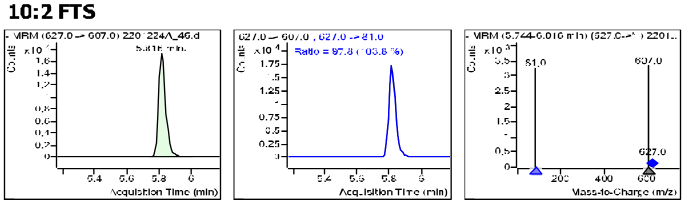


10:2 FTS



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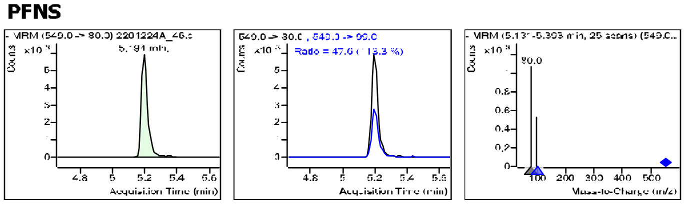

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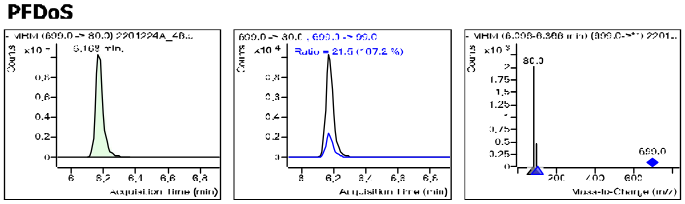

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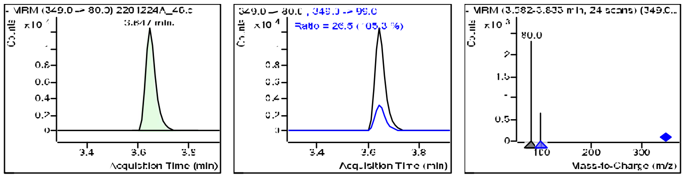

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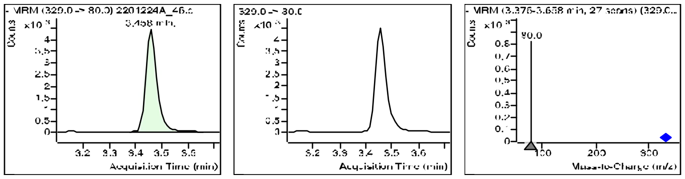
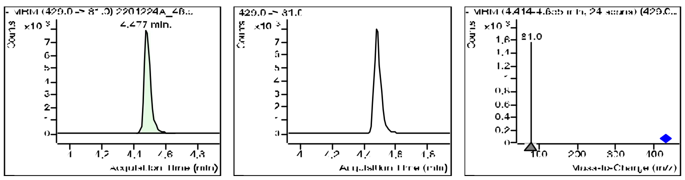
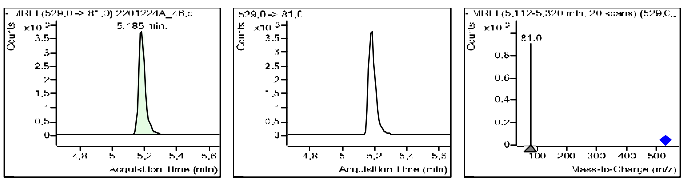


M2 6:2 FTS



M2 8:2 FTS



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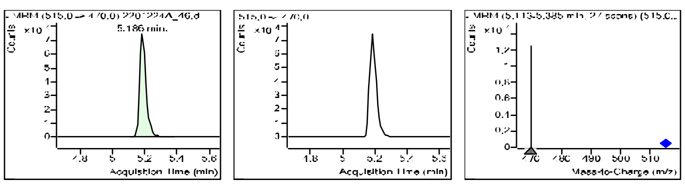

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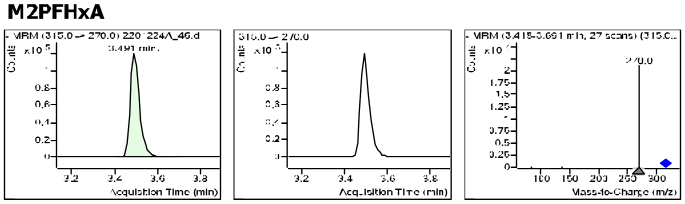

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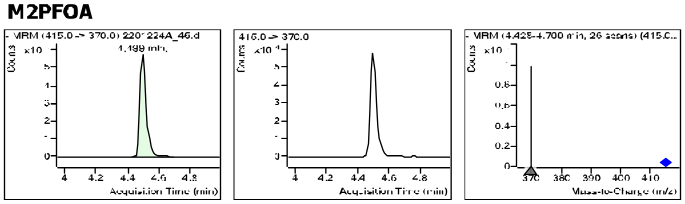

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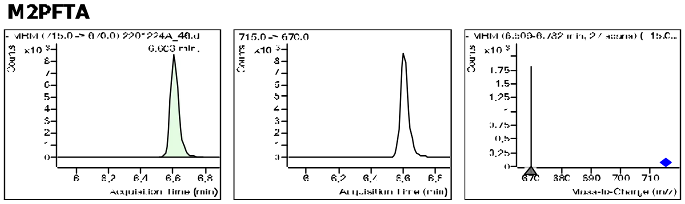

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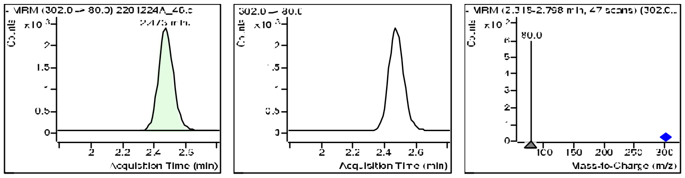

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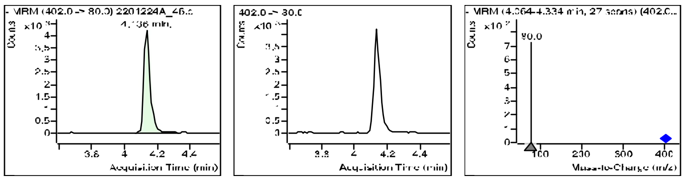

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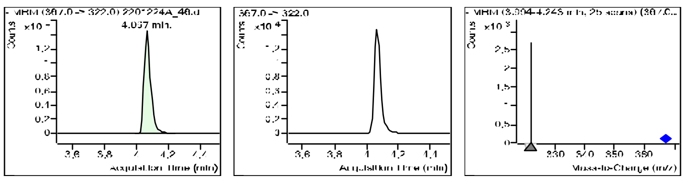

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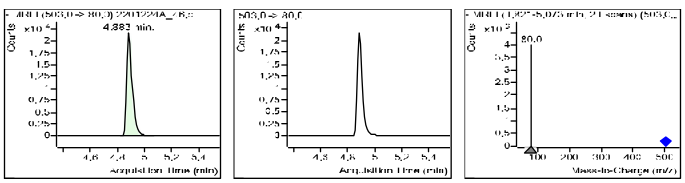

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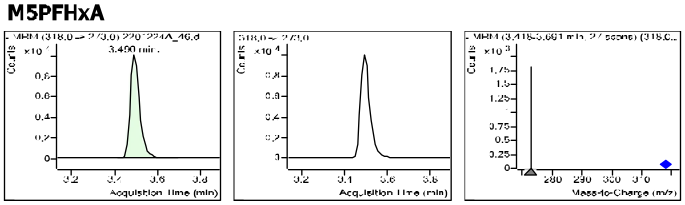

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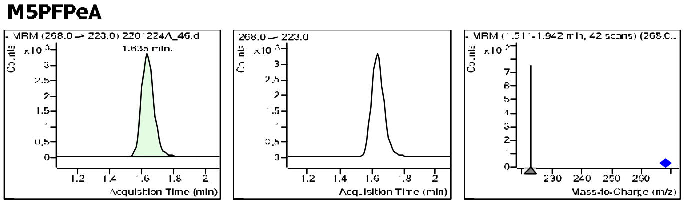

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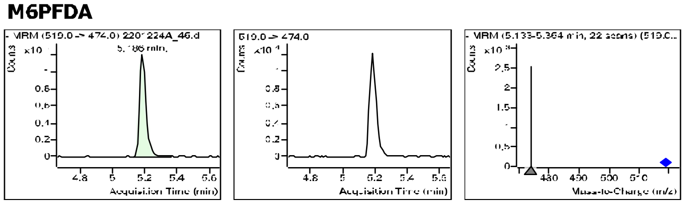

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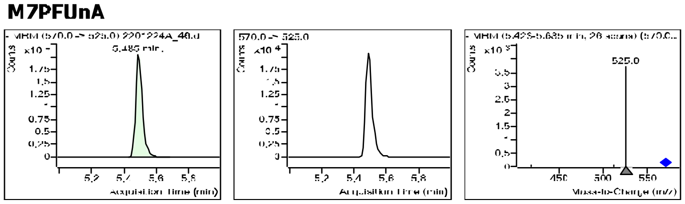

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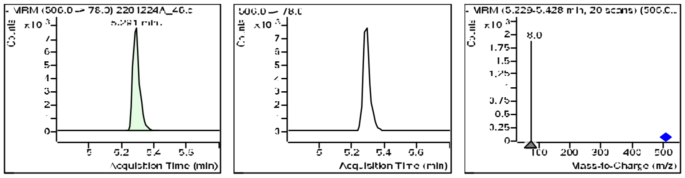

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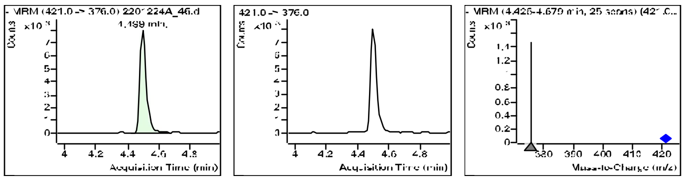

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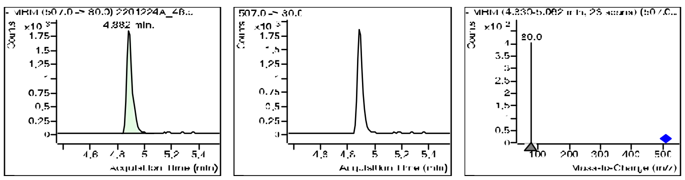

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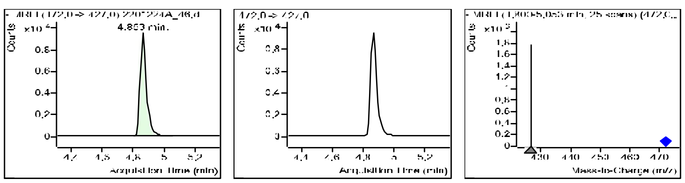

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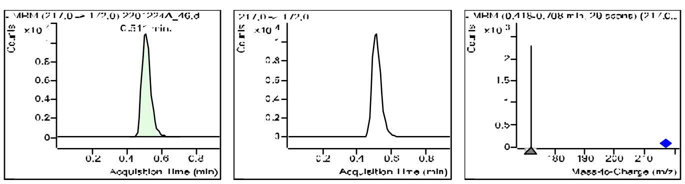

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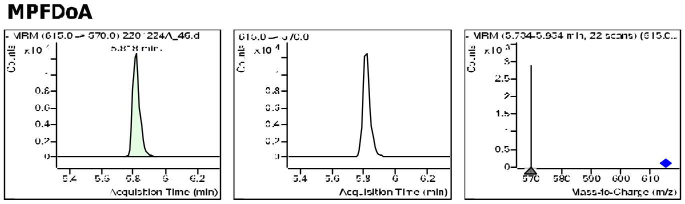

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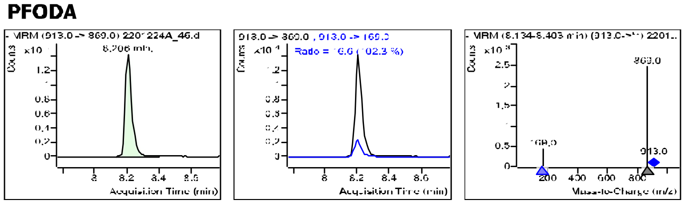

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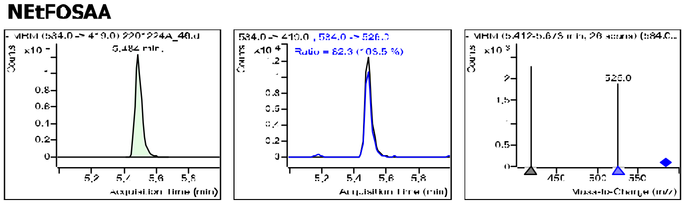

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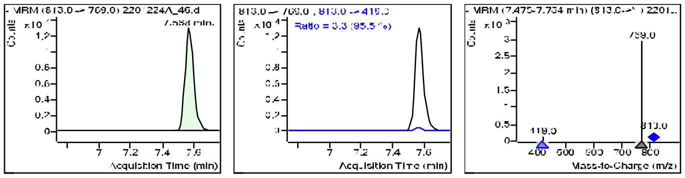

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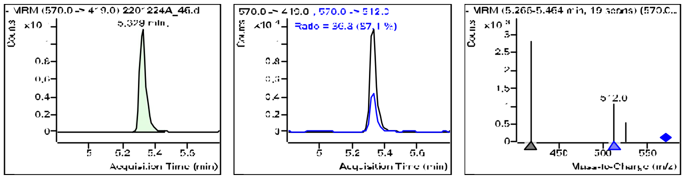

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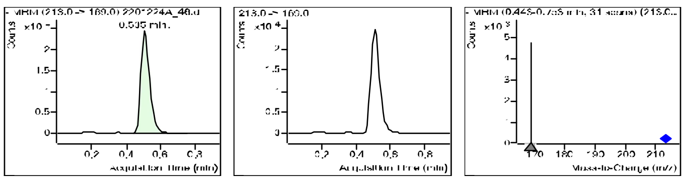

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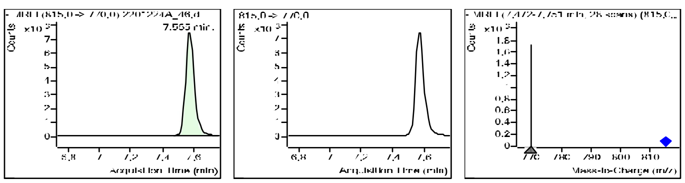

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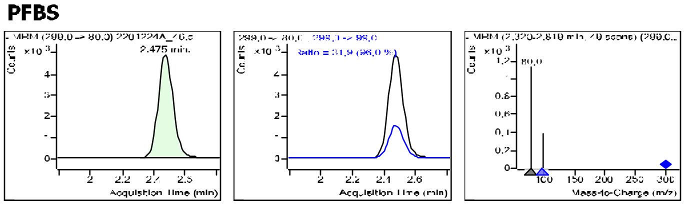

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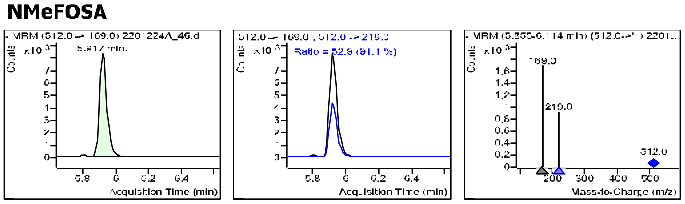

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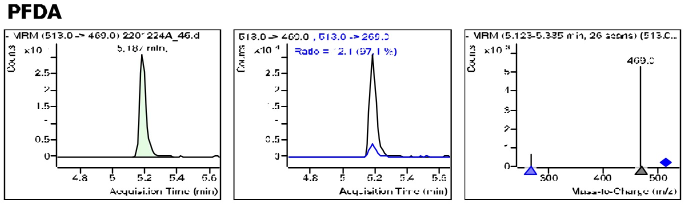

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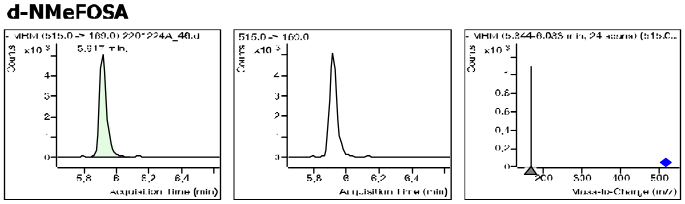

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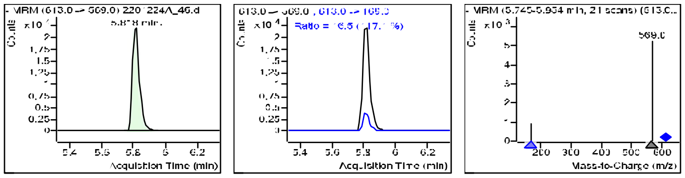

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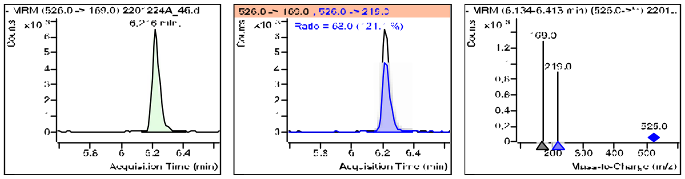

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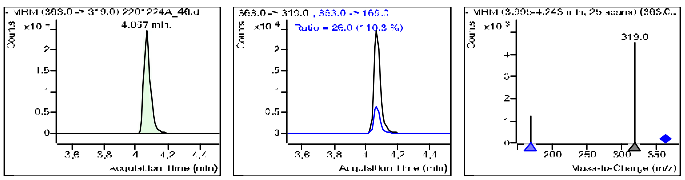

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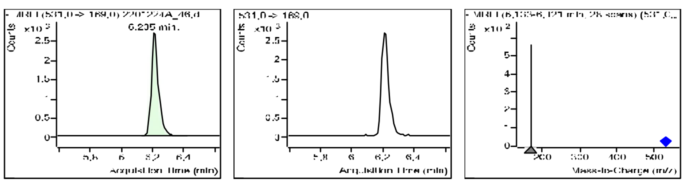

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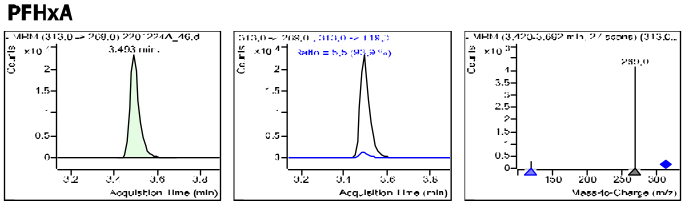

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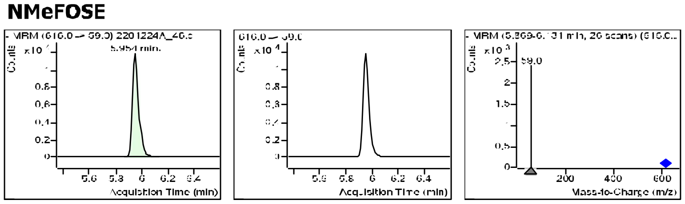

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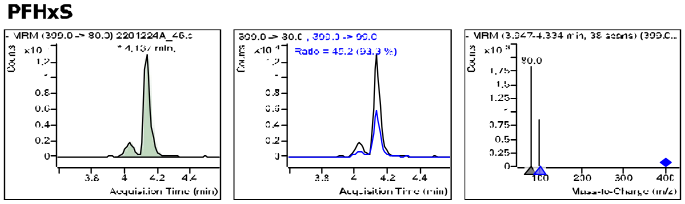

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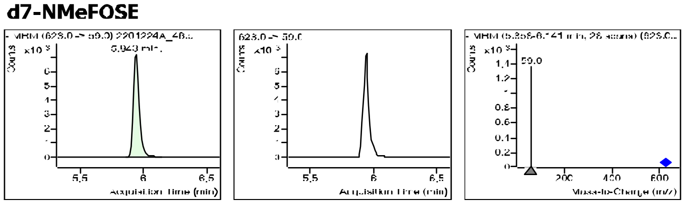

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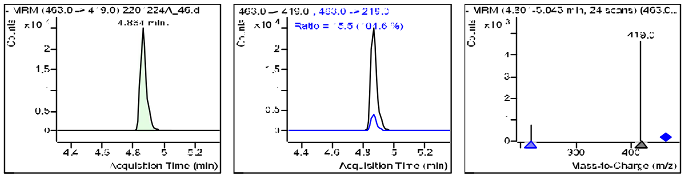

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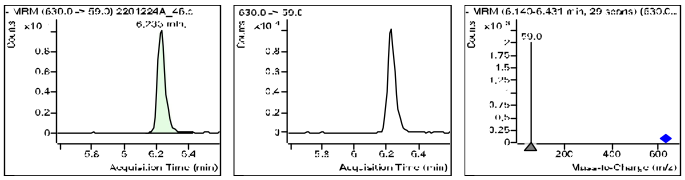

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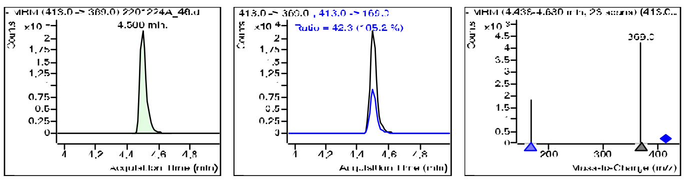

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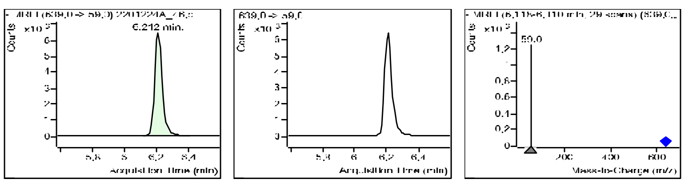

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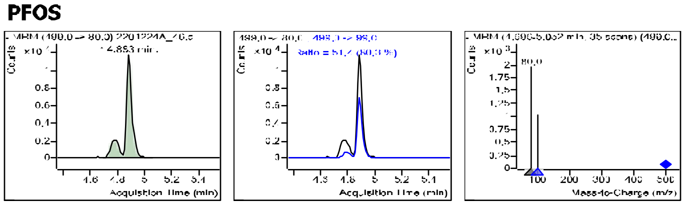

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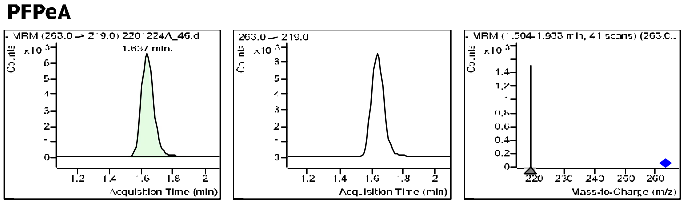

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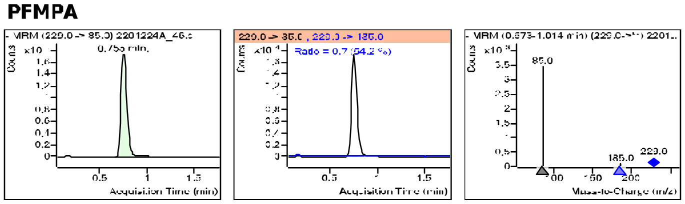

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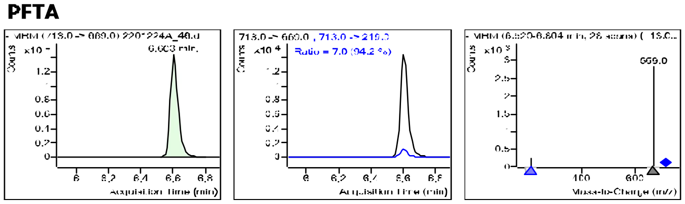

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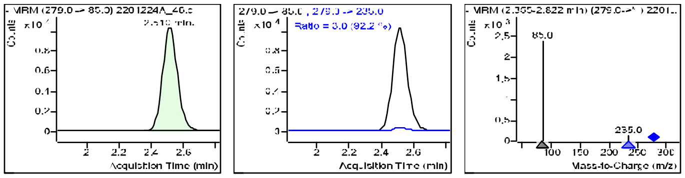

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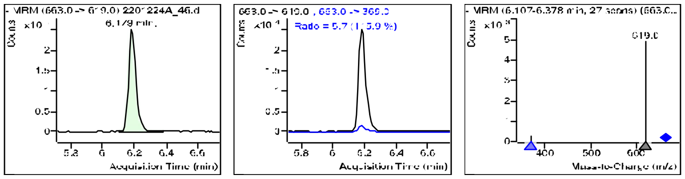

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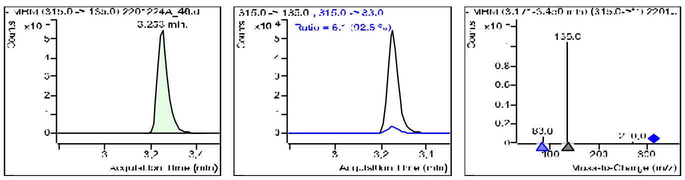

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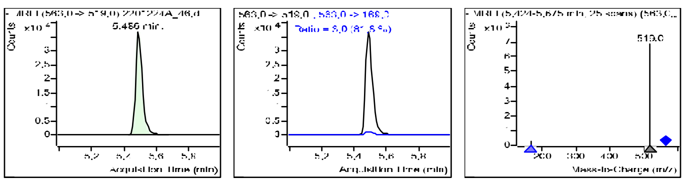

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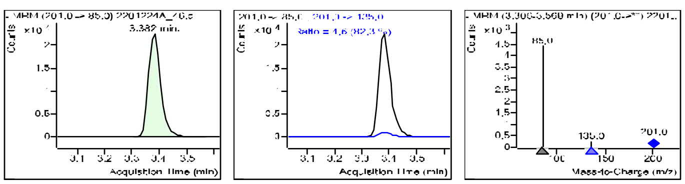

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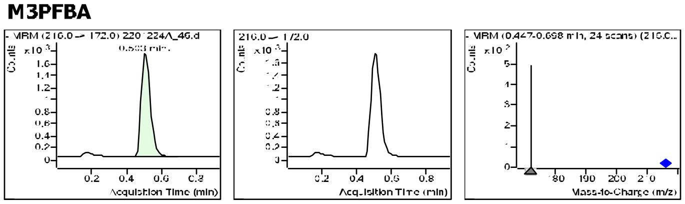

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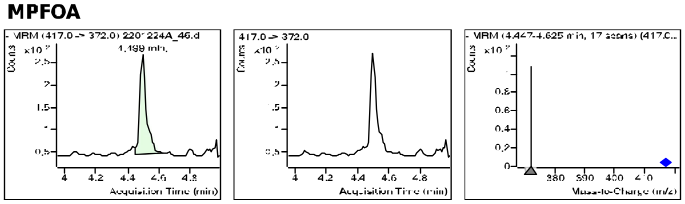


1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 6, EXP 12, IMP 3A REP A-F-
Collect Date:	05/27/20 Time: 0300	GCAL Sample ID:	22012227908
Matrix:	Water % Moisture: NA	Instrument ID:	QQQ1
Sample Amt:	125 mL	Lab File ID:	2201224A_47.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	12/24/20 Time: 2337
Prep Batch:	700361	Analytical Batch:	700789
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
27619-97-2	6:2 Fluorotelomersulfonic acid	70.5		1.79	4.00	10.0
39108-34-4	8:2 Fluorotelomersulfonic acid	78.4		1.63	4.00	10.0
375-73-5	Perfluorobutanesulfonic acid	53.4		1.47	4.00	10.0
375-22-4	Perfluorobutanoic acid	71.5		2.13	4.00	10.0
335-76-2	Perfluorodecanoic acid	69.8		1.65	4.00	10.0
375-85-9	Perfluoroheptanoic acid	72.6		1.85	4.00	10.0
355-46-4	Perfluorohexanesulfonic acid	69.4		1.64	4.00	10.0
307-24-4	Perfluorohexanoic acid	68.9		1.94	4.00	10.0
375-95-1	Perfluorononanoic acid	71.4		1.68	4.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	65.3		1.70	4.00	10.0
335-67-1	Perfluorooctanoic acid	77.3		1.80	4.00	10.0
2706-90-3	Perfluoropentanoic acid	67.7		2.35	4.00	10.0
2058-94-8	Perfluoroundecanoic acid	72.7		1.86	4.00	10.0

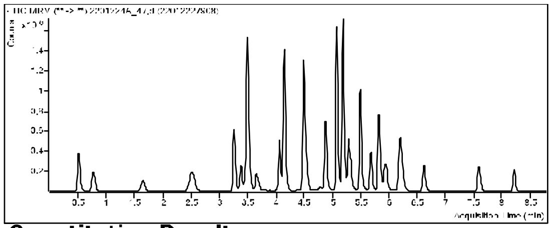
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path	D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update	12/24/2020 15:17

Data File	2201224A_47.d	**Position**	Vial 40	**Samp Name**	22012227908	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	QC	**Comment**	MRA,QQQ1;700361
Acq Date	12/24/2020 23:37						

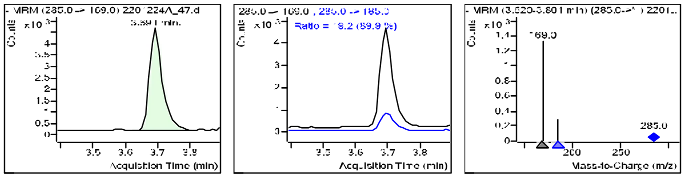
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	203696.140	5.186				119.04	23.8085	119.04	3582.17	1.70	
M2PFHxA	340552.690	3.501				127.75	51.0989	127.75	7927.12	1.31	
M2PFOA	159378.236	4.499				126.14	25.2287	126.14	13387.95	1.78	
M4PFOS	59819.808	4.883				122.91	24.5820	122.91	10591.14	1.96	
M3PFBA	6602.082	0.513				0.00	5.1377	102.75	194.47	1.19	
MPFOA	468.638	4.509				0.00	23.0014	92.01	25.98	0.97	
HFPO-DA	12357.009	3.694	M3HFPODA	3275	3.693	111.67	29.6364	98.79	120.59	1.44	
4:2 FTS	38840.728	3.458	M2 4:2 FTS	12893	3.458	116.43	7.6918	82.27	279.09	1.93	
6:2 FTS	71770.219	4.487	M2 6:2 FTS	23561	4.487	107.38	8.8103	92.74	587.79	1.28	
ADONA	192974.002	4.148	M8PFOA	23659	4.499	112.79	9.2648	92.65	16517.16	1.63	
8:2 FTS	70788.349	5.185	M2 8:2 FTS	10910	5.185	105.94	9.8011	102.10	3561.43	1.33	
FOSA	115919.458	5.293	M8FOSA	24621	5.291	111.90	10.1129	101.13	3499.84	1.40	
9Cl-PF3ONS	445540.298	5.069	M8PFOS	6038	4.882	128.12	7.6111	76.11	4591.57	1.94	
PFDS	19192.713	5.494	M6PFDA	35522	5.186	114.93	10.2330	106.04	1503.33	1.67	
11Cl-PF3OUdS	102835.330	5.679	M8PFOS	6038	4.882	128.12	7.6662	76.66	10607.67	1.32	
PFHpS	39886.632	4.539	M8PFOA	23659	4.499	112.79	11.0992	116.83	1190.36	1.67	
10:2 FTS	56687.434	5.827	M2 8:2 FTS	10910	5.185	105.94	16.5208	85.69	1258.52	1.40	
PFNS	17963.352	5.194	M9PFNA	27501	4.863	103.27	11.8293	123.22	2070.99	1.82	
PFDoS	46470.647	6.179	M8PFOS	6038	4.882	128.12	15.5653	80.40	2461.48	1.66	
PFPeS	34638.731	3.657	M5PFHxA	31440	3.501	117.04	10.2131	108.65	2753.04	1.25	
PFODA	57595.350	8.216	M2PFHxDA	32365	7.596	95.65	15.8915	79.46	2264.33	1.26	
NEtFOSAA	40100.393	5.484	d5-NEtFOSAA	14752	5.484	117.46	9.6949	96.95	20693.78	1.82	
PFHxDA	61051.859	7.589	M2PFHxDA	32365	7.596	95.65	19.3488	96.74	1258.41	1.50	
NMeFOSAA	34530.597	5.329	d3-NMeFOSAA	9664	5.328	101.42	11.0382	110.38	4024.78	1.45	
PFBA	91817.591	0.505	MPFBA	39864	0.511	112.81	8.9349	89.35	2175.50	1.69	
PFBS	33998.536	2.485	M3PFBS	16542	2.483	140.23	6.6725	75.40	1810.47	1.17	
NMeFOSA	26546.947	5.928	d-NMeFOSA	15776	5.927	93.84	18.0658	90.33	879.55	1.46	
PFDA	93513.088	5.187	M6PFDA	35522	5.186	114.93	8.7285	87.29	1823.45	1.68	
PFDoA	77387.228	5.818	MPFDoA	40693	5.818	108.07	9.1901	91.90	7058.12	1.65	
NEtFOSA	22905.791	6.227	d-NEtFOSA	9480	6.216	79.88	17.5365	87.68	1129.93	1.60	
PFHpA	78414.231	4.067	M4PFHpA	42321	4.067	119.92	9.0696	90.70	1149.61	1.81	
PFHxA	71500.707	3.503	M5PFHxA	31440	3.501	117.04	8.6184	86.18	266.56	1.24	
NMeFOSE	38064.045	5.954	d7-NMeFOSE	22177	5.943	95.31	16.4161	82.08	3179.08	1.92	
PFHxS	46148.712	4.137	M3PFHxS	11874	4.136	118.91	8.6747	95.12	3573.11	1.75	m
PFNA	76393.676	4.864	M9PFNA	27501	4.863	103.27	8.9214	89.21	503.57	1.88	
NEtFOSE	36126.797	6.244	d9-NEtFOSE	20801	6.223	100.06	15.7635	78.82	1618.13	1.21	
PFOA	64407.450	4.500	M8PFOA	23659	4.499	112.79	9.6601	96.60	998.35	1.75	
PFOS	44902.933	4.883	M8PFOS	6038	4.882	128.12	8.1666	88.24	4883.08	1.98	m
PFPeA	37362.115	1.637	M5PFPeA	18783	1.635	111.71	8.4597	84.60	351.54	1.40	
PFMPA	75595.456	0.766	M5PFPeA	18783	1.635	111.71	17.6922	88.46	4033.23	1.30	
PFTA	56540.959	6.614	M2PFTA	31123	6.623	97.92	10.2383	102.38	4562.17	1.77	
PFMBA	71540.381	2.531	M5PFHxA	31440	3.501	117.04	16.8106	84.05	5204.56	1.05	
PFTrDA	89105.515	6.190	MPFDoA	40693	5.818	108.07	10.2240	102.24	707.96	1.61	
PFEESA	181695.307	3.253	M3PFHxS	11874	4.136	118.91	16.5880	93.19	5457.99	1.76	
PFUnA	116370.415	5.496	M7PFUnA	59872	5.496	114.09	9.0927	90.93	1825.51	1.33	
NFDHA	73399.291	3.382	M4PFHpA	42321	4.067	119.92	17.6041	88.02	427.96	1.68	

HFPO-DA



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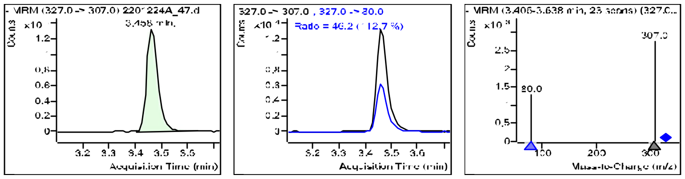

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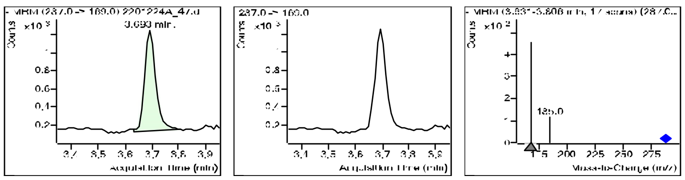

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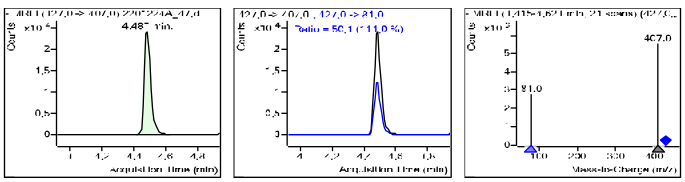

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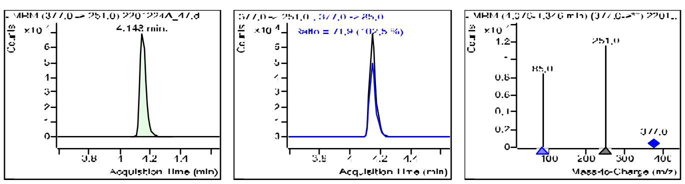

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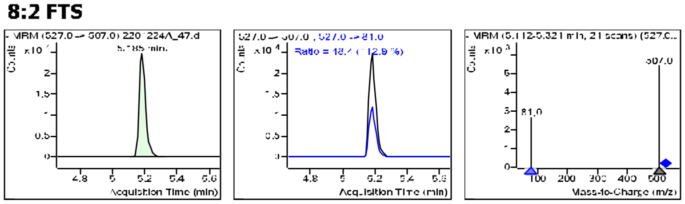

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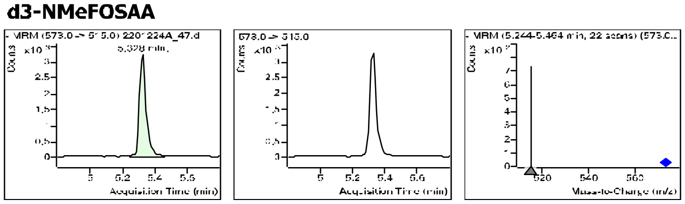

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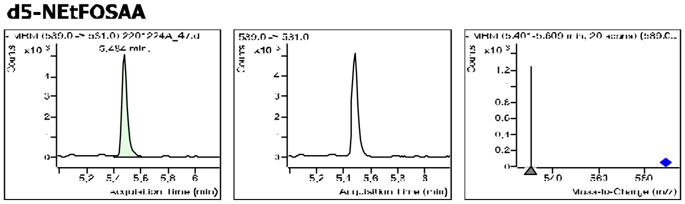

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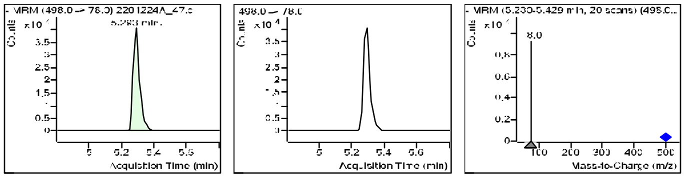

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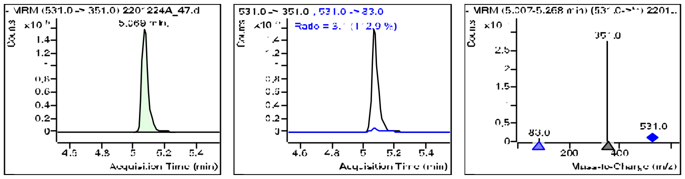

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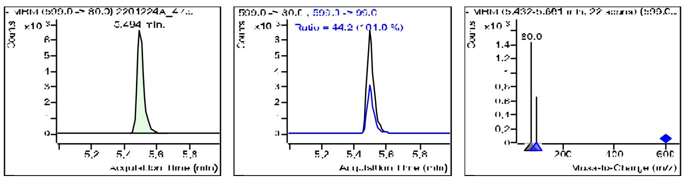

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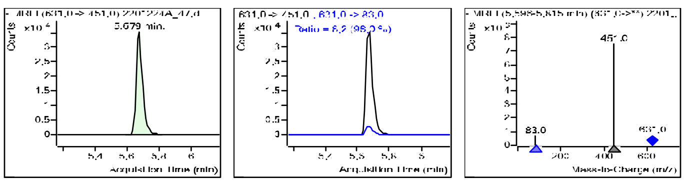

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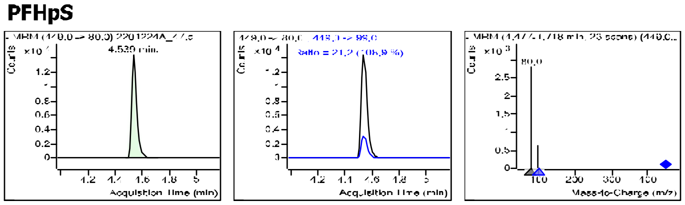

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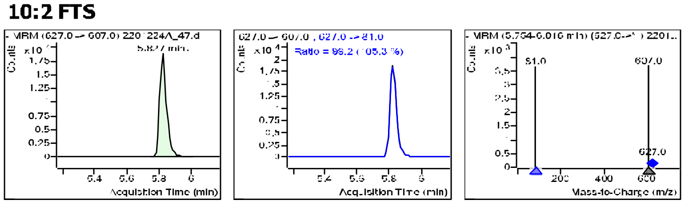

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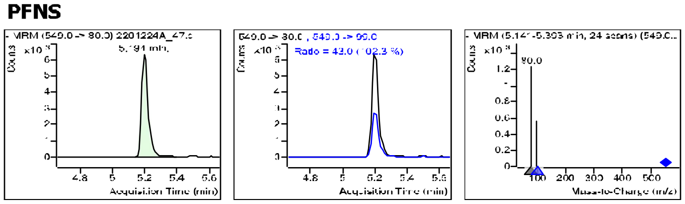

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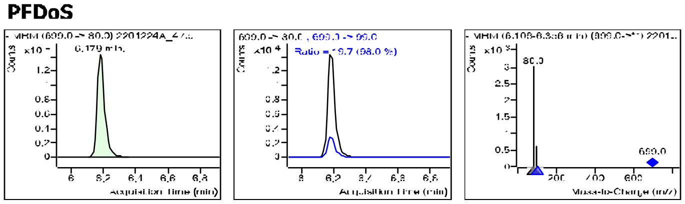

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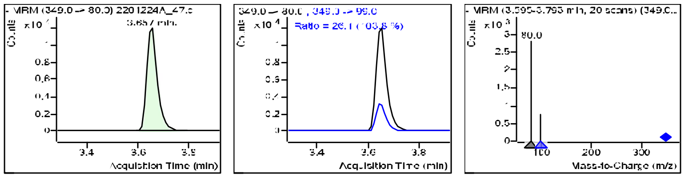

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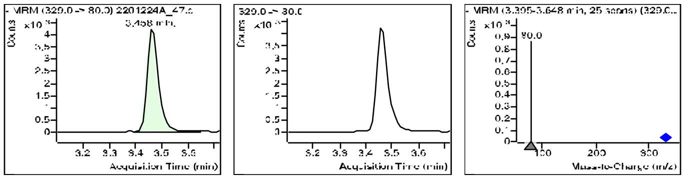

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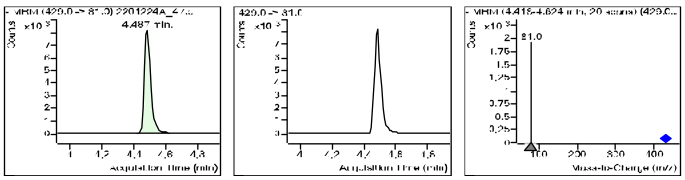

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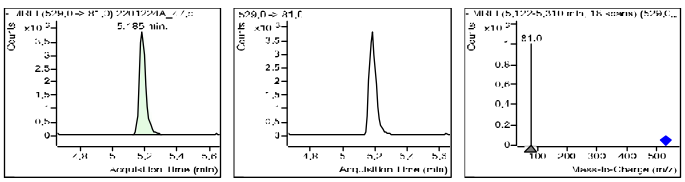

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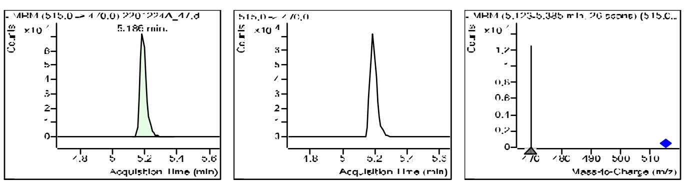

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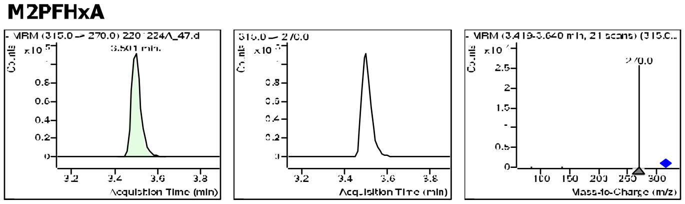

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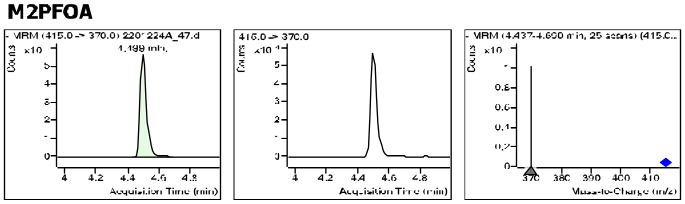

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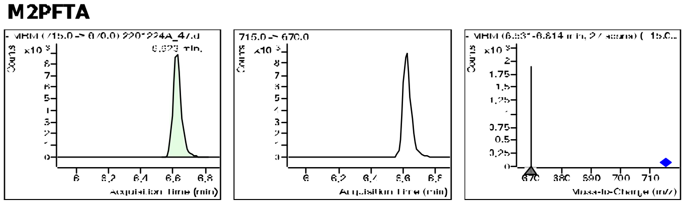

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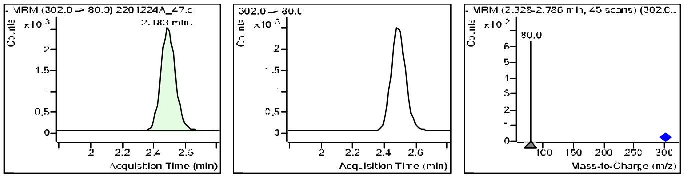

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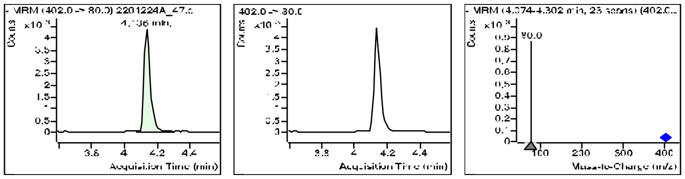

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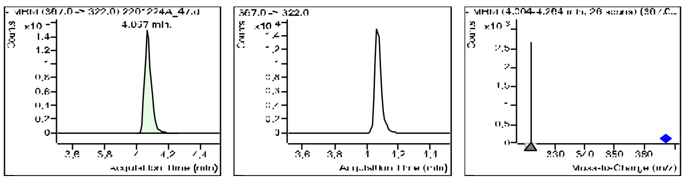

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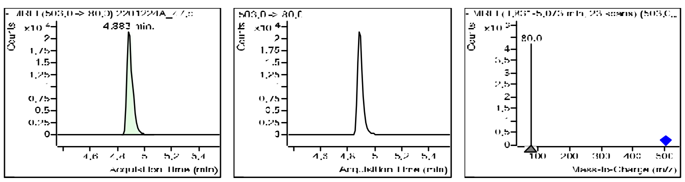

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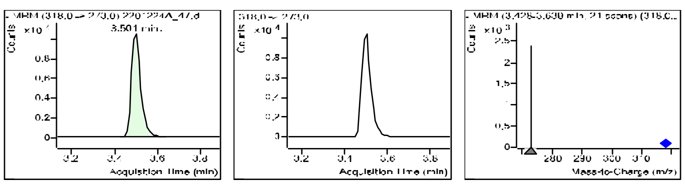

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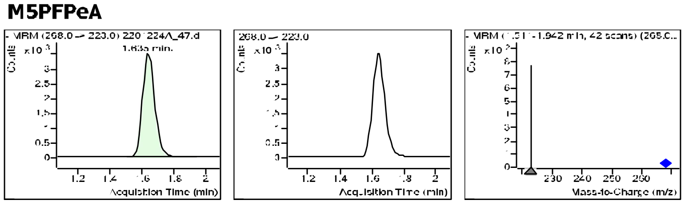

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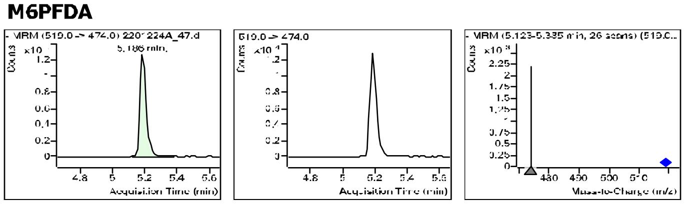

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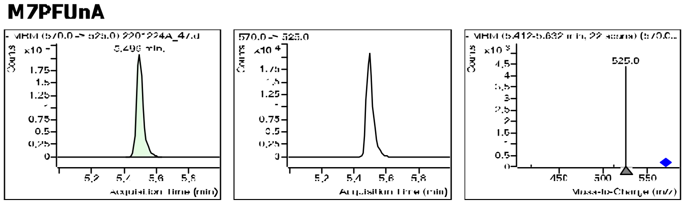

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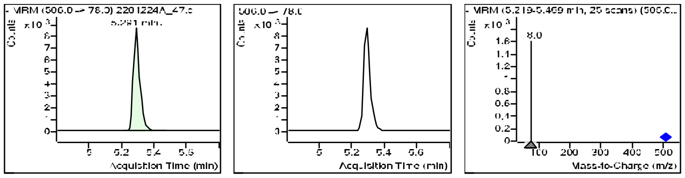

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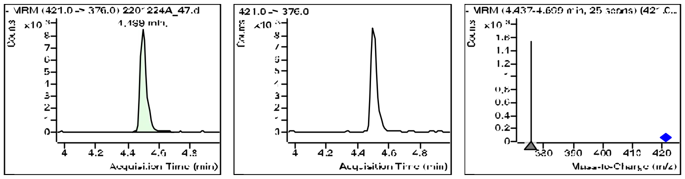

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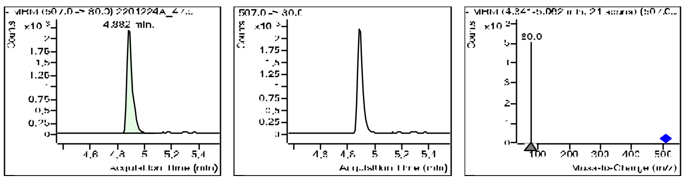

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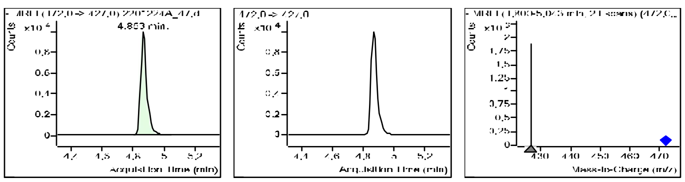

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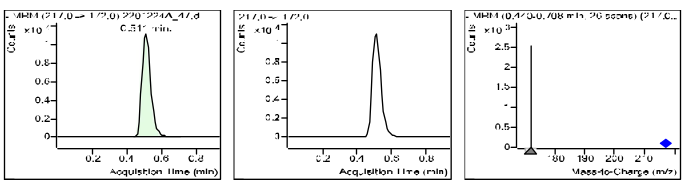

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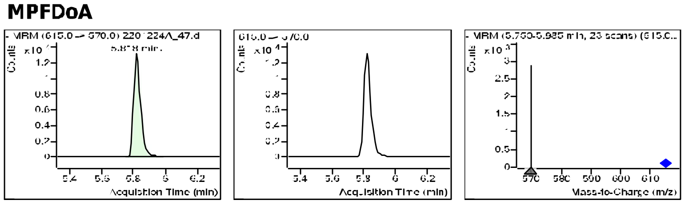

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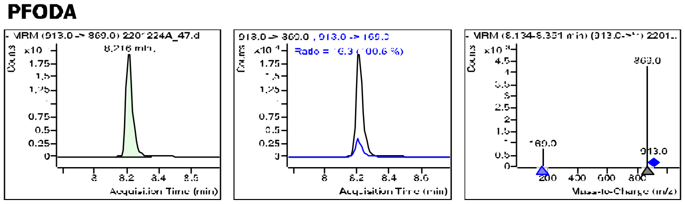

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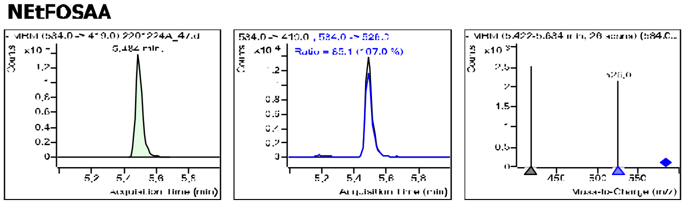

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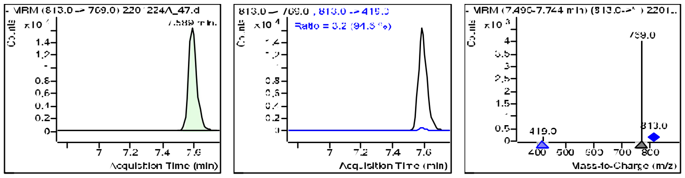

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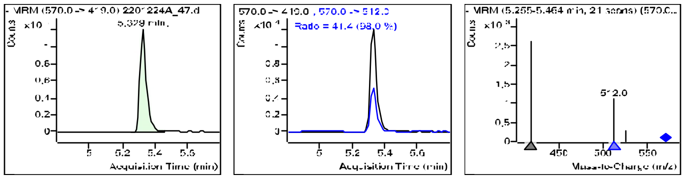

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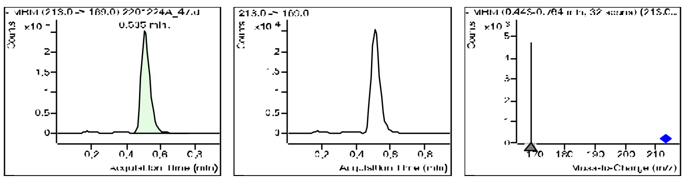

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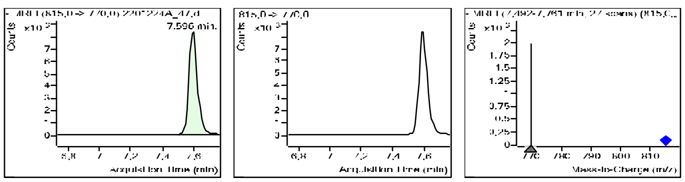

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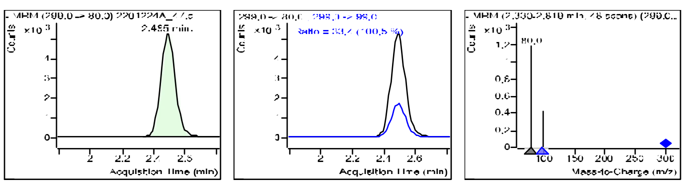

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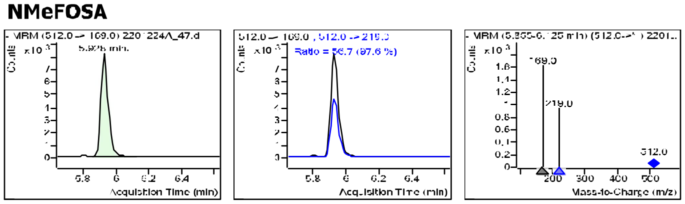

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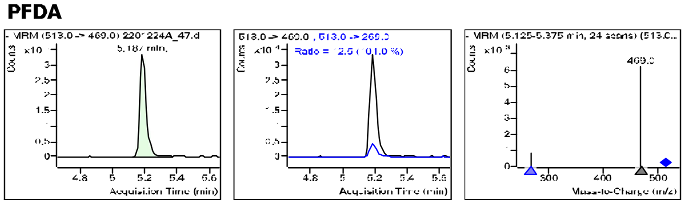

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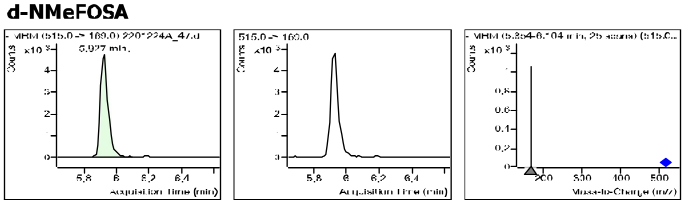

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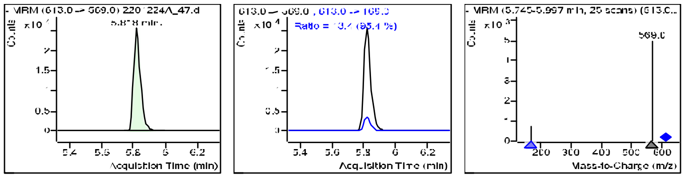

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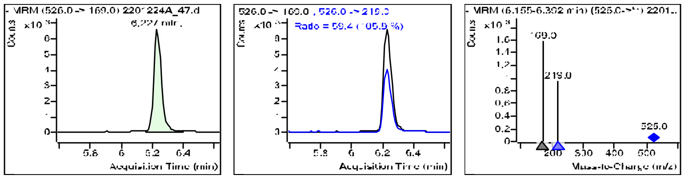

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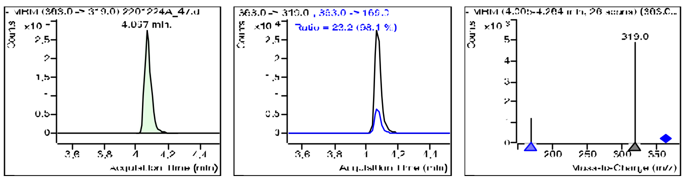

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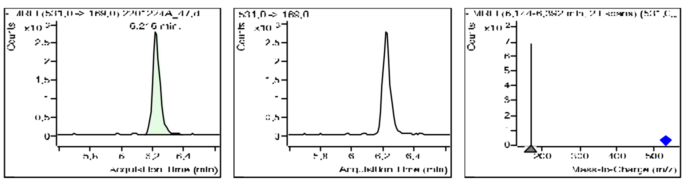

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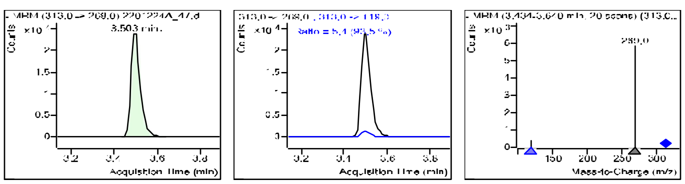

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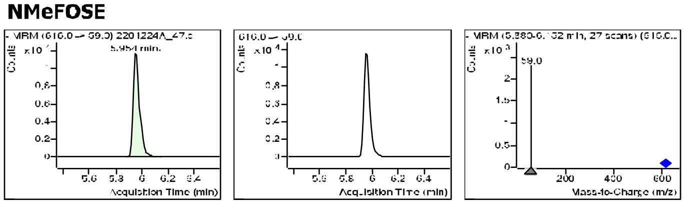

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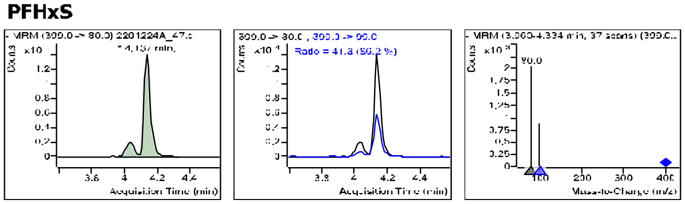

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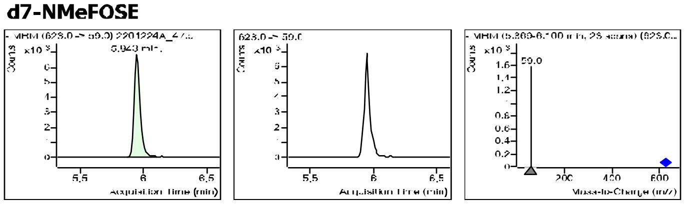

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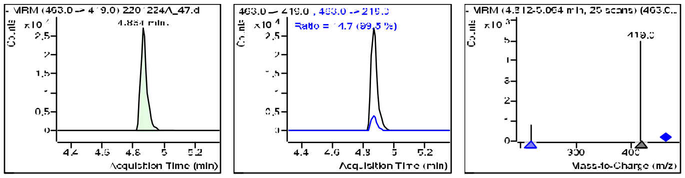

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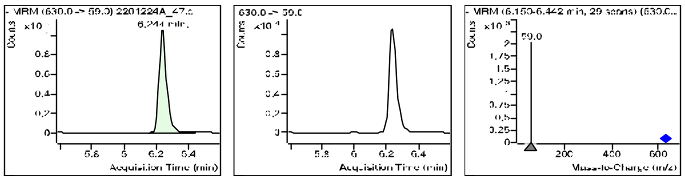

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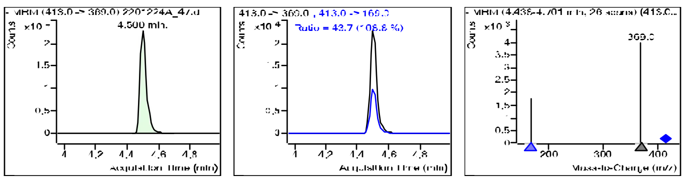

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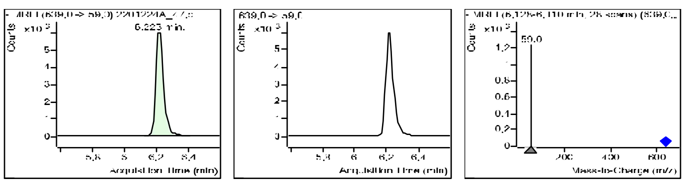

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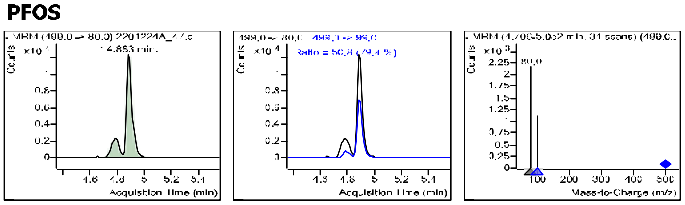

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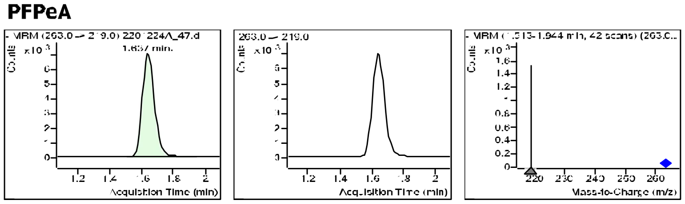

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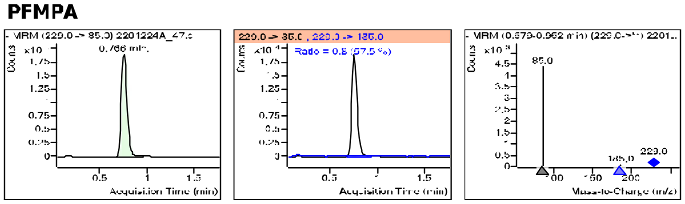

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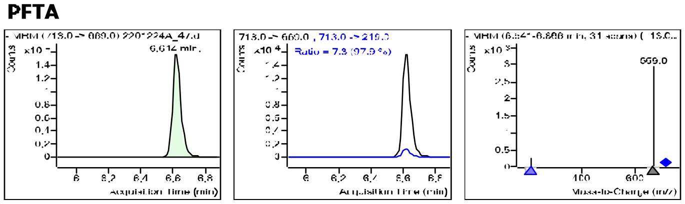

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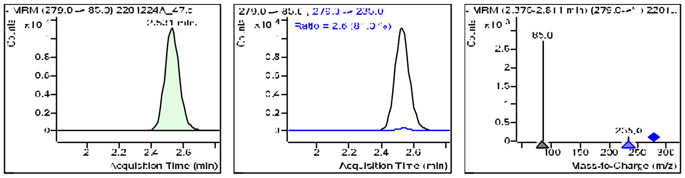

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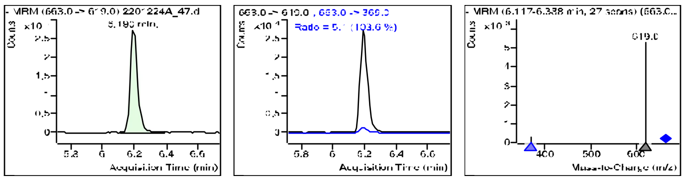

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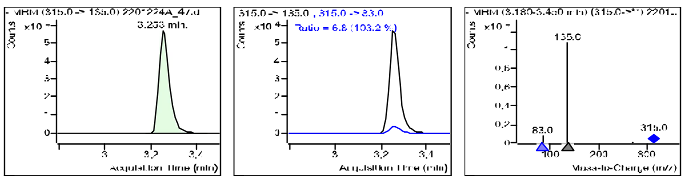

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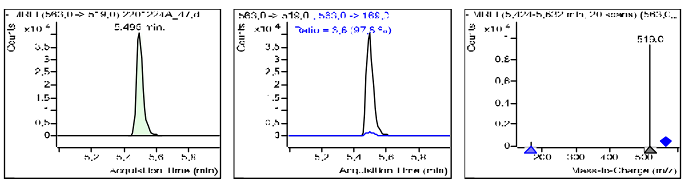

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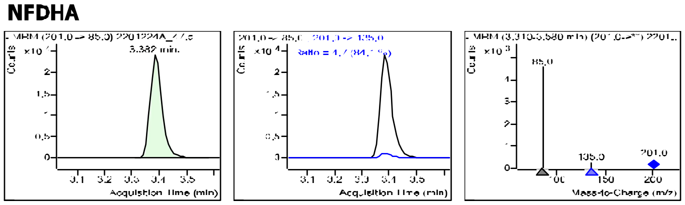

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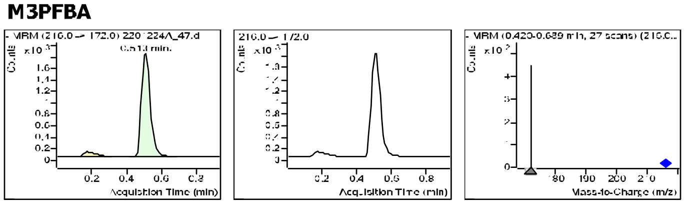
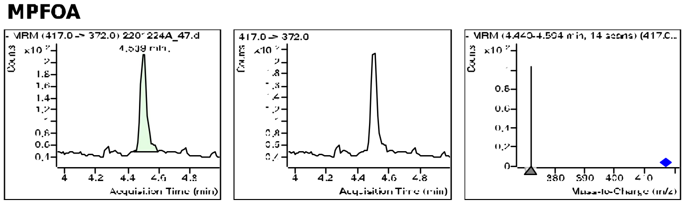


MPFOA



1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 7, EXP 13, IMP 1A REP A,B
Collect Date:	06/04/20 Time: 1100	GCAL Sample ID:	22012227909
Matrix:	Water % Moisture: NA	Instrument ID:	QQQ1
Sample Amt:	125 mL	Lab File ID:	2201224A_48.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	12/24/20 Time: 2351
Prep Batch:	700361	Analytical Batch:	700789
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
27619-97-2	6:2 Fluorotelomersulfonic acid	4.00	U	1.79	4.00	10.0
39108-34-4	8:2 Fluorotelomersulfonic acid	4.00	U	1.63	4.00	10.0
375-73-5	Perfluorobutanesulfonic acid	4.00	U	1.47	4.00	10.0
375-22-4	Perfluorobutanoic acid	4.00	U	2.13	4.00	10.0
335-76-2	Perfluorodecanoic acid	4.00	U	1.65	4.00	10.0
375-85-9	Perfluoroheptanoic acid	4.00	U	1.85	4.00	10.0
355-46-4	Perfluorohexanesulfonic acid	4.00	U	1.64	4.00	10.0
307-24-4	Perfluorohexanoic acid	4.00	U	1.94	4.00	10.0
375-95-1	Perfluorononanoic acid	4.00	U	1.68	4.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	4.00	U	1.70	4.00	10.0
335-67-1	Perfluorooctanoic acid	4.00	U	1.80	4.00	10.0
2706-90-3	Perfluoropentanoic acid	4.00	U	2.35	4.00	10.0
2058-94-8	Perfluoroundecanoic acid	4.00	U	1.86	4.00	10.0

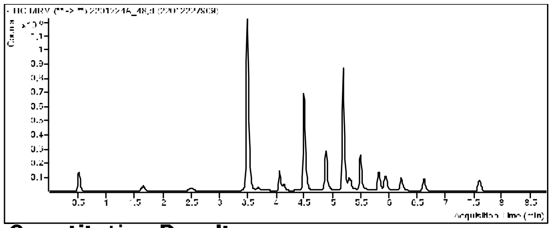
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path	D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update	12/24/2020 15:17

Data File	2201224A_48.d	**Position**	Vial 41	**Samp Name**	22012227909	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ1;700361
Acq Date	12/24/2020 23:51						

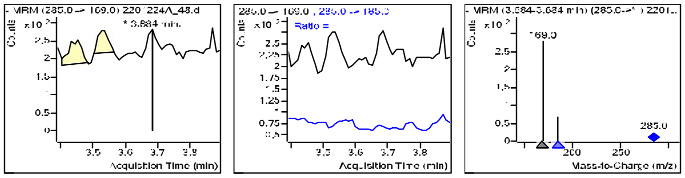
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	206472.239	5.197				120.67	24.1330		3577.09	1.23	
M2PFHxA	335706.707	3.491				125.93	50.3718		17476.39	1.93	
M2PFOA	157513.659	4.499				124.67	24.9336		4054.16	1.96	
M4PFOS	56740.496	4.893				116.58	23.3166		8888.05	1.41	
M3PFBA	6214.708	0.513				0.00	4.8363		258.55	1.32	
MPFOA	504.244	4.509				0.00	24.7491		9.79	1.04	
HFPO-DA	0.000	3.684	M3HFPODA	3106	3.693	105.92			2.16	1.00	m
4:2 FTS	131.401	3.458	M2 4:2 FTS	12805	3.458	115.63	0.0262		3.54	1.77	
6:2 FTS	443.246	4.477	M2 6:2 FTS	22837	4.487	104.08	0.0561		7.95	1.23	
ADONA	295.382	4.159	M8PFOA	21484	4.499	102.42	0.0156		16.27	1.81	
8:2 FTS	247.396	5.185	M2 8:2 FTS	10568	5.185	102.61	0.0354		33.58	1.87	
FOSA	128.361	5.303	M8FOSA	22574	5.291	102.60	0.0122		54.72	1.13	
9Cl-PF3ONS	396.472	5.080	M8PFOS	5474	4.893	116.16	0.0075		26.59	2.10	
PFDS	25.312	5.494	M6PFDA	34800	5.196	112.59	0.0138		5.44	2.53	
11Cl-PF3OUdS	131.723	5.689	M8PFOS	5474	4.893	116.16	0.0108		10.72	1.19	
PFHpS	57.211	4.549	M8PFOA	21484	4.499	102.42	0.0175		2.99	0.99	
10:2 FTS	105.523	5.816	M2 8:2 FTS	10568	5.185	102.61	0.0318		53.97	2.20	
PFNS	46.357	5.205	M9PFNA	26888	4.874	100.97	0.0312		35.54	1.78	
PFDoS	48.679	6.168	M8PFOS	5474	4.893	116.16	0.0180		3.30	2.82	
PFPeS	47.926	3.647	M5PFHxA	28441	3.490	105.88	0.0156		1.38	1.35	
PFODA	136.897	8.227	M2PFHxDA	30882	7.596	91.27	0.0396		11.13	1.42	
NEtFOSAA	60.537	5.495	d5-NEtFOSAA	13037	5.484	103.81	0.0166		36.74	1.54	
PFHxDA	413.678	7.599	M2PFHxDA	30882	7.596	91.27	0.1374		7.87	1.72	
NMeFOSAA	67.762	5.371	d3-NMeFOSAA	11217	5.328	117.72	0.0187		25.17	0.54	
PFBA	1486.734	0.515	MPFBA	37482	0.511	106.07	0.1539		19.40	1.47	
PFBS	31.479	2.516	M3PFBS	15058	2.494	127.65	0.0068		1.86	1.17	
NMeFOSA	8.423	5.875	d-NMeFOSA	15238	5.927	90.64	0.0059		2.34	0.71	
PFDA	491.909	5.197	M6PFDA	34800	5.196	112.59	0.0469		7.10	1.91	
PFDoA	181.247	5.818	MPFDoA	39745	5.818	105.56	0.0220		5.64	1.67	
NEtFOSA	25.418	6.247	d-NEtFOSA	10862	6.216	91.53	0.0170		1.52	1.20	
PFHpA	645.302	4.067	M4PFHpA	38447	4.067	108.95	0.0822		14.50	1.82	
PFHxA	0.000	3.493	M5PFHxA	28441	3.490	105.88			7.26	1.00	m
NMeFOSE	18.012	5.964	d7-NMeFOSE	22709	5.943	97.60	0.0076		1.69	0.72	
PFHxS	122.750	4.137	M3PFHxS	10998	4.136	110.14	0.0249		6.05	1.33	m
PFNA	259.091	4.864	M9PFNA	26888	4.874	100.97	0.0309		1.98	1.57	
NEtFOSE	13.004	6.244	d9-NEtFOSE	21325	6.223	102.58	0.0055		1.26	1.53	
PFOA	603.279	4.500	M8PFOA	21484	4.499	102.42	0.0996		6.18	1.17	m
PFOS	135.216	4.904	M8PFOS	5474	4.893	116.16	0.0271		2.72	1.12	m
PFPeA	603.635	1.637	M5PFPeA	17235	1.645	102.50	0.1490		1.43	1.45	
PFMPA	93.118	0.776	M5PFPeA	17235	1.645	102.50	0.0238		3.42	1.33	
PFTA	257.456	6.614	M2PFTA	30104	6.623	94.72	0.0482		9.87	1.39	
PFMBA	70.241	2.520	M5PFHxA	28441	3.490	105.88	0.0182		3.34	1.02	
PFTrDA	220.351	6.201	MPFDoA	39745	5.818	105.56	0.0259		1.61	4.75	
PFEESA	180.783	3.263	M3PFHxS	10998	4.136	110.14	0.0178		6.78	1.48	
PFUnA	398.458	5.496	M7PFUnA	58250	5.496	111.00	0.0320		11.81	2.15	
NFDHA	43.930	3.372	M4PFHpA	38447	4.067	108.95	0.0116		2.58	1.55	

HFPO-DA



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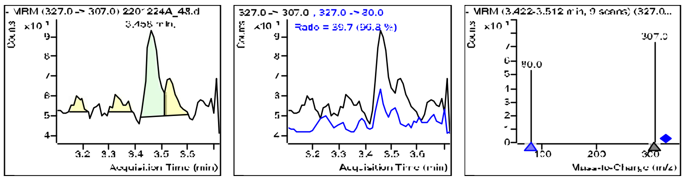

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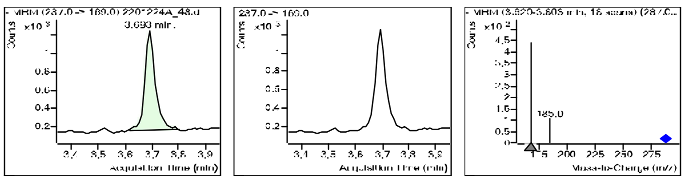
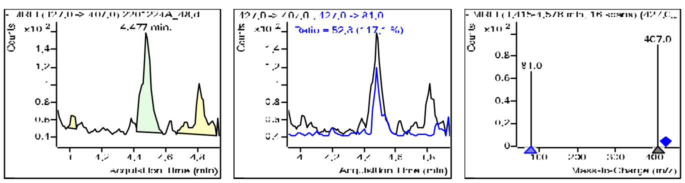


6:2 FTS



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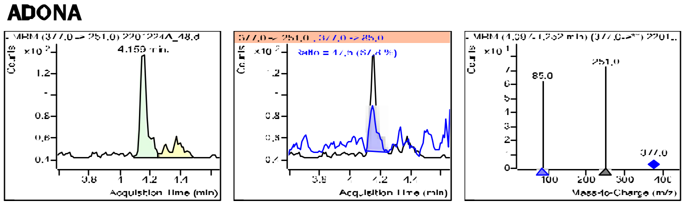
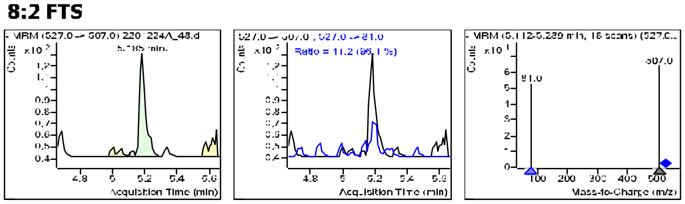


8:2 FTS



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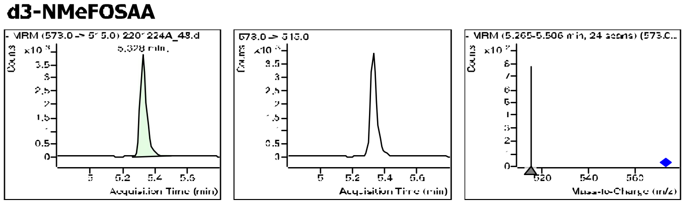

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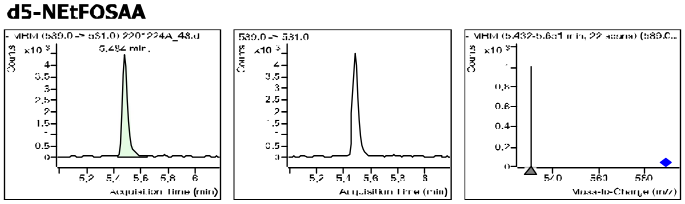

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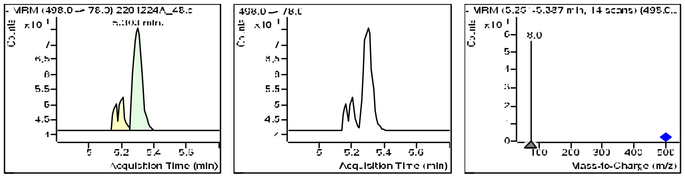

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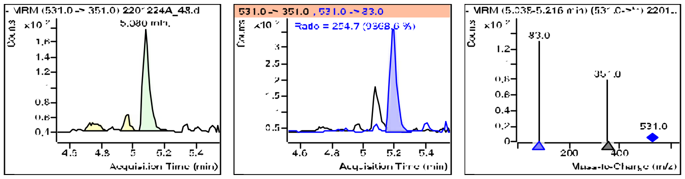

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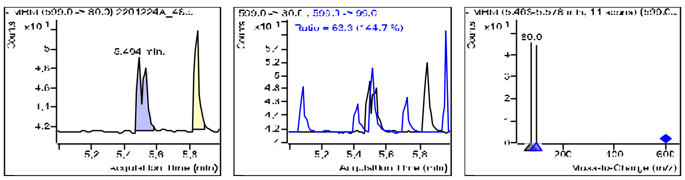

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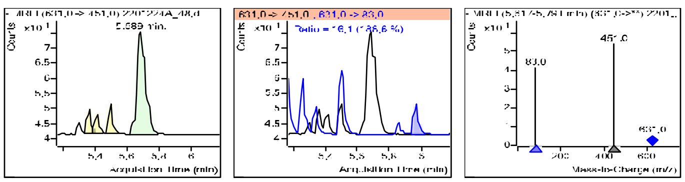

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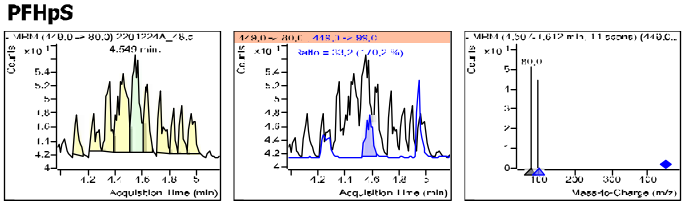
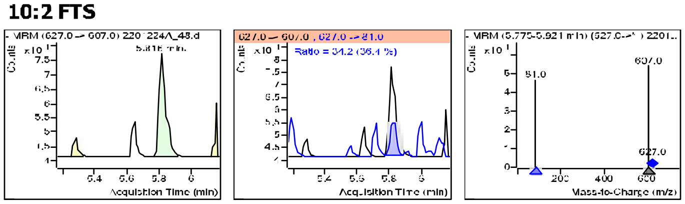


10:2 FTS



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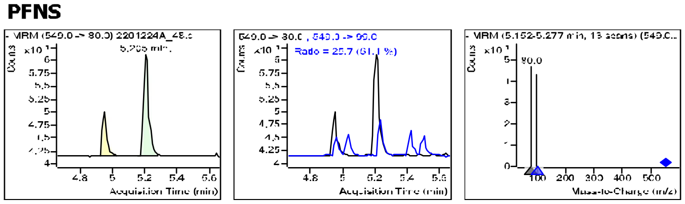

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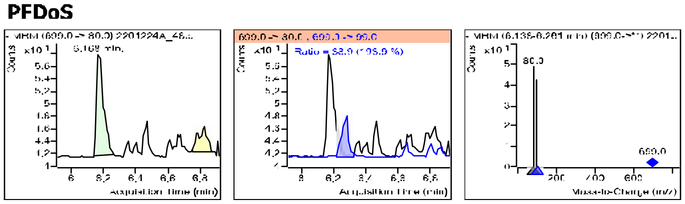

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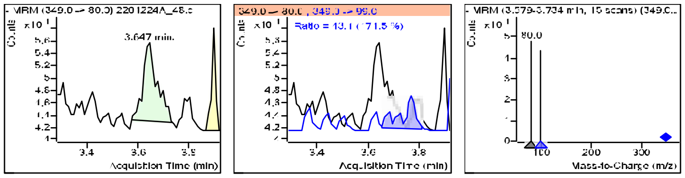

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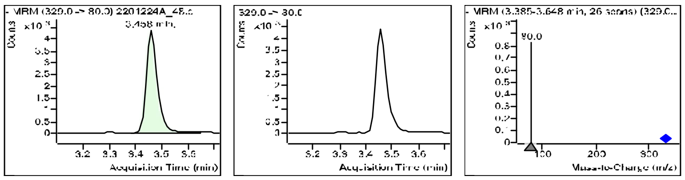
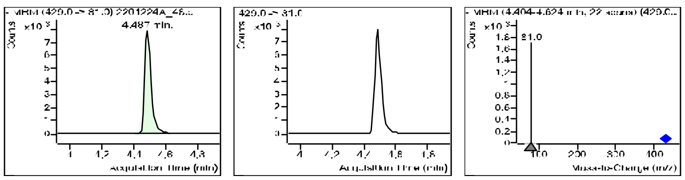
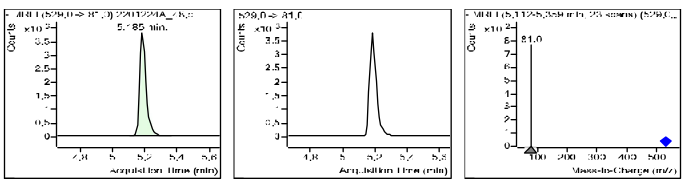


M2 6:2 FTS



M2 8:2 FTS



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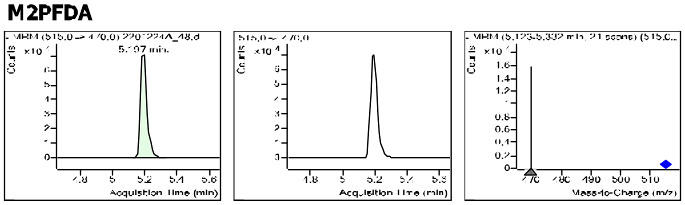

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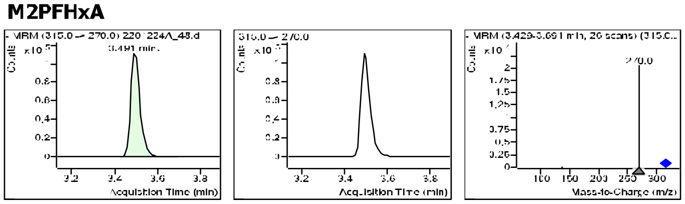

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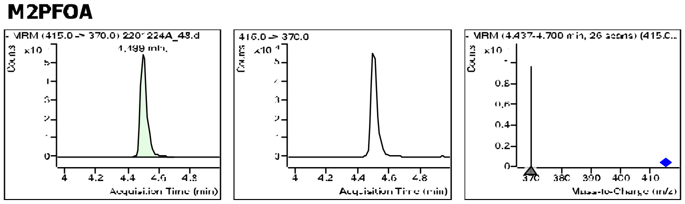

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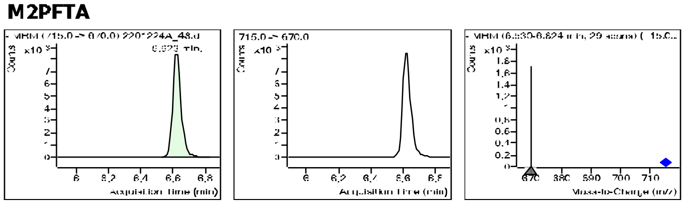

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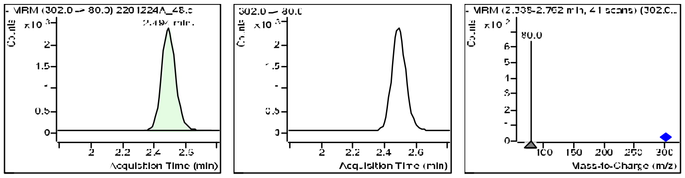

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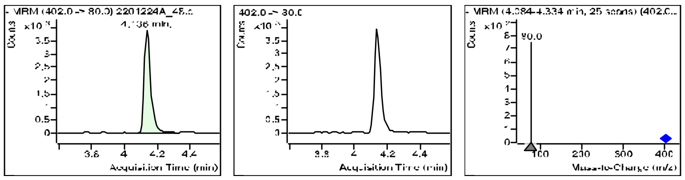

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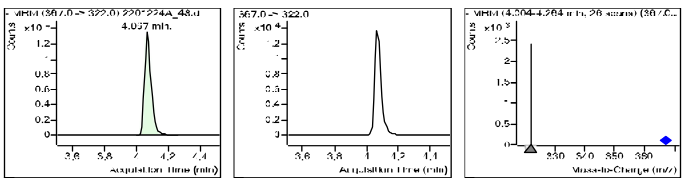

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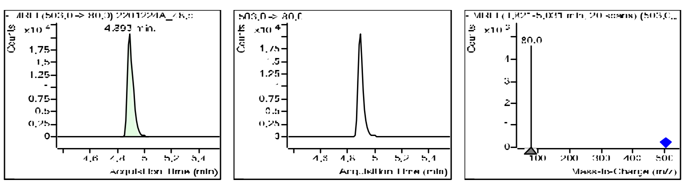

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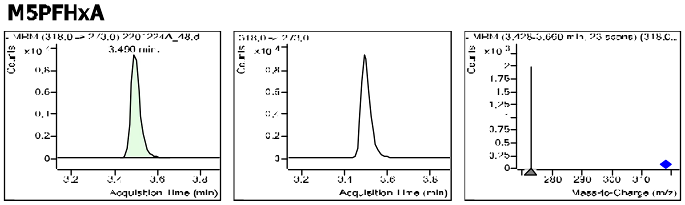

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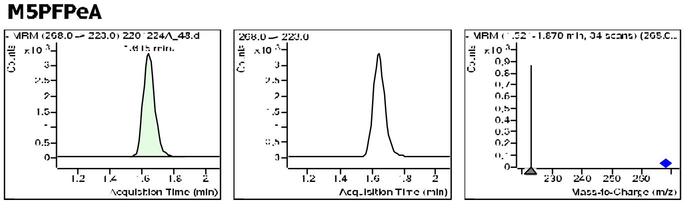

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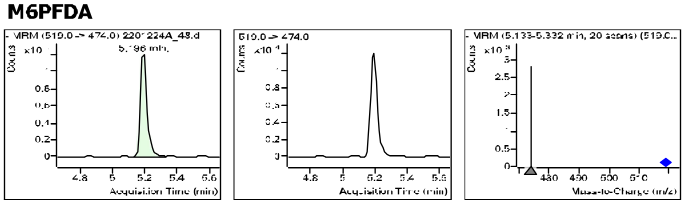

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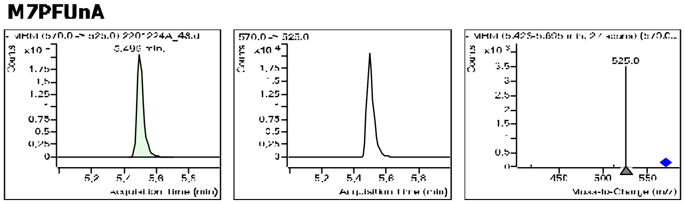
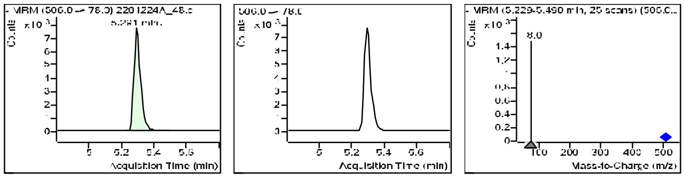


Quantitative Analysis Sample Report

M8FOSA



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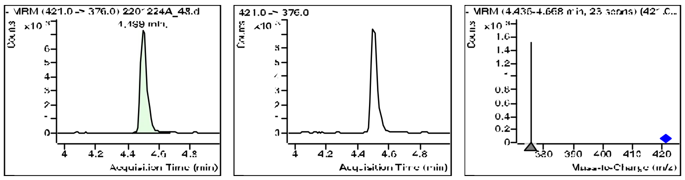

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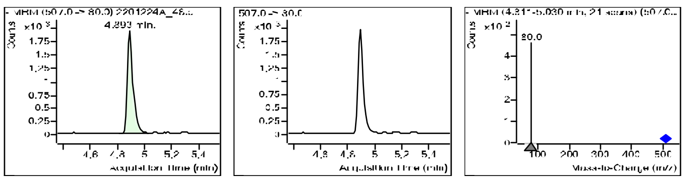

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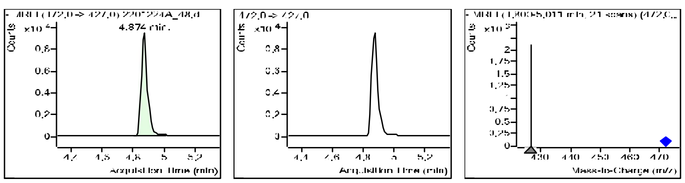

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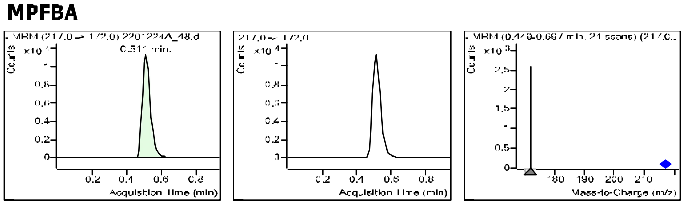

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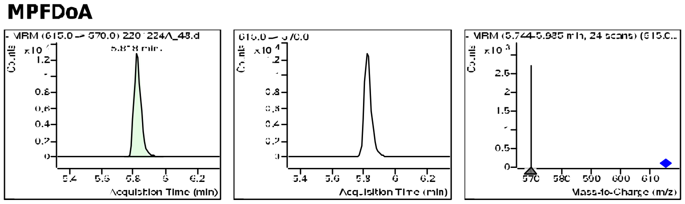

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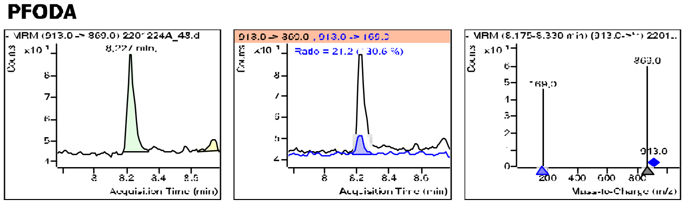

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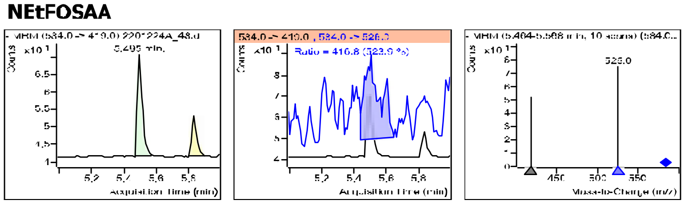
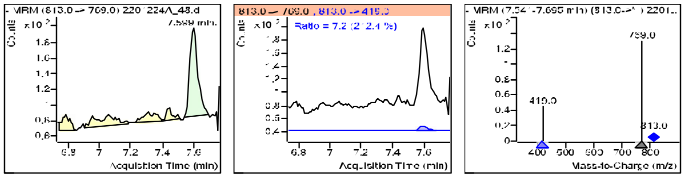


PFHxDA



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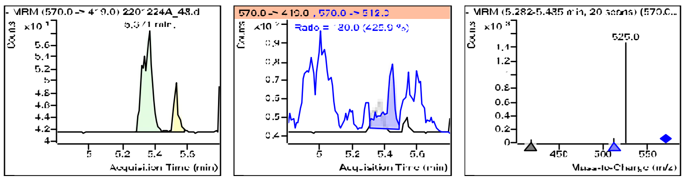

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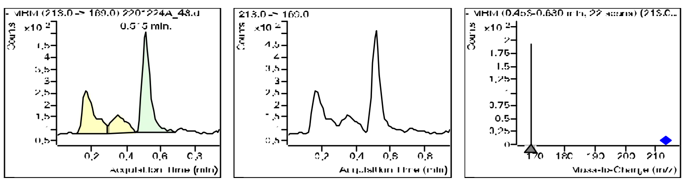

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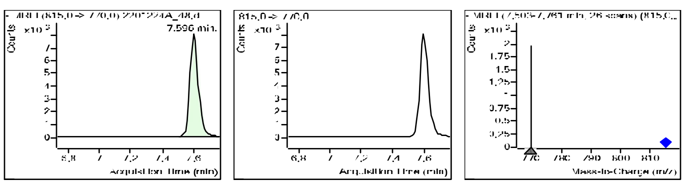

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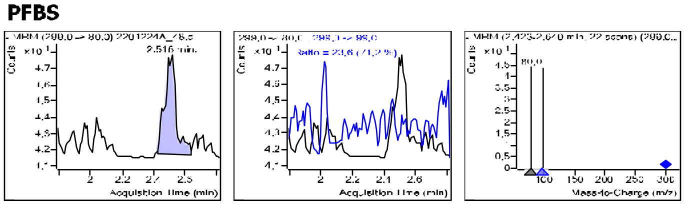

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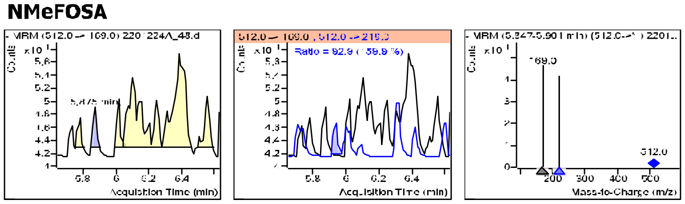

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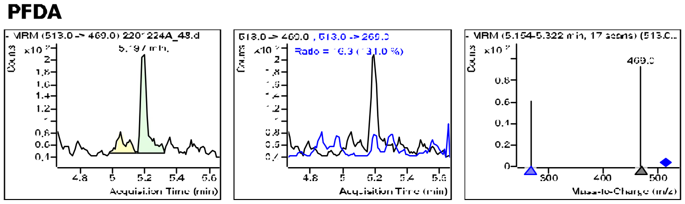

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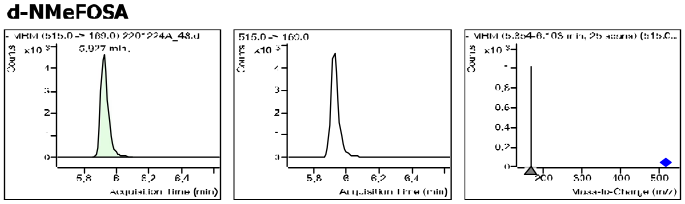

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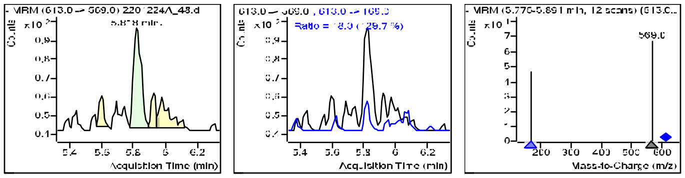

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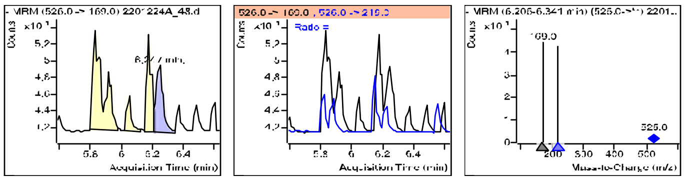

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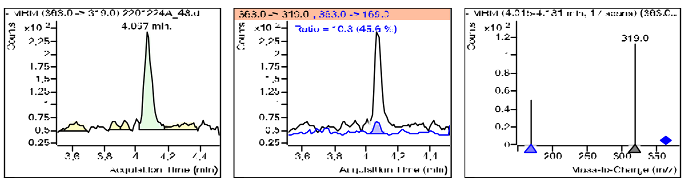

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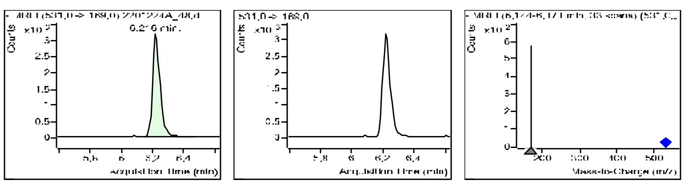

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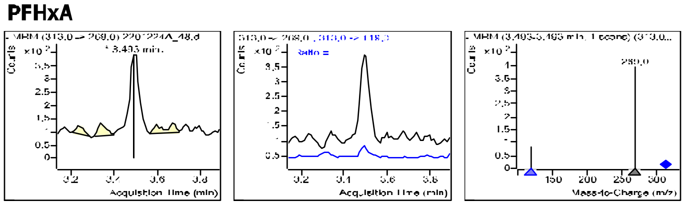

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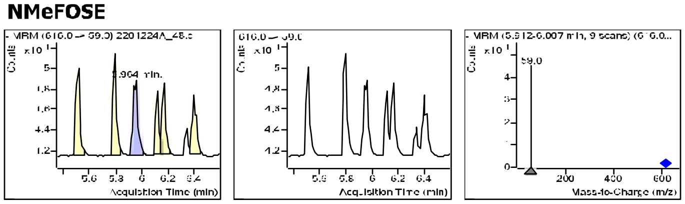

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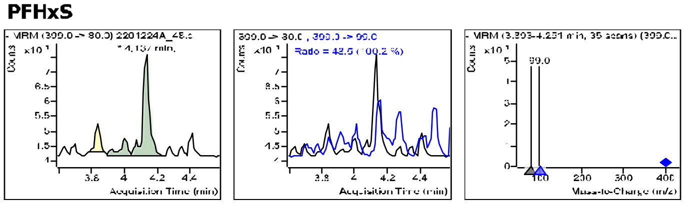

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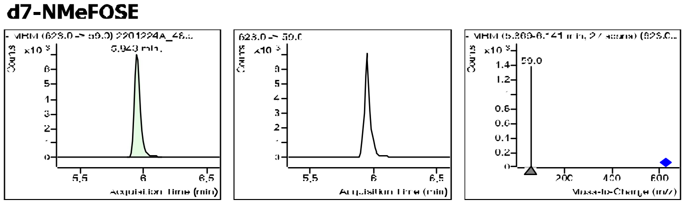

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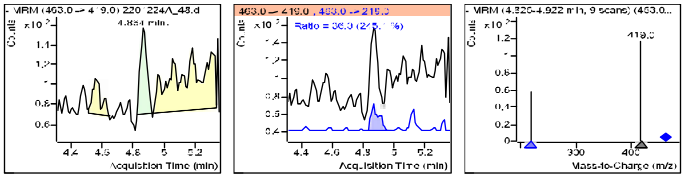

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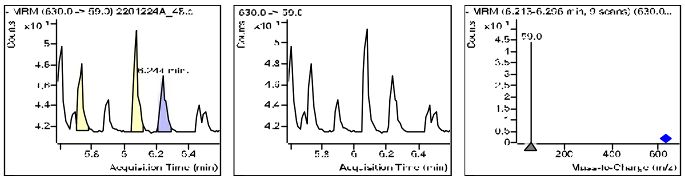

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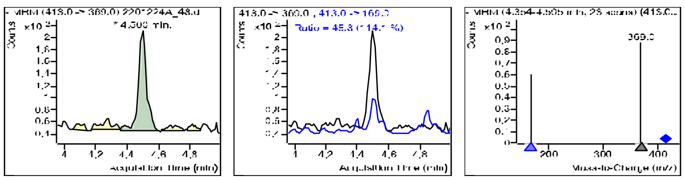

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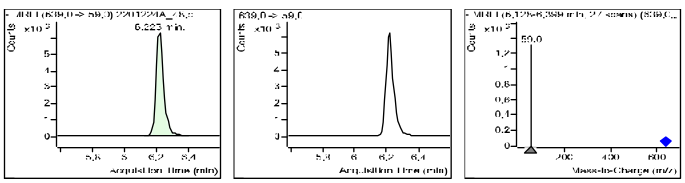

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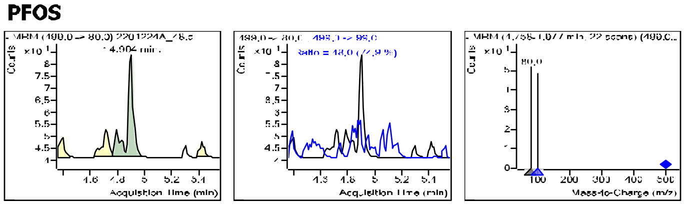

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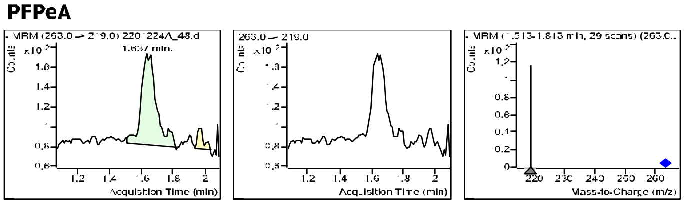

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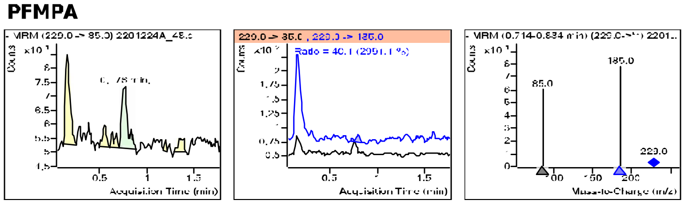

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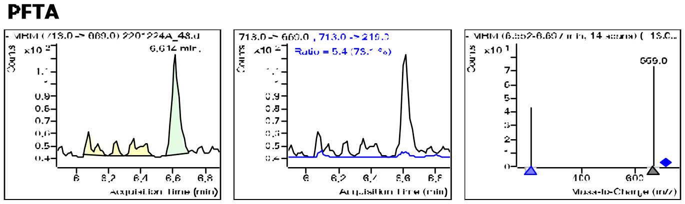

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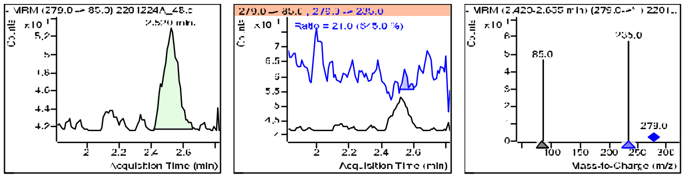

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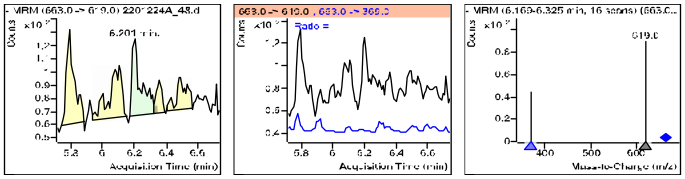

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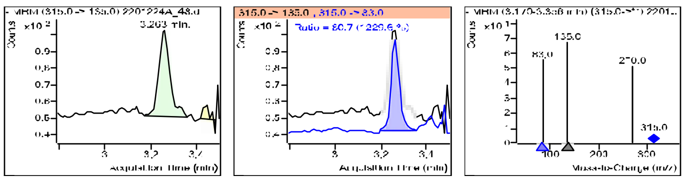

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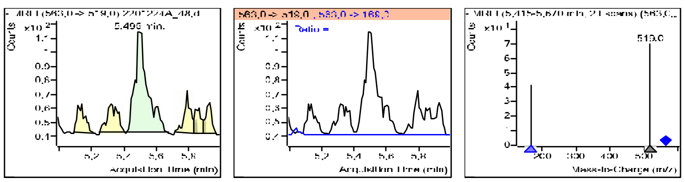

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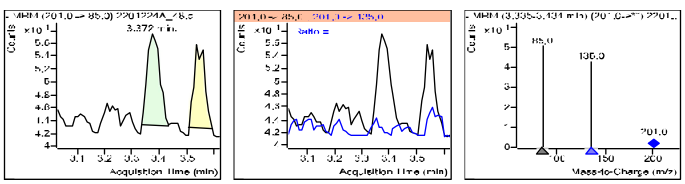

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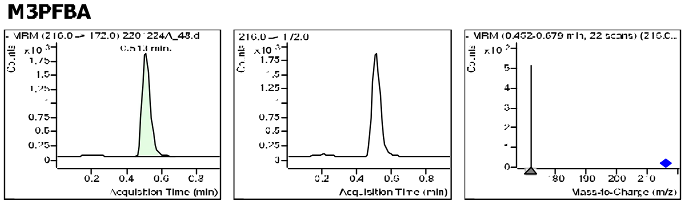

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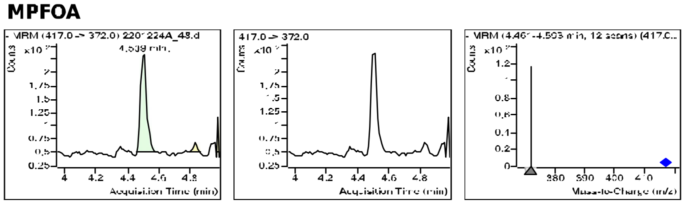


1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 8, EXP 13, IMP 3A REP A,B
Collect Date:	06/04/20 Time: 1300	GCAL Sample ID:	22012227910
Matrix:	Water % Moisture: NA	Instrument ID:	QQQ1
Sample Amt:	125 mL	Lab File ID:	2201224A_49.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	12/25/20 Time: 0005
Prep Batch:	700361	Analytical Batch:	700789
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
27619-97-2	6:2 Fluorotelomersulfonic acid	4.00	U	1.79	4.00	10.0
39108-34-4	8:2 Fluorotelomersulfonic acid	4.00	U	1.63	4.00	10.0
375-73-5	Perfluorobutanesulfonic acid	4.00	U	1.47	4.00	10.0
375-22-4	Perfluorobutanoic acid	4.00	U	2.13	4.00	10.0
335-76-2	Perfluorodecanoic acid	4.00	U	1.65	4.00	10.0
375-85-9	Perfluoroheptanoic acid	4.00	U	1.85	4.00	10.0
355-46-4	Perfluorohexanesulfonic acid	4.00	U	1.64	4.00	10.0
307-24-4	Perfluorohexanoic acid	4.00	U	1.94	4.00	10.0
375-95-1	Perfluorononanoic acid	4.00	U	1.68	4.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	4.00	U	1.70	4.00	10.0
335-67-1	Perfluorooctanoic acid	4.00	U	1.80	4.00	10.0
2706-90-3	Perfluoropentanoic acid	4.00	U	2.35	4.00	10.0
2058-94-8	Perfluoroundecanoic acid	4.00	U	1.86	4.00	10.0

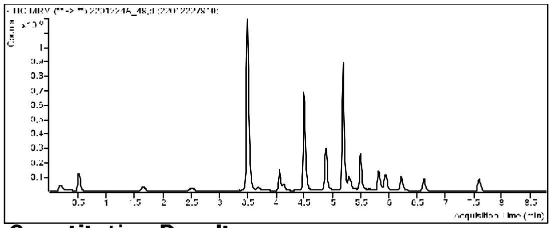
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_49.d	**Position**	Vial 42	**Samp Name**	22012227910	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ1;700361
Acq Date	12/25/2020 0:05						

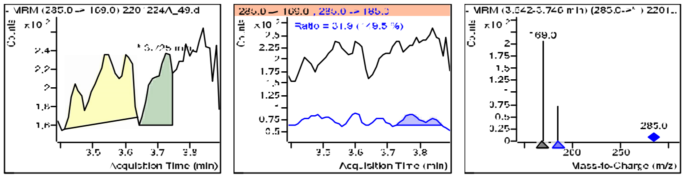
Sample Chromatogram



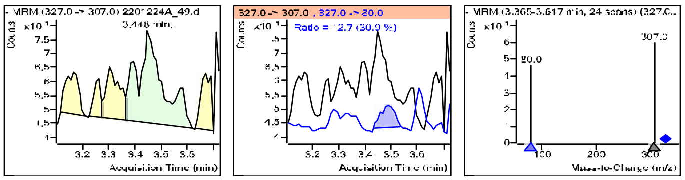
Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	203306.408	5.186				118.81	23.7630		3650.21	1.89	
M2PFHxA	335168.221	3.491				125.73	50.2910		4645.21	2.05	
M2PFOA	155655.022	4.499				123.20	24.6394		13908.83	1.92	
M4PFOS	59957.658	4.893				123.19	24.6386		2406.98	1.31	
M3PFBA	6348.355	0.513				0.00	4.9403		147.78	1.31	
MPFOA	449.241	4.499				0.00	22.0494		11.21	1.89	
HFPO-DA	299.263	3.725	M3HFPODA	3334	3.693	113.67	0.7051		0.73	2.23	m
4:2 FTS	222.104	3.448	M2 4:2 FTS	12534	3.458	113.18	0.0452		0.36	1.19	
6:2 FTS	624.280	4.456	M2 6:2 FTS	22660	4.487	103.27	0.0797		6.27	2.28	
ADONA	142.087	4.159	M8PFOA	21569	4.499	102.83	0.0075		3.31	1.66	
8:2 FTS	91.406	5.185	M2 8:2 FTS	12458	5.185	120.97	0.0111		1.46	2.24	
FOSA	111.165	5.293	M8FOSA	23147	5.291	105.20	0.0103		94.61	1.85	
9Cl-PF3ONS	176.646	5.080	M8PFOS	5165	4.893	109.61	0.0035		13.32	1.39	
PFDS	9.615	5.567	M6PFDA	35238	5.186	114.01	0.0052		1.30	0.90	
11Cl-PF3OUdS	10.794	5.700	M8PFOS	5165	4.893	109.61	0.0009		8.38	1.17	
PFHpS	87.850	4.445	M8PFOA	21569	4.499	102.83	0.0268		4.25	4.18	
10:2 FTS	59.074	5.858	M2 8:2 FTS	12458	5.185	120.97	0.0151		3.65	0.59	
PFNS	18.606	5.351	M9PFNA	26671	4.874	100.16	0.0126		5.66	1.18	
PFDoS	9.834	6.189	M8PFOS	5165	4.893	109.61	0.0039		1.80	0.86	
PFPeS	50.277	3.657	M5PFHxA	28646	3.490	106.64	0.0163		7.83	2.25	
PFODA	80.510	8.216	M2PFHxDA	31076	7.596	91.85	0.0231		5.39	1.11	
NEtFOSAA	34.477	5.484	d5-NEtFOSAA	12270	5.484	97.70	0.0100		3.48	1.36	
PFHxDA	411.743	7.589	M2PFHxDA	31076	7.596	91.85	0.1359		8.87	2.74	
NMeFOSAA	30.841	5.339	d3-NMeFOSAA	10174	5.328	106.77	0.0094		24.40	1.58	
PFBA	565.381	0.474	MPFBA	38792	0.511	109.78	0.0565		5.45	1.45	m
PFBS	43.932	2.516	M3PFBS	15548	2.504	131.81	0.0092		1.72	1.05	
NMeFOSA	109.014	5.948	d-NMeFOSA	15774	5.927	93.83	0.0742		1.89	1.03	
PFDA	556.414	5.187	M6PFDA	35238	5.186	114.01	0.0524		13.27	1.82	
PFDoA	214.704	5.818	MPFDoA	38984	5.818	103.54	0.0266		31.87	2.19	
NEtFOSA	8.091	6.237	d-NEtFOSA	11806	6.216	99.48	0.0050		0.70	0.60	
PFHpA	427.575	4.078	M4PFHpA	40092	4.067	113.61	0.0522		2.45	2.47	
PFHxA	990.840	3.493	M5PFHxA	28646	3.490	106.64	0.1311		2.71	1.51	
NMeFOSE	51.758	5.953	d7-NMeFOSE	23965	5.943	103.00	0.0207		4.46	1.30	
PFHxS	29.100	4.168	M3PFHxS	11067	4.136	110.83	0.0059		5.60	0.17	m
PFNA	291.948	4.874	M9PFNA	26671	4.874	100.16	0.0352		0.64	0.30	
NEtFOSE	29.562	6.493	d9-NEtFOSE	22198	6.223	106.78	0.0121		1.38	0.36	
PFOA	543.907	4.510	M8PFOA	21569	4.499	102.83	0.0895		2.46	1.23	m
PFOS	182.390	4.894	M8PFOS	5165	4.893	109.61	0.0388		5.63	1.46	m
PFPeA	213.825	1.648	M5PFPeA	17750	1.645	105.56	0.0512		8.84	0.54	
PFMPA	76.688	0.745	M5PFPeA	17750	1.645	105.56	0.0190		1.79	2.25	
PFTA	239.840	6.624	M2PFTA	30368	6.623	95.55	0.0445		16.58	1.21	
PFTrDA	447.454	6.201	MPFDoA	38984	5.818	103.54	0.0536		3.26	3.07	
PFEESA	132.537	3.242	M3PFHxS	11067	4.136	110.83	0.0130		5.64	0.61	
PFUnA	348.866	5.507	M7PFUnA	59040	5.496	112.51	0.0276		1.89	0.48	
NFDHA	45.864	3.382	M4PFHpA	40092	4.067	113.61	0.0116		2.67	1.33	

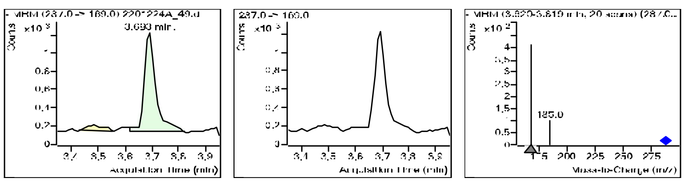
HFPO-DA



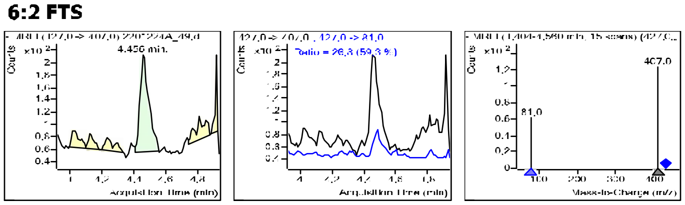
4:2 FTS



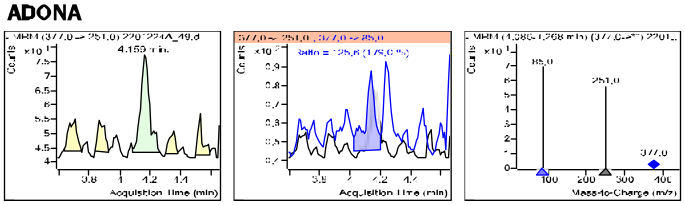
M3HFPODA



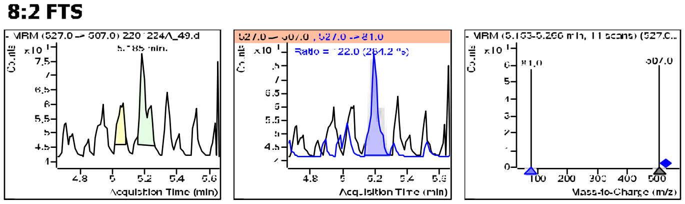
6:2 FTS



ADONA



8:2 FTS



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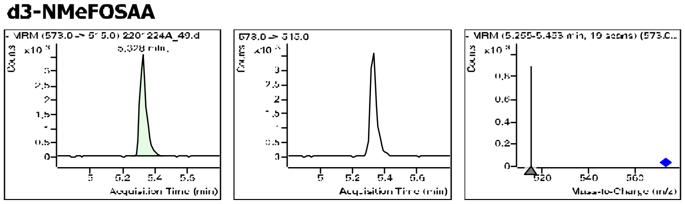

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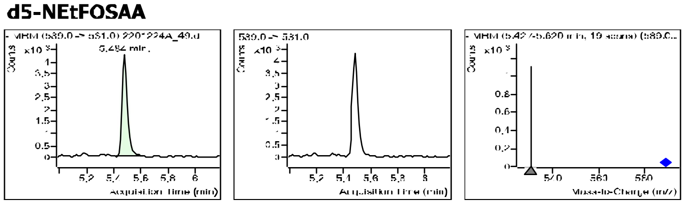
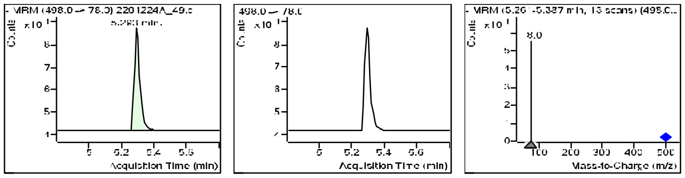
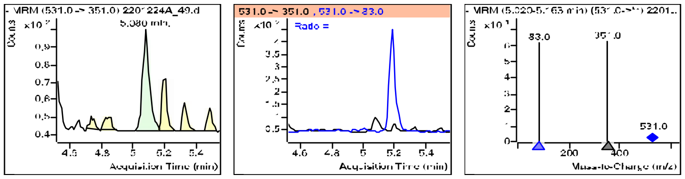


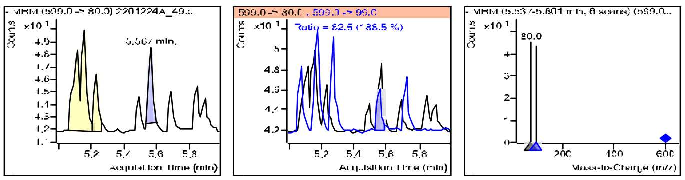
FOSA



9Cl-PF3ONS



PFDS



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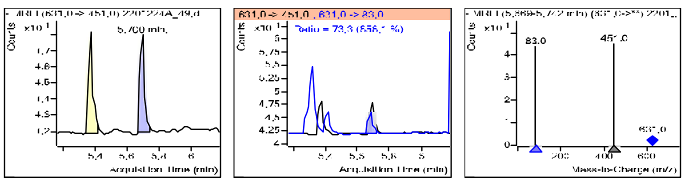

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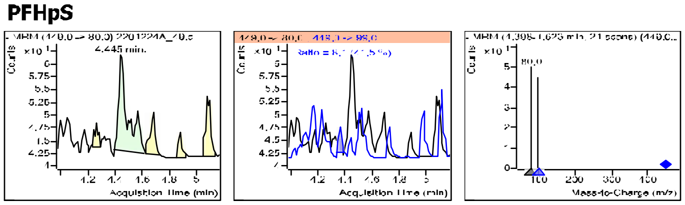

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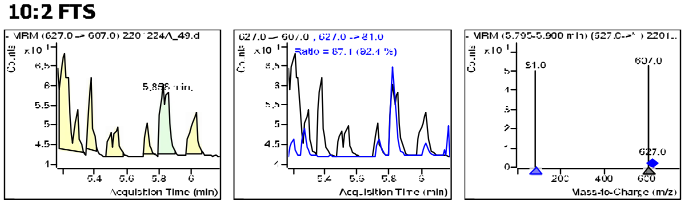

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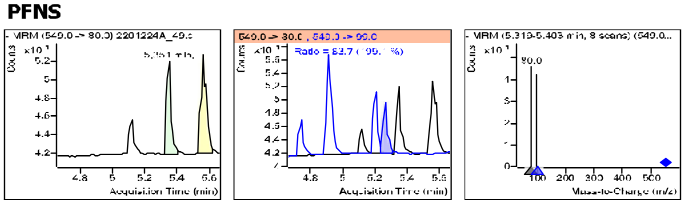
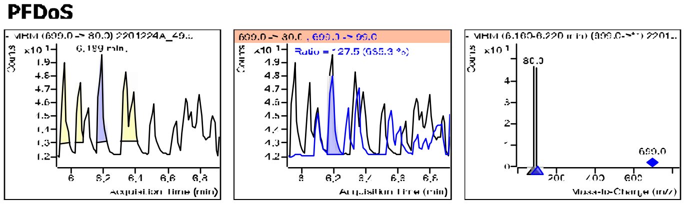


PFDoS



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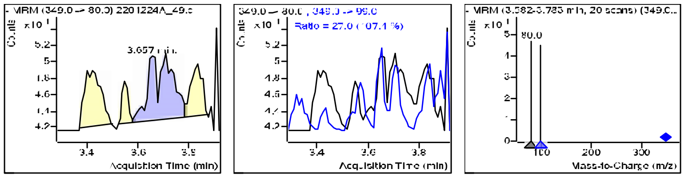

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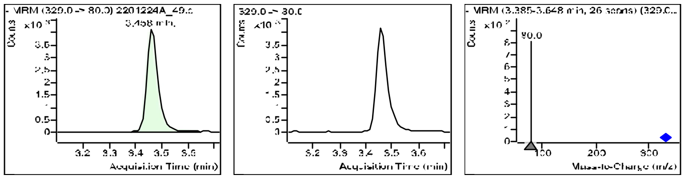

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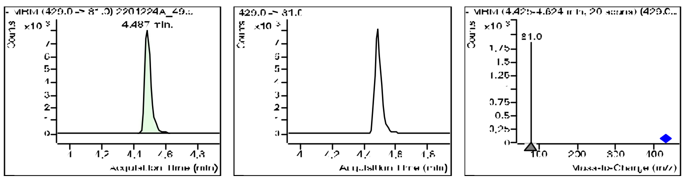

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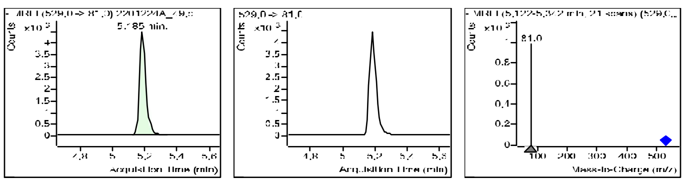

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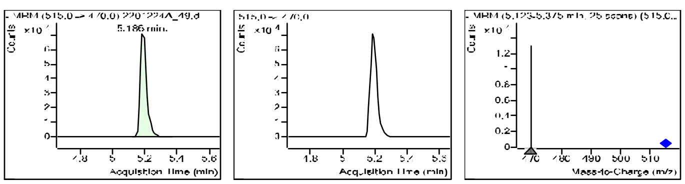

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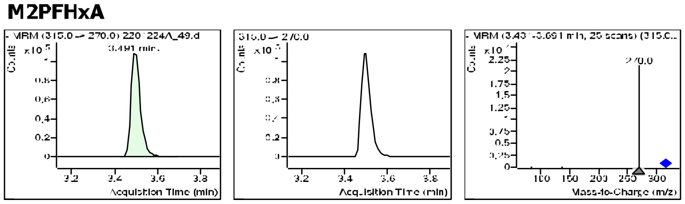

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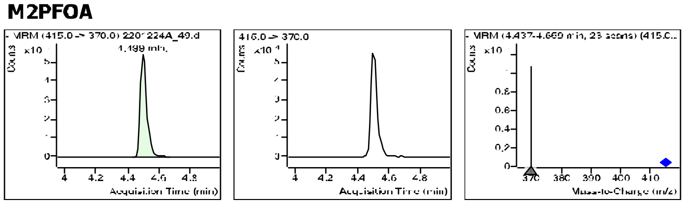

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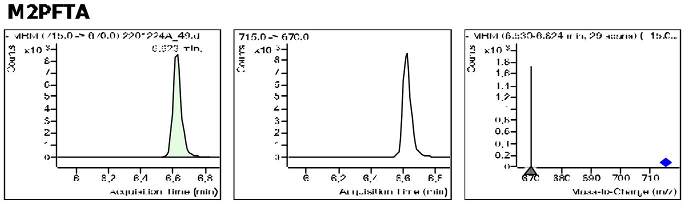

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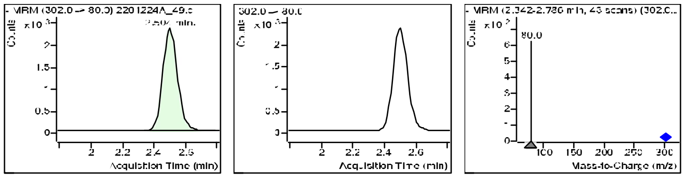

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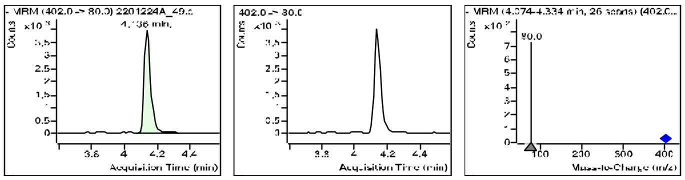

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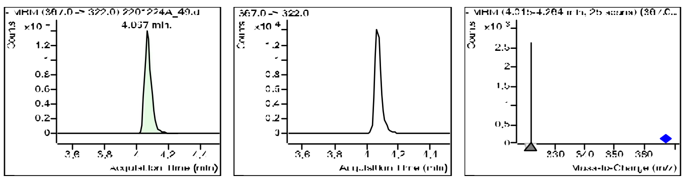

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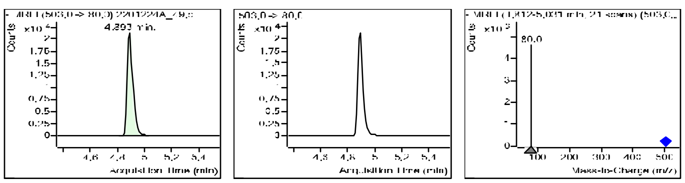

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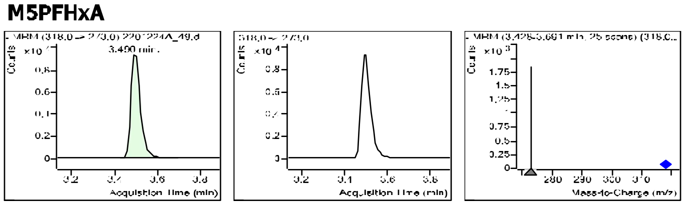

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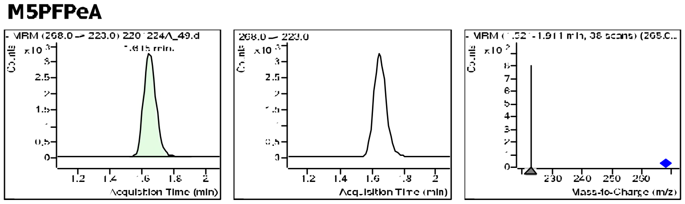

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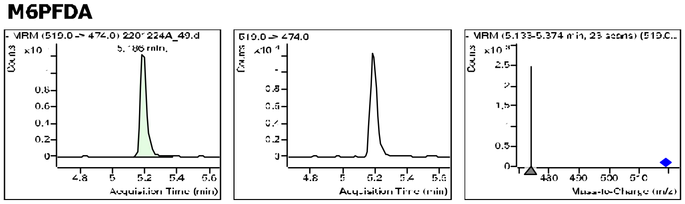

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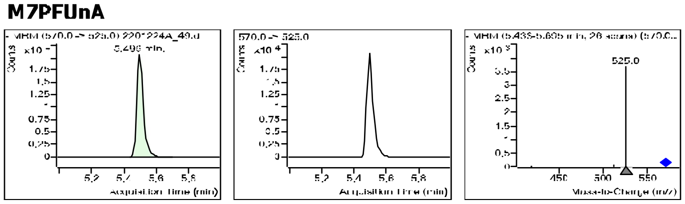

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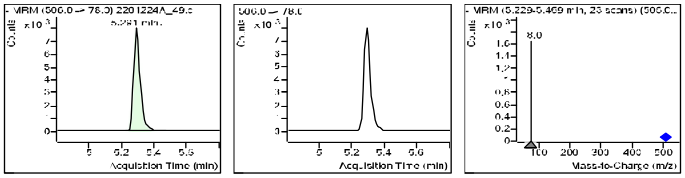

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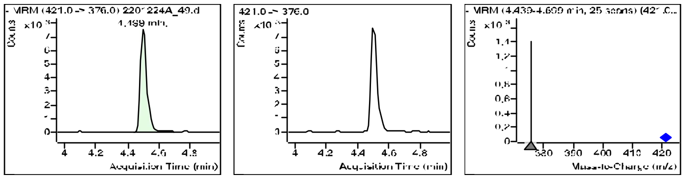

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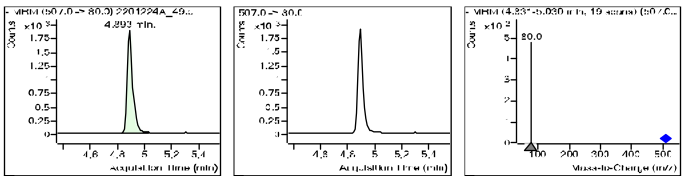

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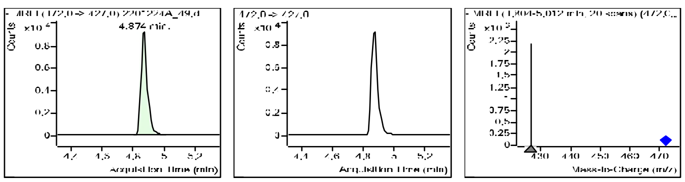

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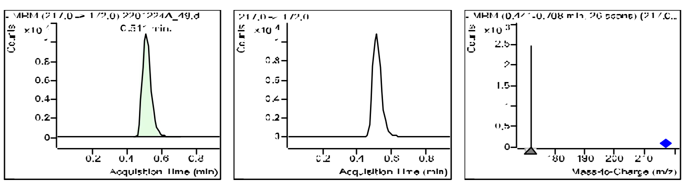

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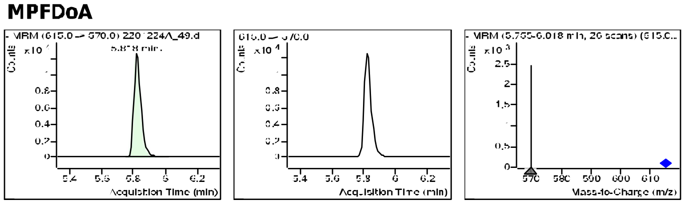

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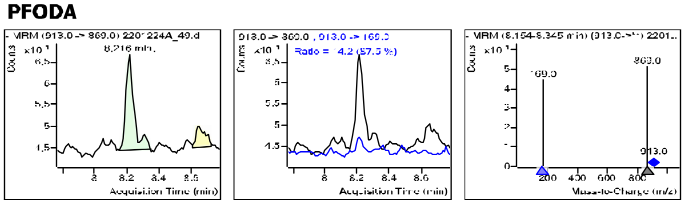

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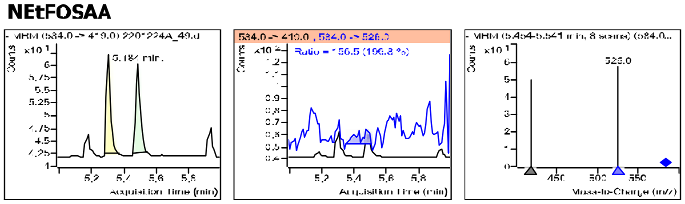

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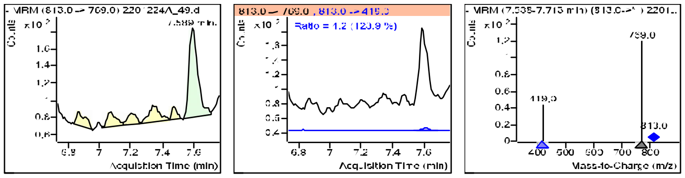

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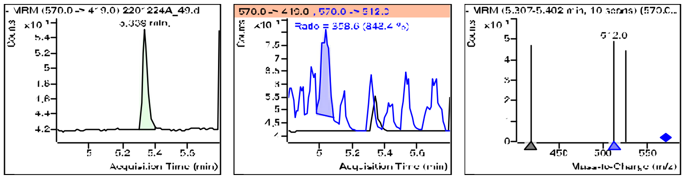

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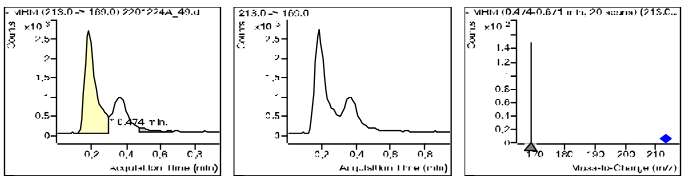

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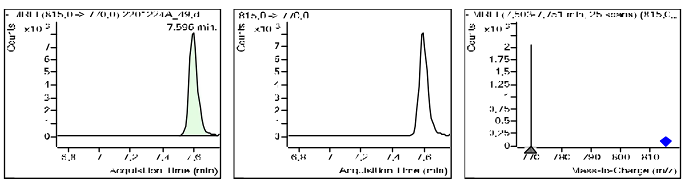

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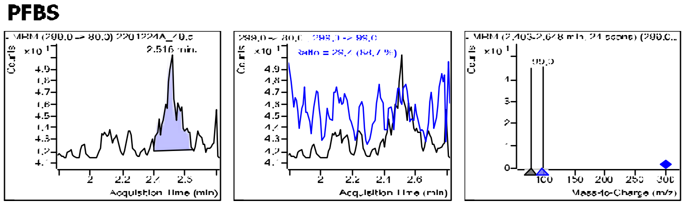

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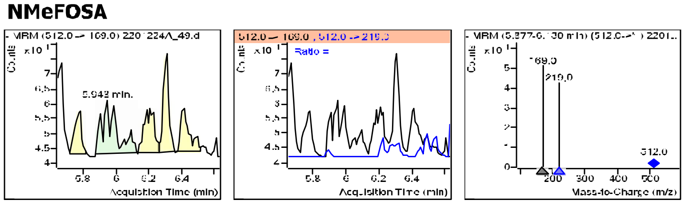

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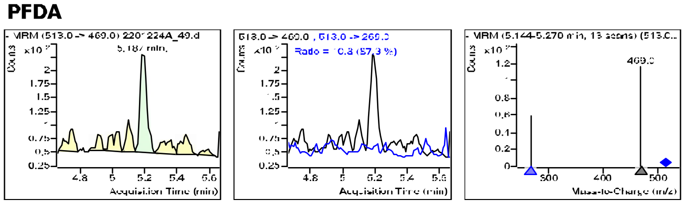

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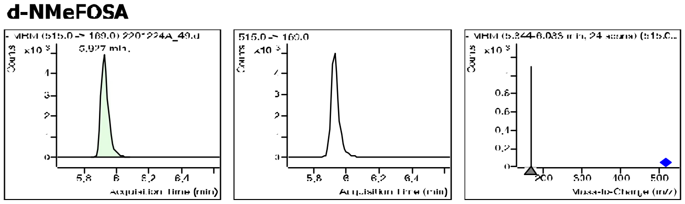

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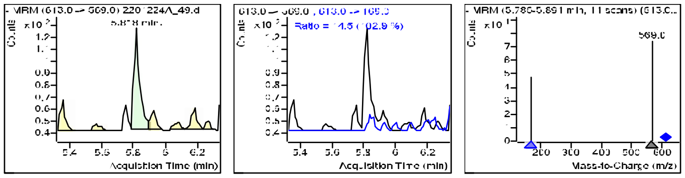

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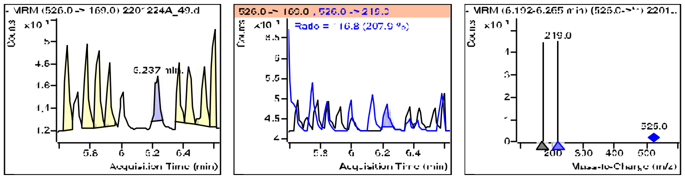

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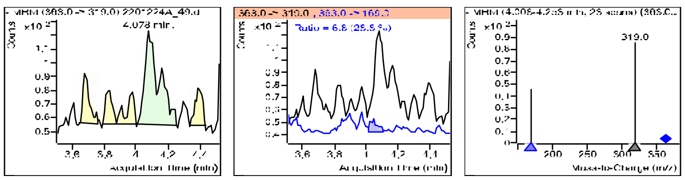

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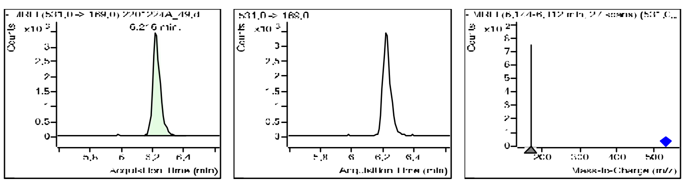

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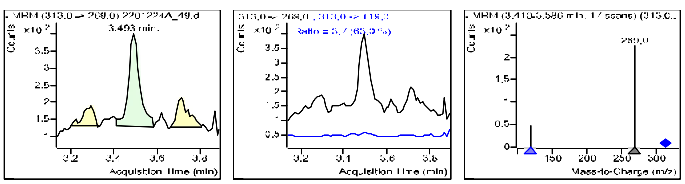

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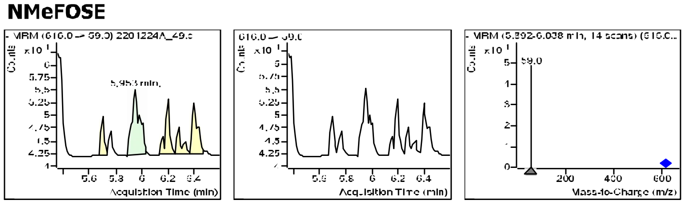

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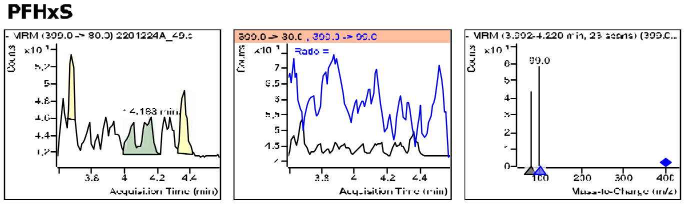

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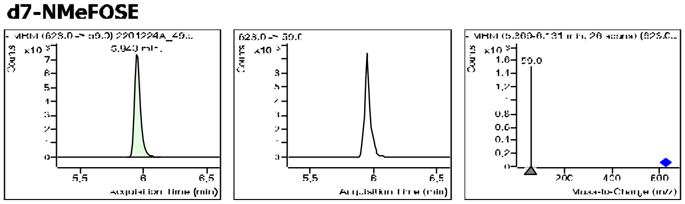

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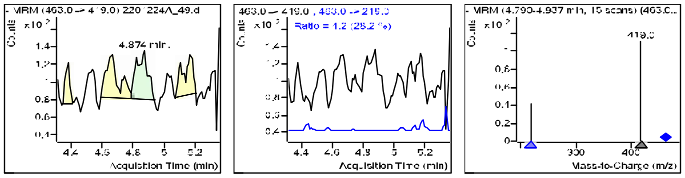

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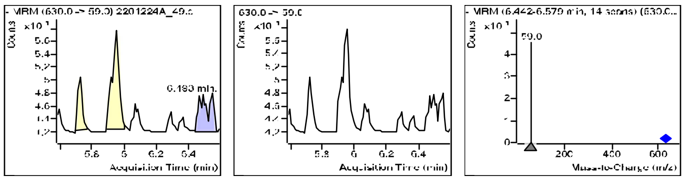

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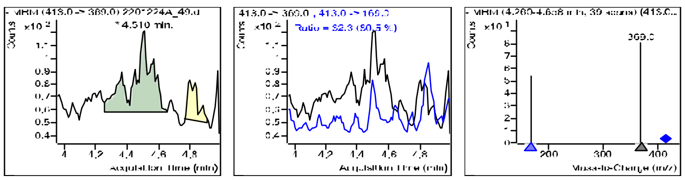

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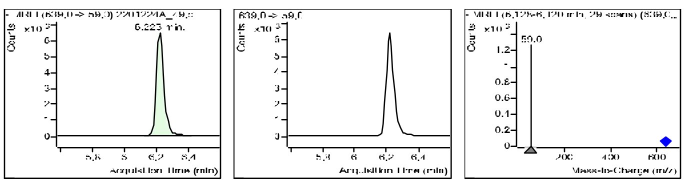

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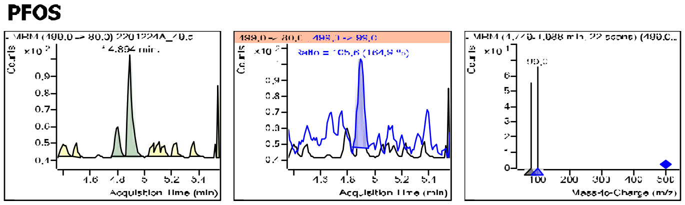

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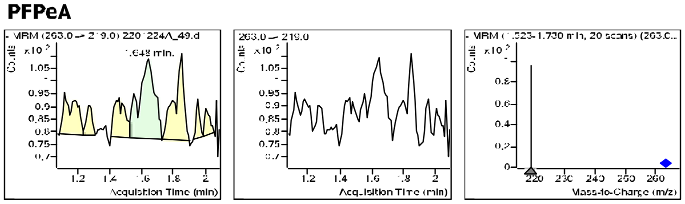

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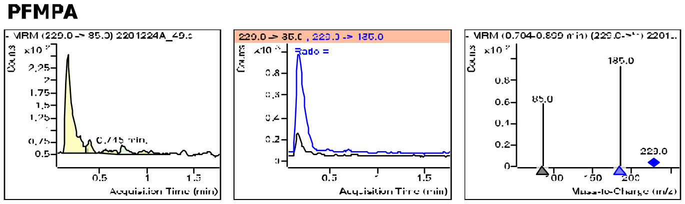

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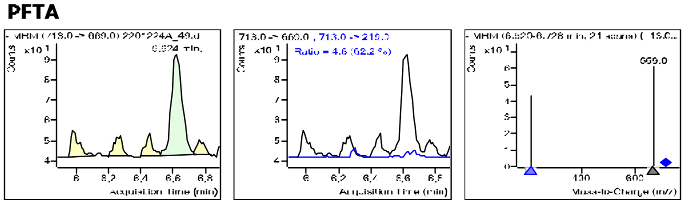

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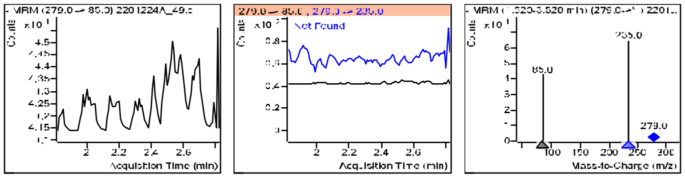

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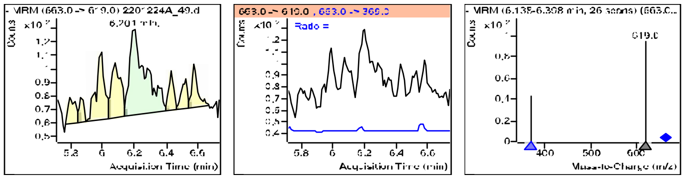

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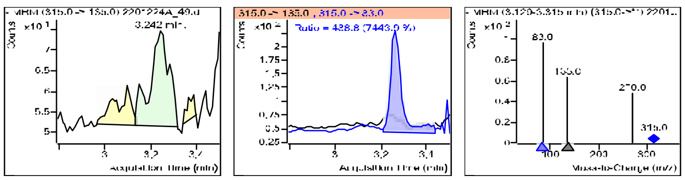

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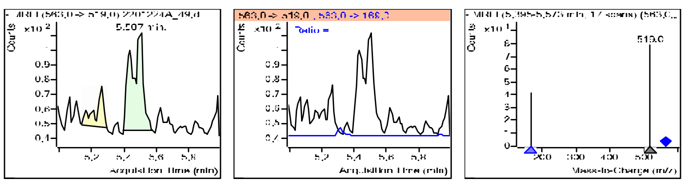

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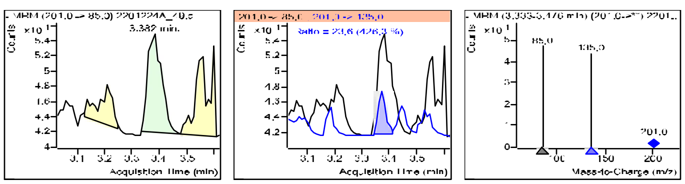

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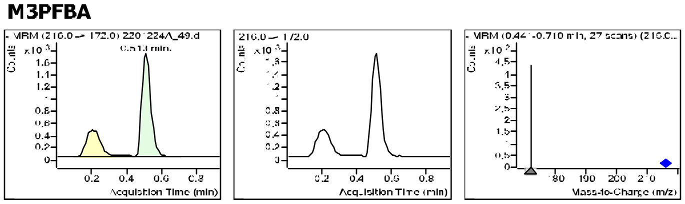

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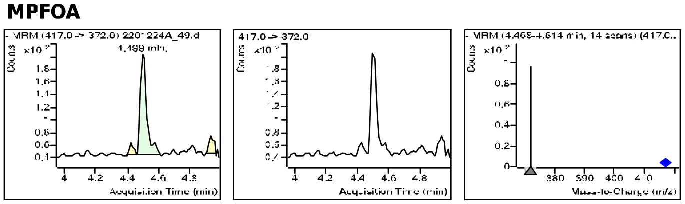


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	MB2127843
Collect Date:	NA Time: NA	GCAL Sample ID:	2127843
Matrix:	Water % Moisture: NA	Instrument ID:	QQQ1
Sample Amt:	125 mL	Lab File ID:	2201224A_41.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	12/24/20 Time: 2211
Prep Batch:	700361	Analytical Batch:	700789
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
27619-97-2	6:2 Fluorotelomersulfonic acid	4.00	U	1.79	4.00	10.0
39108-34-4	8:2 Fluorotelomersulfonic acid	4.00	U	1.63	4.00	10.0
375-73-5	Perfluorobutanesulfonic acid	4.00	U	1.47	4.00	10.0
375-22-4	Perfluorobutanoic acid	4.00	U	2.13	4.00	10.0
335-76-2	Perfluorodecanoic acid	4.00	U	1.65	4.00	10.0
375-85-9	Perfluoroheptanoic acid	4.00	U	1.85	4.00	10.0
355-46-4	Perfluorohexanesulfonic acid	4.00	U	1.64	4.00	10.0
307-24-4	Perfluorohexanoic acid	4.00	U	1.94	4.00	10.0
375-95-1	Perfluorononanoic acid	4.00	U	1.68	4.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	4.00	U	1.70	4.00	10.0
335-67-1	Perfluorooctanoic acid	4.00	U	1.80	4.00	10.0
2706-90-3	Perfluoropentanoic acid	4.00	U	2.35	4.00	10.0
2058-94-8	Perfluoroundecanoic acid	4.00	U	1.86	4.00	10.0

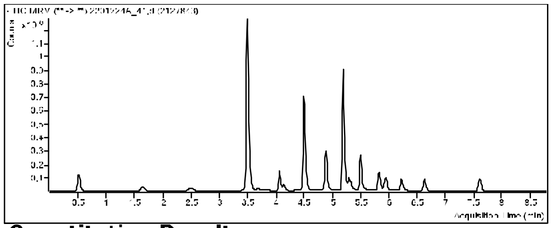
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_41.d	**Position**	Vial 34	**Samp Name**	2127843	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ1;700361
Acq Date	12/24/2020 22:11						

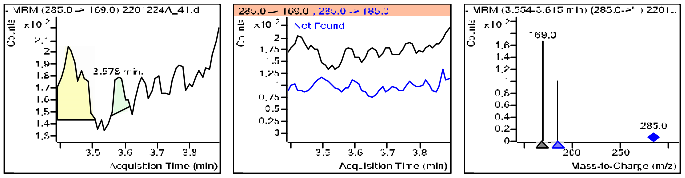
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	213892.221	5.197				125.00	25.0003		18107.07	1.22	
M2PFHxA	351308.882	3.491				131.78	52.7129		5092.11	1.92	
M2PFOA	158137.672	4.499				125.16	25.0323		11781.64	1.93	
M4PFOS	59266.121	4.893				121.77	24.3544		3645.17	1.36	
M3PFBA	6601.417	0.503				0.00	5.1372		224.45	1.75	
MPFOA	565.436	4.499				0.00	27.7525		16.79	1.63	
HFPO-DA	59.164	3.578	M3HFPODA	3276	3.693	111.69	0.1419		0.55	1.92	
4:2 FTS	65.162	3.448	M2 4:2 FTS	12760	3.458	115.23	0.0130		0.72	1.97	
6:2 FTS	333.529	4.487	M2 6:2 FTS	24634	4.487	112.27	0.0392		3.59	1.57	
ADONA	41.623	4.159	M8PFOA	22321	4.499	106.41	0.0021		3.74	0.60	
8:2 FTS	47.619	5.196	M2 8:2 FTS	12125	5.185	117.73	0.0059		16.13	1.38	
FOSA	91.915	5.282	M8FOSA	22471	5.291	102.13	0.0088		49.26	2.04	
9Cl-PF3ONS	122.819	5.080	M8PFOS	5486	4.893	116.41	0.0023		7.47	1.66	
PFDS	0.710	5.442	M6PFDA	33562	5.196	108.59	0.0004		0.01	2.05	m
11Cl-PF3OUdS	23.299	5.669	M8PFOS	5486	4.893	116.41	0.0019		2.70	2.21	
PFHpS	33.551	4.539	M8PFOA	22321	4.499	106.41	0.0099		1.63	1.19	
10:2 FTS	36.999	5.806	M2 8:2 FTS	12125	5.185	117.73	0.0097		4.77	1.54	
PFNS	36.174	5.194	M9PFNA	29152	4.874	109.47	0.0225		12.60	1.40	
PFDoS	13.700	6.189	M8PFOS	5486	4.893	116.41	0.0049		1.46	1.70	
PFPeS	39.425	3.647	M5PFHxA	31371	3.490	116.79	0.0116		2.47	0.96	
PFODA	70.627	8.227	M2PFHxDA	34553	7.606	102.12	0.0183		5.19	1.31	
NEtFOSAA	0.407	5.484	d5-NEtFOSAA	12835	5.484	102.20	0.0001		0.05	0.28	m
PFHxDA	449.367	7.599	M2PFHxDA	34553	7.606	102.12	0.1334		2.56	1.54	
NMeFOSAA	43.855	5.339	d3-NMeFOSAA	9887	5.328	103.76	0.0137		21.12	0.81	
PFBA	251.582	0.495	MPFBA	41318	0.511	116.93	0.0236		6.61	2.38	
PFBS	177.442	2.475	M3PFBS	16639	2.494	141.06	0.0346		6.94	1.10	
NMeFOSA	23.480	5.792	d-NMeFOSA	10750	5.927	63.94	0.0235		0.64	1.00	
PFDA	377.294	5.187	M6PFDA	33562	5.196	108.59	0.0373		5.22	1.92	
PFDoA	211.273	5.839	MPFDoA	40135	5.828	106.59	0.0254		13.99	0.79	
NEtFOSA	15.870	6.227	d-NEtFOSA	7849	6.226	66.14	0.0147		1.68	1.08	
PFHpA	154.484	4.078	M4PFHpA	40077	4.067	113.57	0.0189		2.77	2.15	
PFHxA	583.465	3.493	M5PFHxA	31371	3.490	116.79	0.0705		6.52	2.08	
NMeFOSE	21.115	5.974	d7-NMeFOSE	22702	5.953	97.57	0.0089		2.14	2.37	
PFHxS	164.806	4.137	M3PFHxS	11118	4.136	111.35	0.0331		2.94	0.26	m
PFNA	80.471	4.864	M9PFNA	29152	4.874	109.47	0.0089		5.81	3.08	
NEtFOSE	23.950	6.161	d9-NEtFOSE	21277	6.223	102.35	0.0102		3.45	1.49	
PFOA	214.276	4.489	M8PFOA	22321	4.499	106.41	0.0341		1.92	1.09	
PFOS	283.617	4.883	M8PFOS	5486	4.893	116.41	0.0568		4.14	1.53	m
PFPeA	210.306	1.679	M5PFPeA	18938	1.635	112.62	0.0472		2.13	0.54	
PFMPA	52.309	0.797	M5PFPeA	18938	1.635	112.62	0.0121		1.14	0.80	
PFTA	221.663	6.624	M2PFTA	30786	6.623	96.86	0.0406		9.80	1.84	
PFMBA	38.884	2.520	M5PFHxA	31371	3.490	116.79	0.0092		1.59	1.50	
PFTrDA	415.938	6.253	MPFDoA	40135	5.828	106.59	0.0484		1.19	2.24	
PFEESA	36.871	3.263	M3PFHxS	11118	4.136	111.35	0.0036		1.45	0.74	
PFUnA	339.219	5.496	M7PFUnA	61756	5.496	117.68	0.0257		5.45	2.27	
NFDHA	30.970	3.382	M4PFHpA	40077	4.067	113.57	0.0078		2.13	1.50	

HFPO-DA



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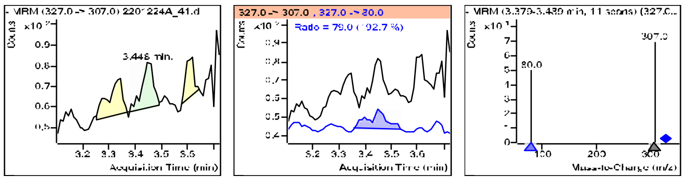

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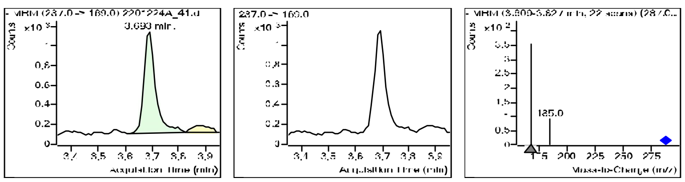

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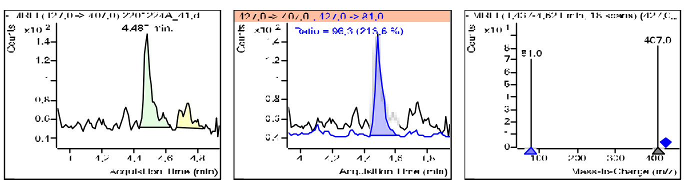

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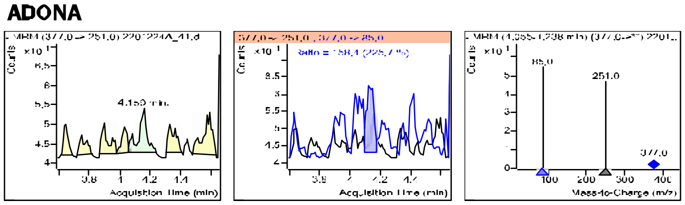

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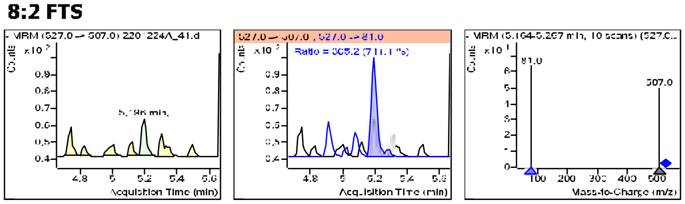

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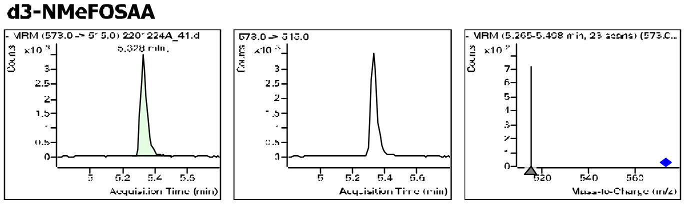

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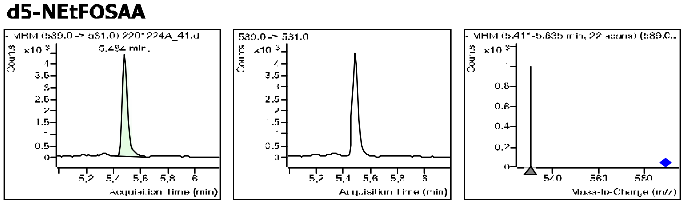

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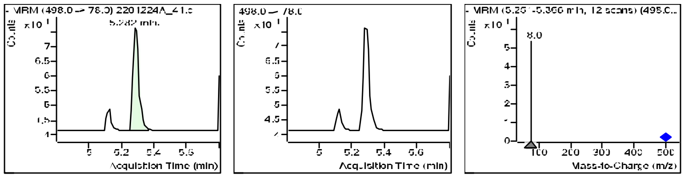

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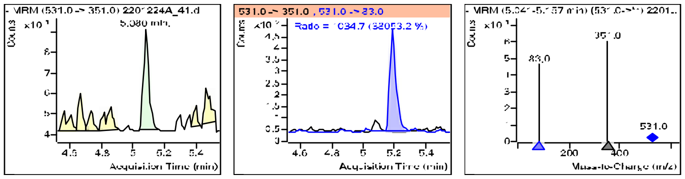

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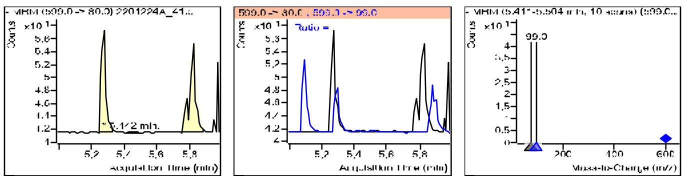

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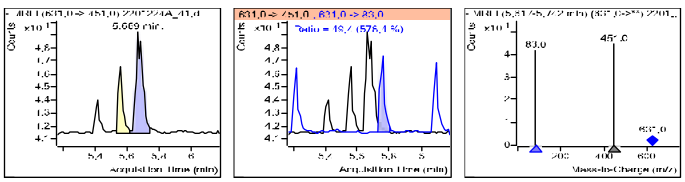

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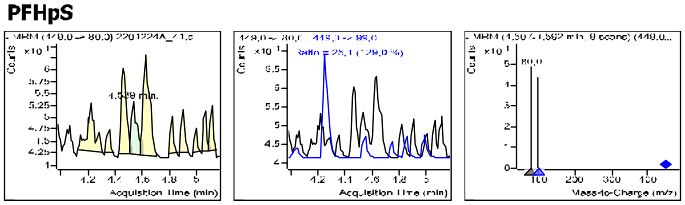

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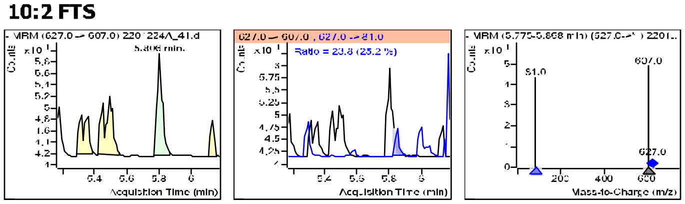

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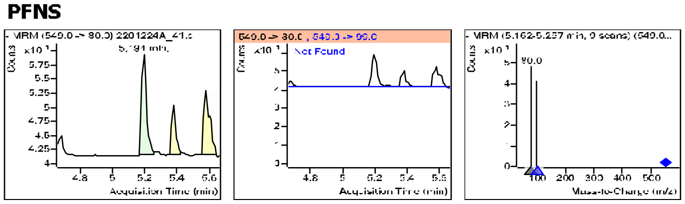

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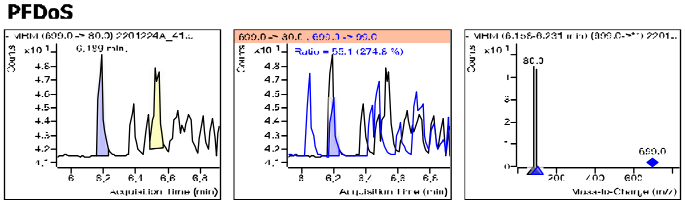

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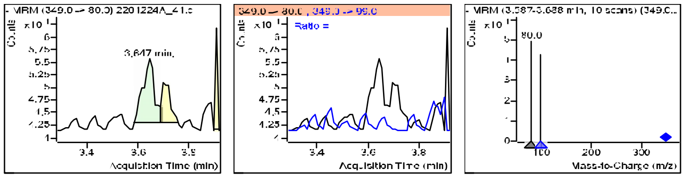

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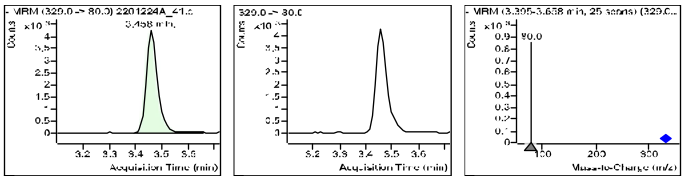

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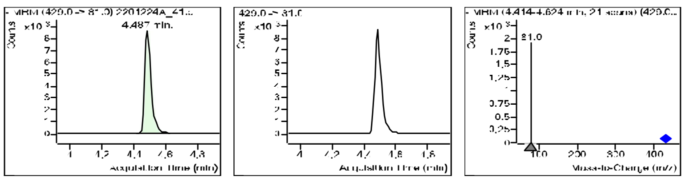

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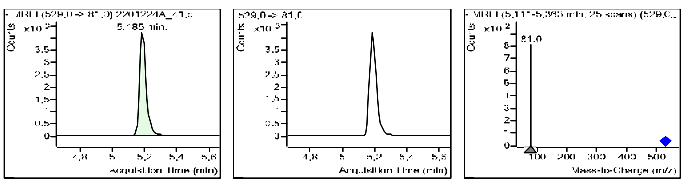

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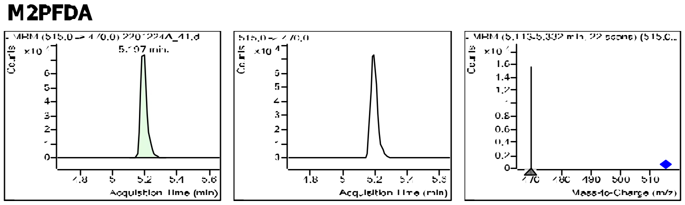

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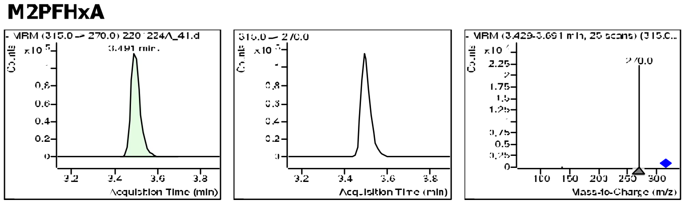

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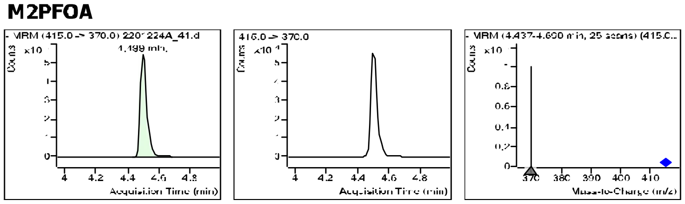

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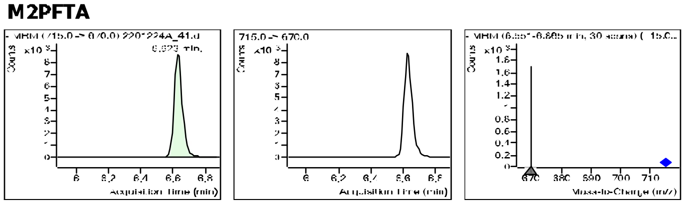

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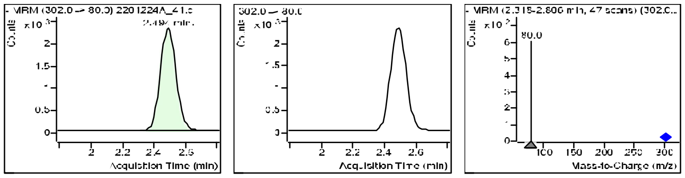

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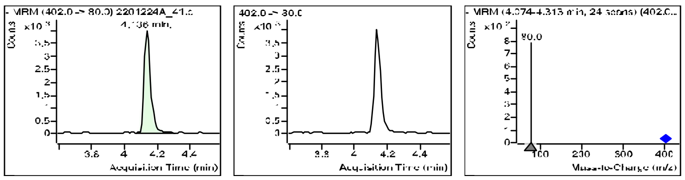

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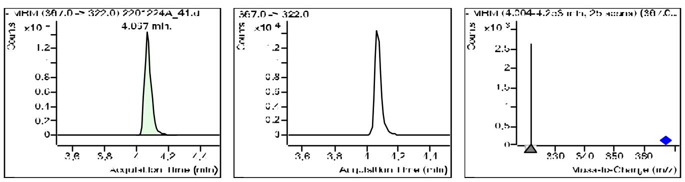

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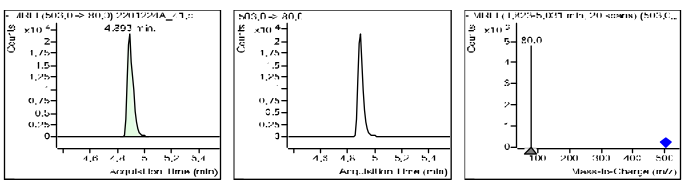

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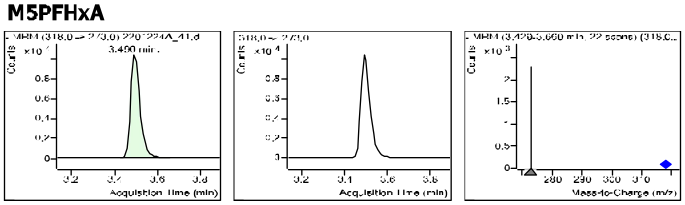

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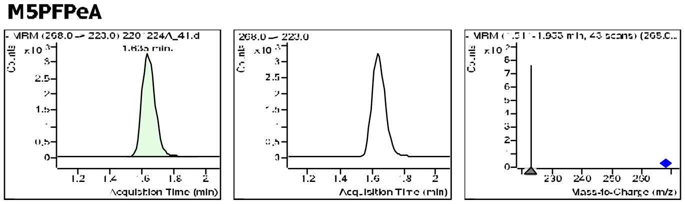

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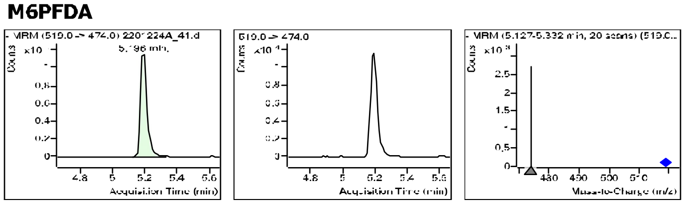

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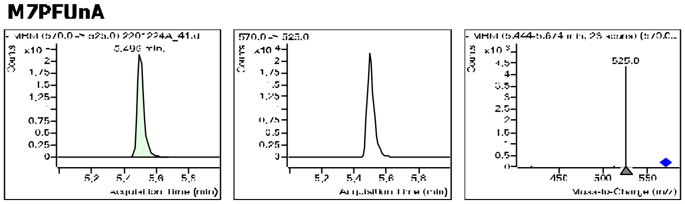

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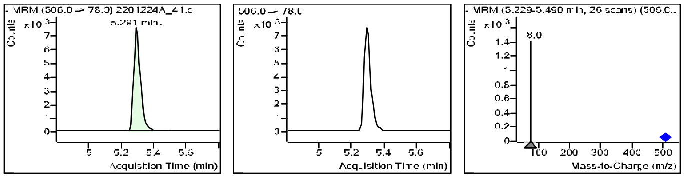

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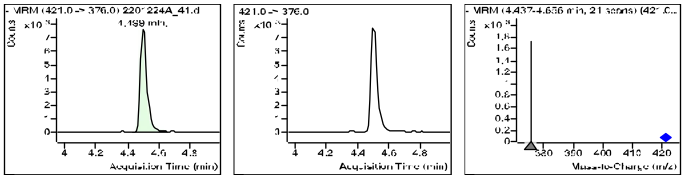

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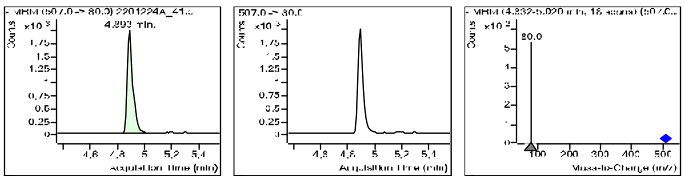

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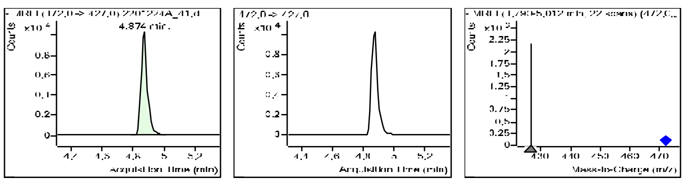

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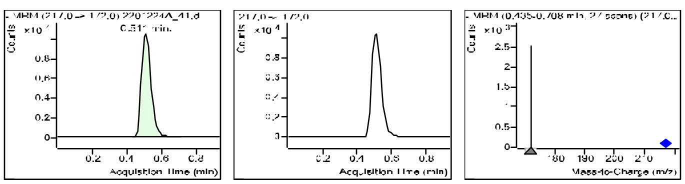

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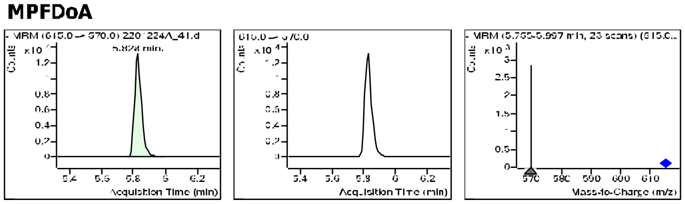

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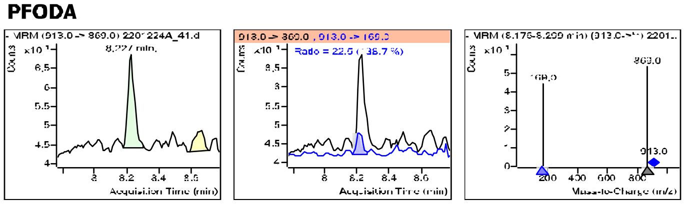

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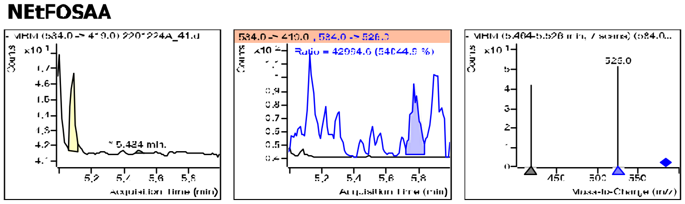

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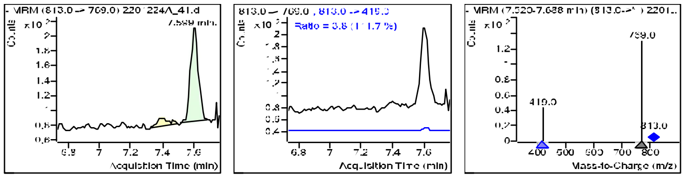

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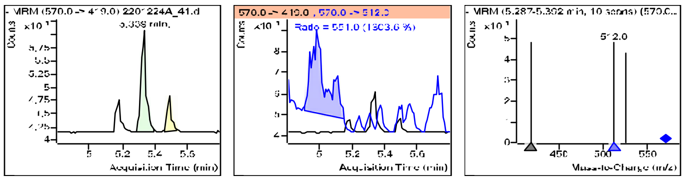

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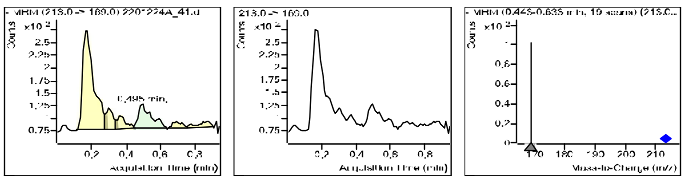

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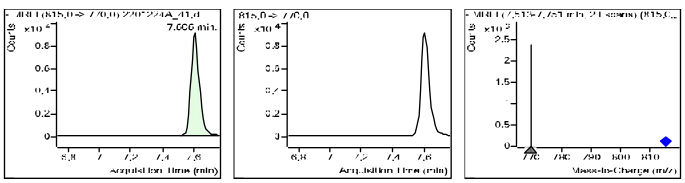

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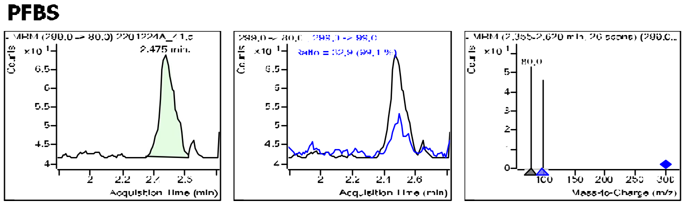

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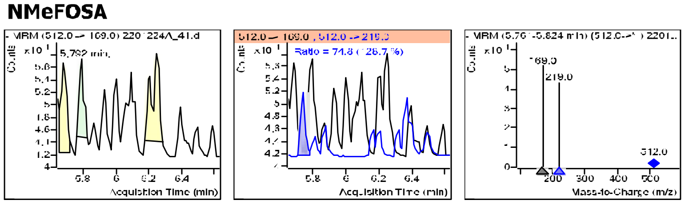

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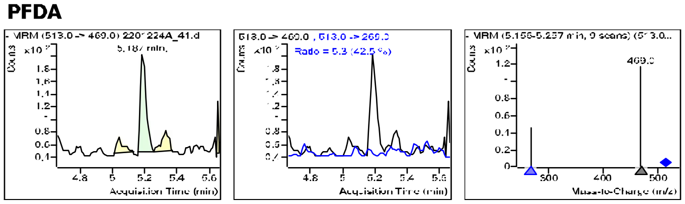

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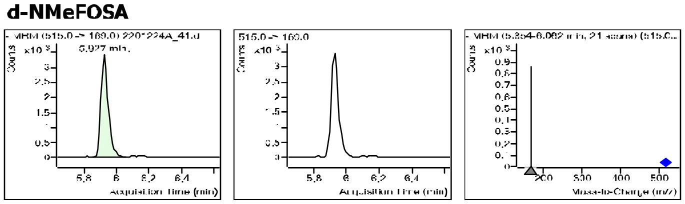

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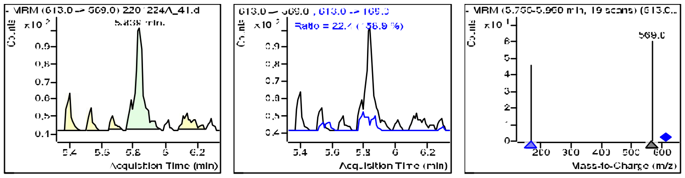

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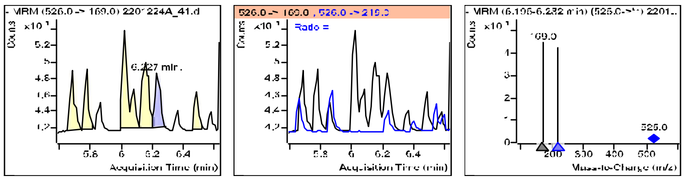

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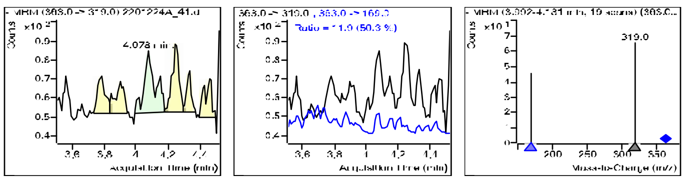

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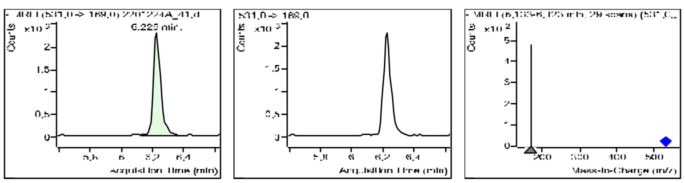

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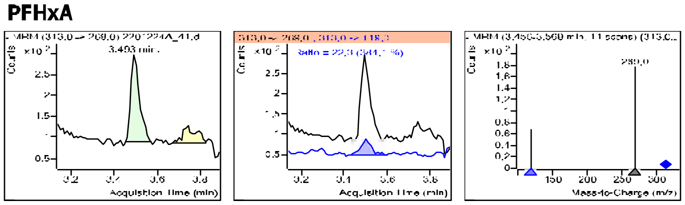

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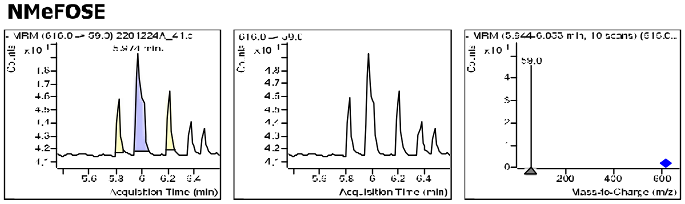

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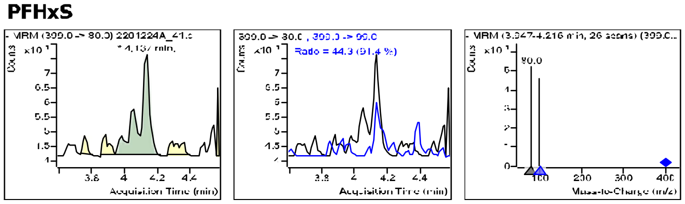

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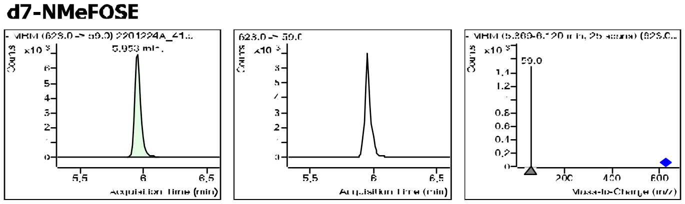

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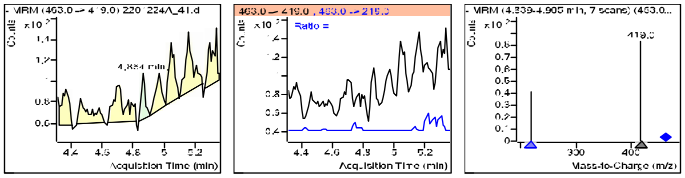

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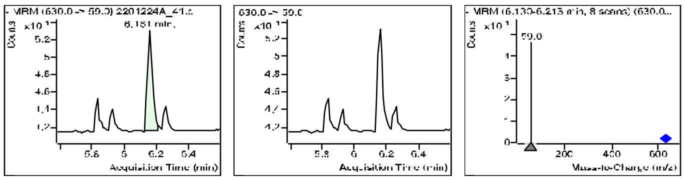

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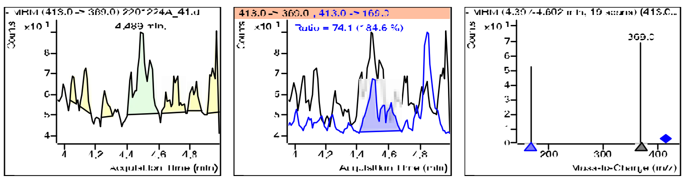

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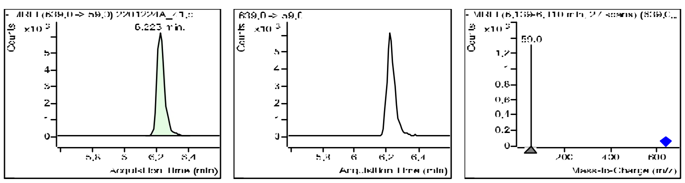

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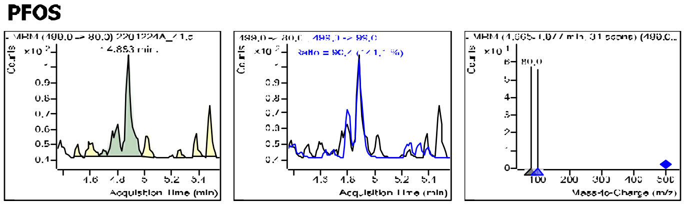

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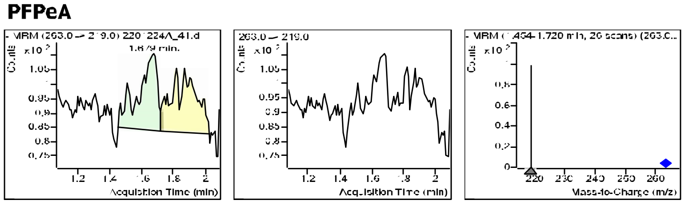

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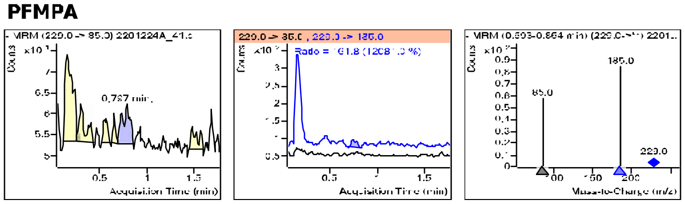

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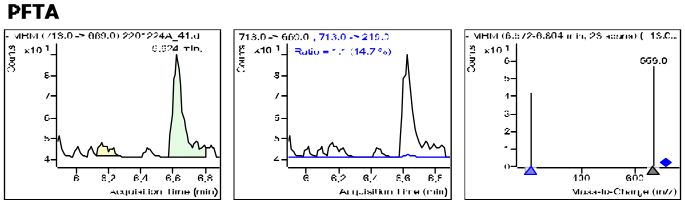

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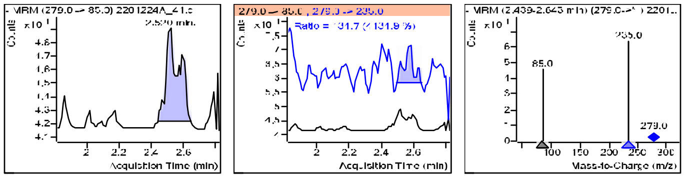

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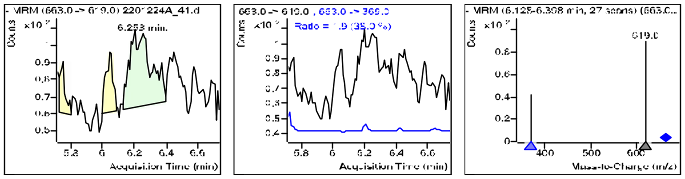

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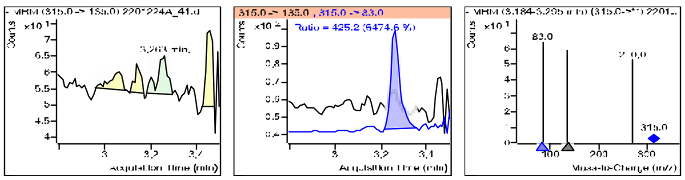

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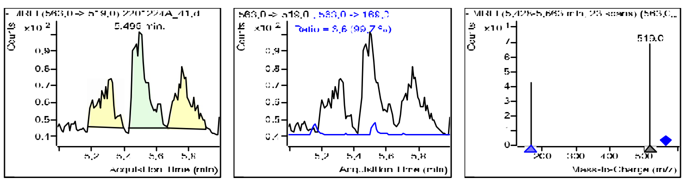

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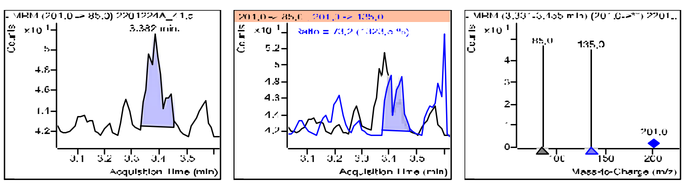

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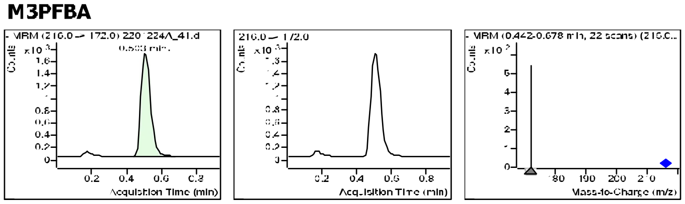

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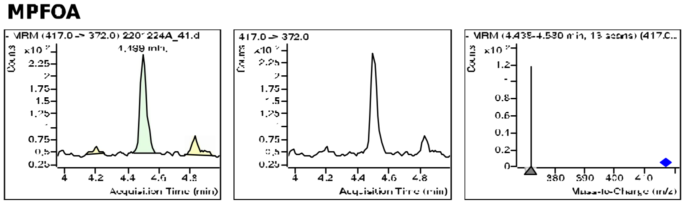


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	LCS2127844
Collect Date:	NA Time: NA	GCAL Sample ID:	2127844
Matrix:	Water % Moisture: NA	Instrument ID:	QQQ1
Sample Amt:	125 mL	Lab File ID:	2201224A_42.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	12/24/20 Time: 2225
Prep Batch:	700361	Analytical Batch:	700789
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
27619-97-2	6:2 Fluorotelomersulfonic acid	77.0		1.79	4.00	10.0
39108-34-4	8:2 Fluorotelomersulfonic acid	71.7		1.63	4.00	10.0
375-73-5	Perfluorobutanesulfonic acid	53.4		1.47	4.00	10.0
375-22-4	Perfluorobutanoic acid	69.8		2.13	4.00	10.0
335-76-2	Perfluorodecanoic acid	68.2		1.65	4.00	10.0
375-85-9	Perfluoroheptanoic acid	71.0		1.85	4.00	10.0
355-46-4	Perfluorohexanesulfonic acid	68.9		1.64	4.00	10.0
307-24-4	Perfluorohexanoic acid	69.5		1.94	4.00	10.0
375-95-1	Perfluorononanoic acid	68.1		1.68	4.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	78.5		1.70	4.00	10.0
335-67-1	Perfluorooctanoic acid	79.9		1.80	4.00	10.0
2706-90-3	Perfluoropentanoic acid	68.2		2.35	4.00	10.0
2058-94-8	Perfluoroundecanoic acid	68.8		1.86	4.00	10.0

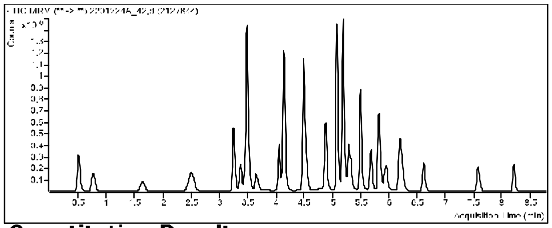
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_42.d	**Position**	Vial 35	**Samp Name**	2127844	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	QC	**Comment**	MRA,QQQ1;700361
Acq Date	12/24/2020 22:25						

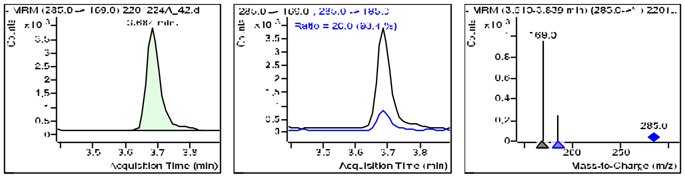
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	185265.685	5.186				108.27	21.6543	108.27	12080.95	1.87	
M2PFHxA	315433.861	3.491				118.32	47.3299	118.32	4471.87	1.37	
M2PFOA	144962.859	4.499				114.73	22.9468	114.73	4859.63	1.59	
M4PFOS	53381.140	4.883				109.68	21.9361	109.68	7710.75	2.05	
M3PFBA	5958.188	0.513				0.00	4.6367	92.73	178.94	1.18	
MPFOA	636.730	4.499				0.00	31.2517	125.01	21.75	3.02	
HFPO-DA	11275.560	3.684	M3HFPODA	2612	3.683	89.07	33.9044	113.01	74.96	1.54	
4:2 FTS	35766.961	3.448	M2 4:2 FTS	11563	3.458	104.42	7.8977	84.47	259.98	2.00	
6:2 FTS	66960.393	4.477	M2 6:2 FTS	20125	4.477	91.72	9.6234	101.30	2318.04	1.96	
ADONA	171802.948	4.148	M8PFOA	20227	4.499	96.42	9.6480	96.48	1935.18	1.24	
8:2 FTS	63086.477	5.185	M2 8:2 FTS	10639	5.185	103.31	8.9576	93.31	5042.83	1.43	
FOSA	90396.222	5.293	M8FOSA	20014	5.291	90.96	9.7014	97.01	5957.31	1.57	
9Cl-PF3ONS	400281.816	5.080	M8PFOS	4212	4.882	89.38	9.8019	98.02	15659.50	1.25	
PFDS	16602.150	5.494	M6PFDA	31028	5.186	100.39	10.1338	105.01	1283.35	1.89	
11Cl-PF3OUdS	93428.599	5.679	M8PFOS	4212	4.882	89.38	9.9840	99.84	7954.59	1.35	
PFHpS	34626.031	4.539	M8PFOA	20227	4.499	96.42	11.2704	118.64	933.27	1.50	
10:2 FTS	53138.074	5.827	M2 8:2 FTS	10639	5.185	103.31	15.8814	82.37	8773.46	1.44	
PFNS	15370.477	5.194	M9PFNA	23816	4.863	89.44	11.6877	121.75	830.14	1.98	
PFDoS	42233.802	6.179	M8PFOS	4212	4.882	89.38	20.2780	104.74	1967.72	1.69	
PFPeS	30948.104	3.647	M5PFHxA	28136	3.490	104.74	10.1964	108.47	675.03	1.29	
PFODA	59732.831	8.206	M2PFHxDA	27977	7.575	82.69	19.0662	95.33	2529.83	1.48	
NEtFOSAA	34239.619	5.484	d5-NEtFOSAA	11807	5.484	94.01	10.3425	103.43	1081.76	1.93	
PFHxDA	52407.267	7.579	M2PFHxDA	27977	7.575	82.69	19.2141	96.07	1018.04	1.28	
NMeFOSAA	31120.013	5.329	d3-NMeFOSAA	9697	5.328	101.76	9.9145	99.15	1666.29	1.75	
PFBA	81298.798	0.505	MPFBA	36156	0.511	102.32	8.7225	87.23	826.40	1.60	
PFBS	30757.988	2.475	M3PFBS	14957	2.473	126.80	6.6759	75.43	1331.57	1.10	
NMeFOSA	14452.598	5.928	d-NMeFOSA	11235	5.927	66.83	13.8105	69.05	492.49	1.46	
PFDA	79796.388	5.187	M6PFDA	31028	5.186	100.39	8.5269	85.27	1189.47	1.81	
PFDoA	64906.487	5.818	MPFDoA	35237	5.818	93.58	8.9015	89.02	3592.10	1.65	
NEtFOSA	14245.374	6.227	d-NEtFOSA	8092	6.216	68.19	12.7769	63.88	338.25	1.63	
PFHpA	63725.744	4.067	M4PFHpA	35149	4.067	99.60	8.8745	88.75	667.51	1.30	
PFHxA	64535.556	3.493	M5PFHxA	28136	3.490	104.74	8.6923	86.92	1797.83	1.31	
NMeFOSE	36447.310	5.964	d7-NMeFOSE	21168	5.943	90.98	16.4678	82.34	1890.56	1.27	
PFHxS	40177.867	4.137	M3PFHxS	10407	4.136	104.22	8.6166	94.48	1155.34	1.28	m
PFNA	63146.801	4.864	M9PFNA	23816	4.863	89.44	8.5152	85.15	1383.23	1.89	
NEtFOSE	31986.544	6.244	d9-NEtFOSE	18468	6.223	88.84	15.7200	78.60	1220.99	1.23	
PFOA	56943.326	4.500	M8PFOA	20227	4.499	96.42	9.9898	99.90	1239.40	1.57	
PFOS	37627.465	4.894	M8PFOS	4212	4.882	89.38	9.8097	105.99	INF	1.24	m
PFPeA	33041.471	1.637	M5PFPeA	16478	1.624	98.00	8.5280	85.28	600.21	1.15	
PFMPA	66267.907	0.766	M5PFPeA	16478	1.624	98.00	17.6788	88.39	2809.19	1.17	
PFTA	51027.455	6.614	M2PFTA	28196	6.613	88.71	10.1990	101.99	375.90	1.46	
PFMBA	62298.697	2.510	M5PFHxA	28136	3.490	104.74	16.3580	81.79	3830.17	1.23	
PFTrDA	77682.914	6.190	MPFDoA	35237	5.818	93.58	10.2936	102.94	759.12	1.62	
PFEESA	166198.635	3.242	M3PFHxS	10407	4.136	104.22	17.3113	97.25	578.62	1.85	
PFUnA	99974.497	5.497	M7PFUnA	54376	5.496	103.62	8.6012	86.01	1080.41	1.40	
NFDHA	65167.349	3.372	M4PFHpA	35149	4.067	99.60	18.8186	94.09	5231.34	1.82	

HFPO-DA



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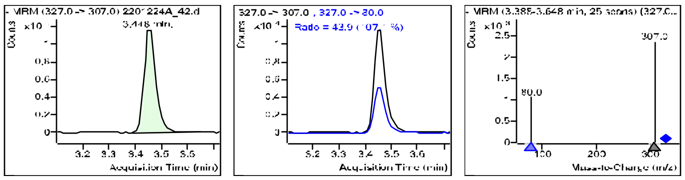

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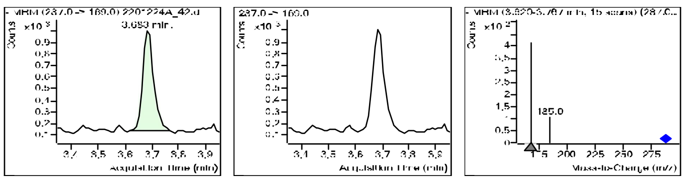

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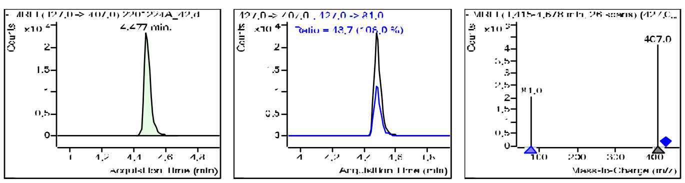

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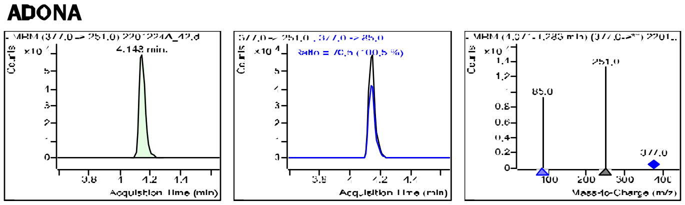
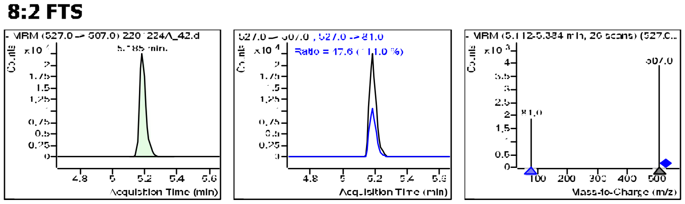


8:2 FTS



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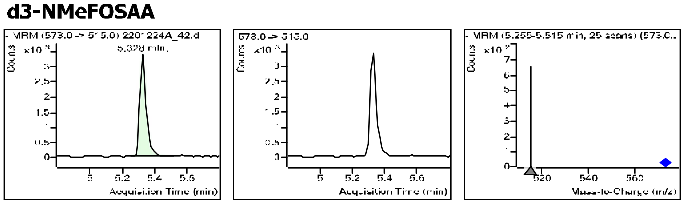

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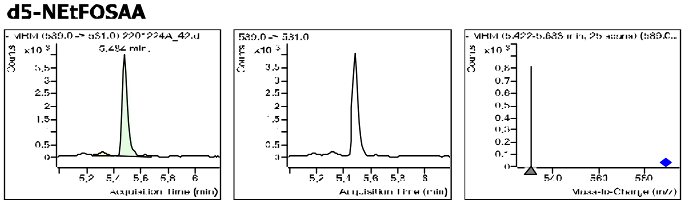

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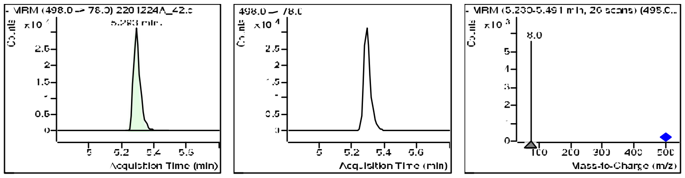

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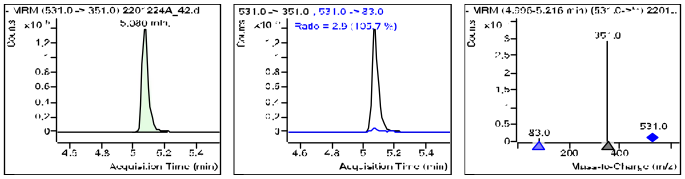

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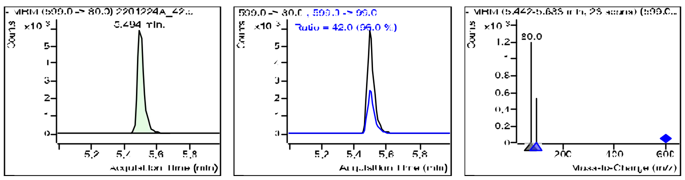

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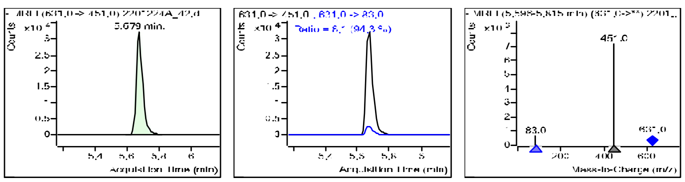

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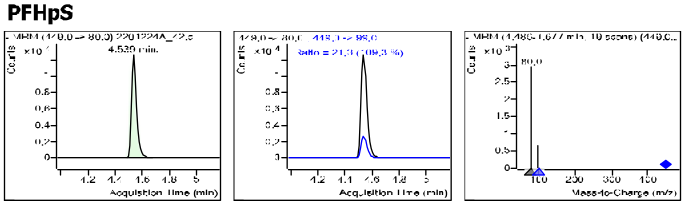
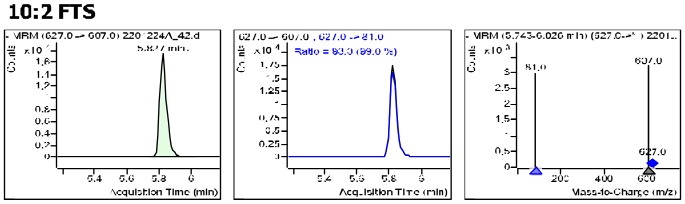


10:2 FTS



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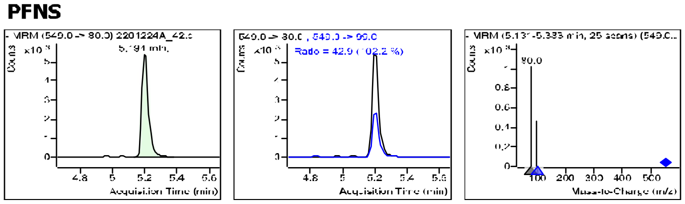

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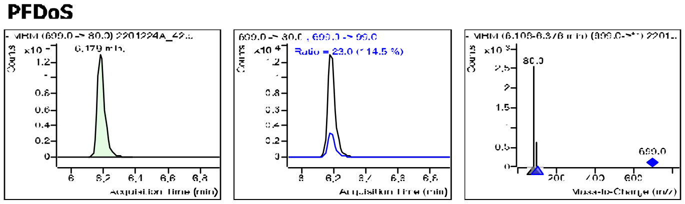

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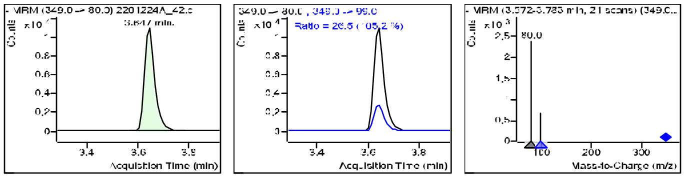

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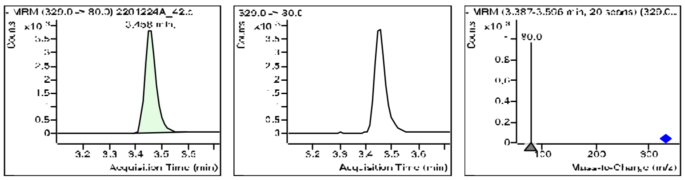
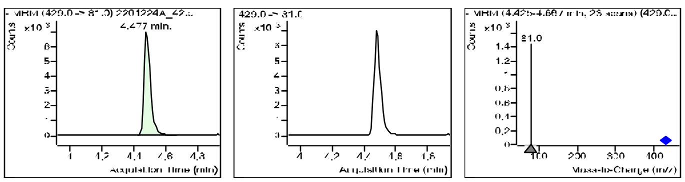
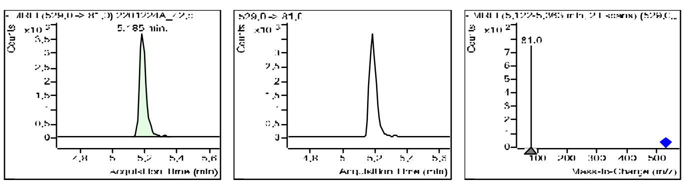


M2 6:2 FTS



M2 8:2 FTS



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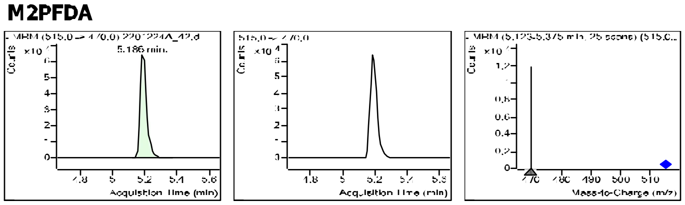

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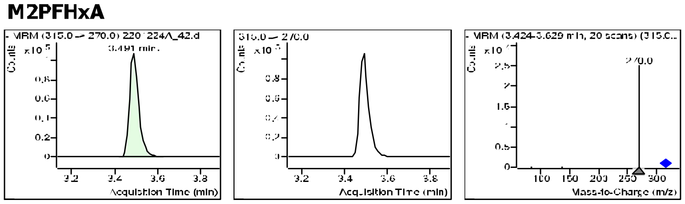

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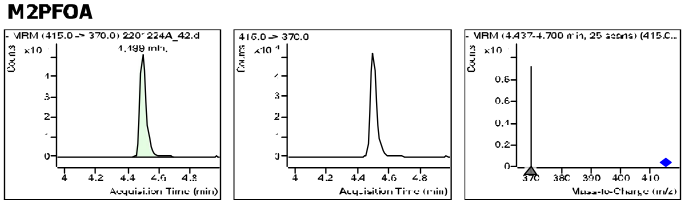

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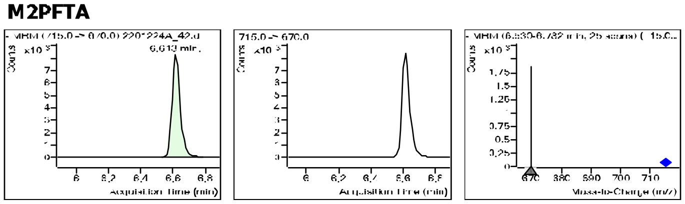

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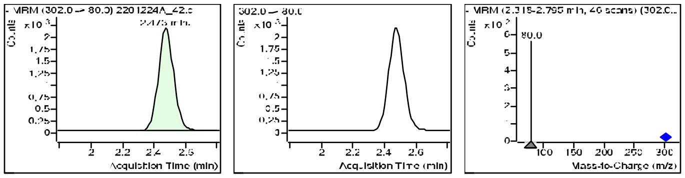

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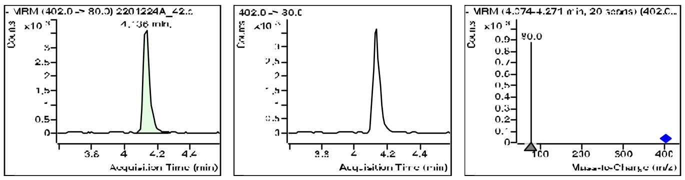

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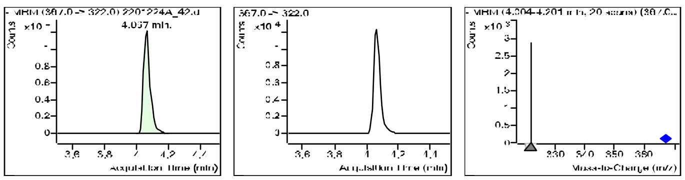

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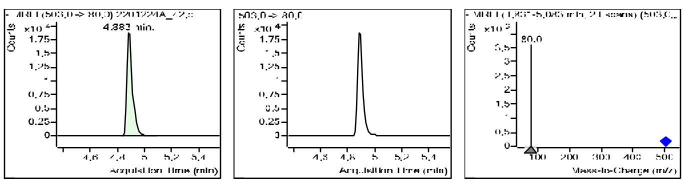

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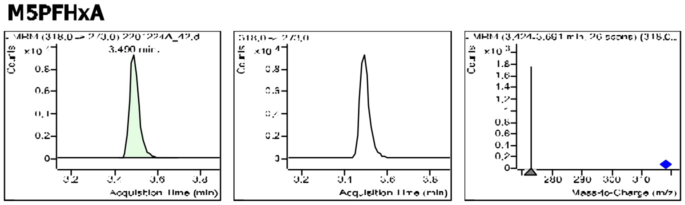

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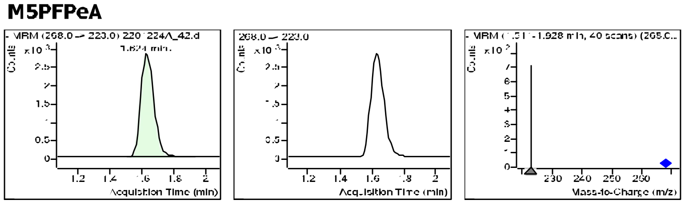

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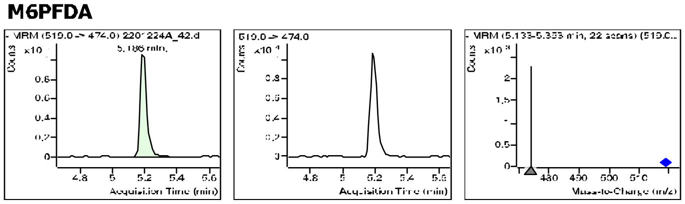
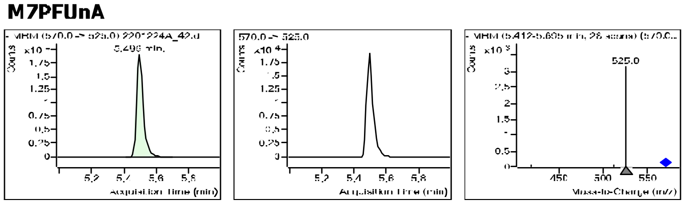


M7PFUnA



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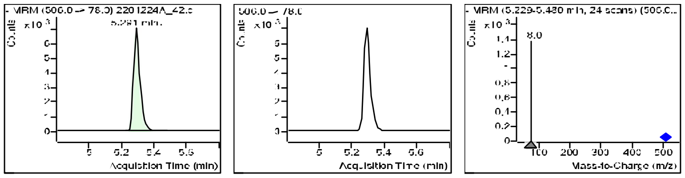

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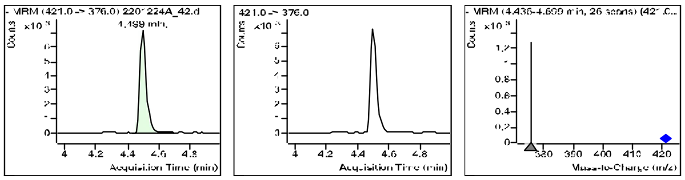

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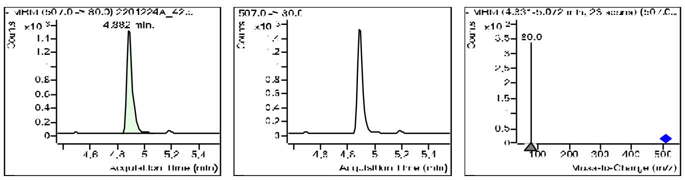

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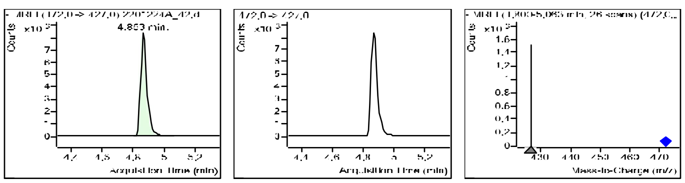

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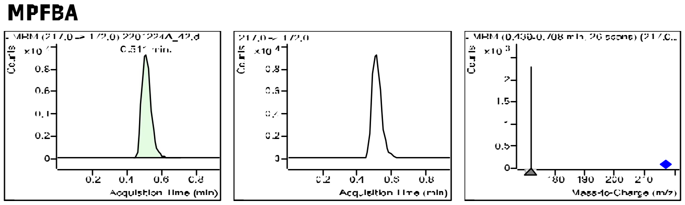

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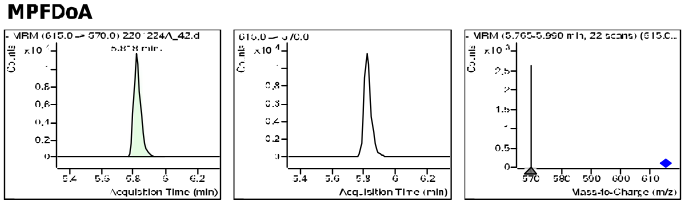

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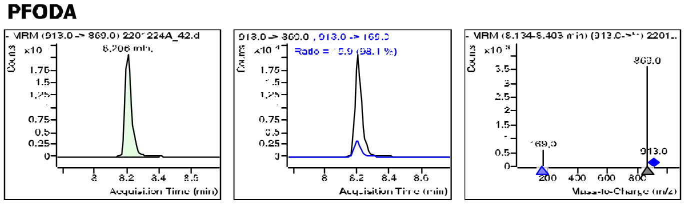

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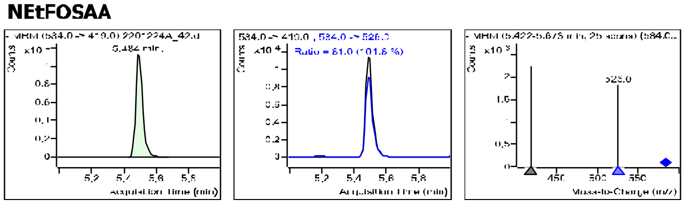

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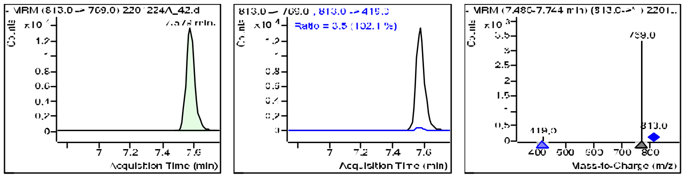

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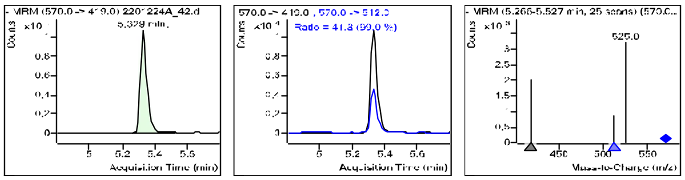

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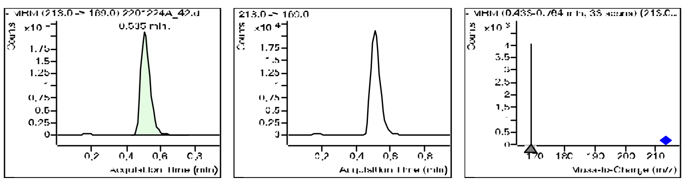

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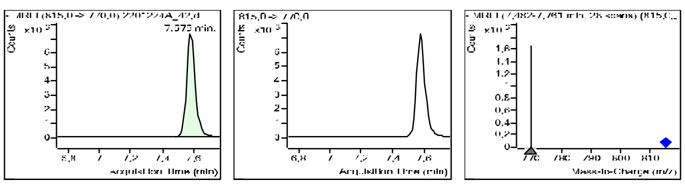

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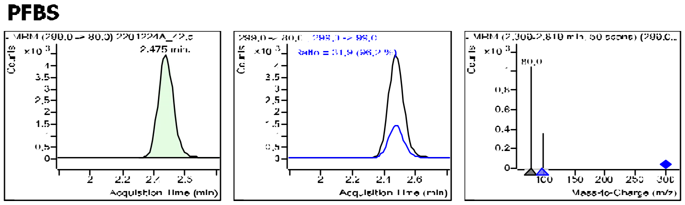

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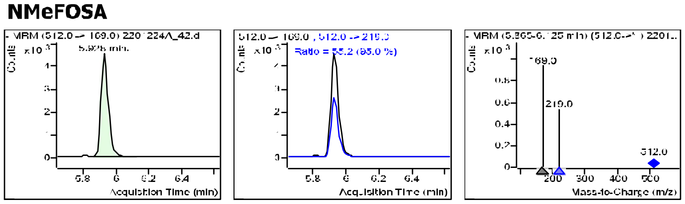

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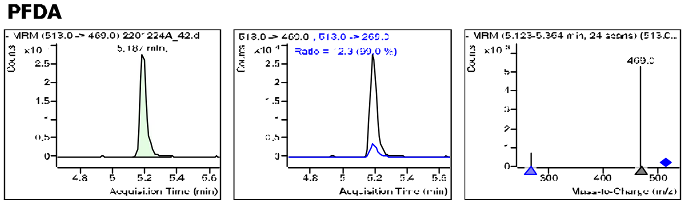

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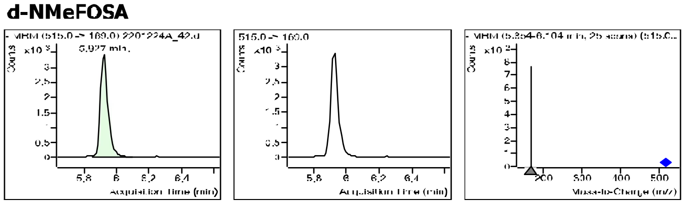

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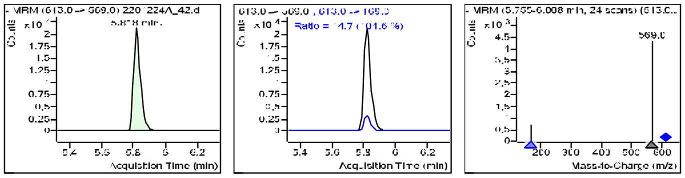

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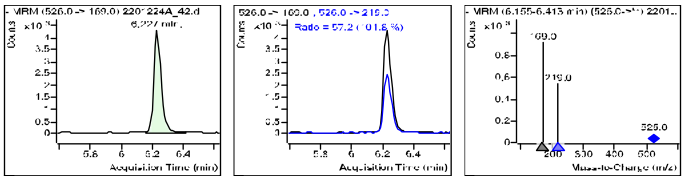

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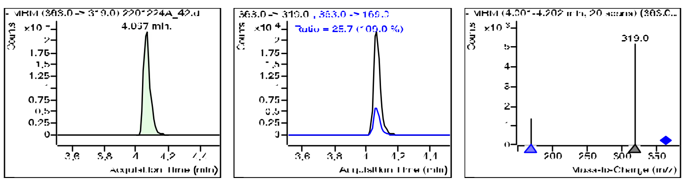

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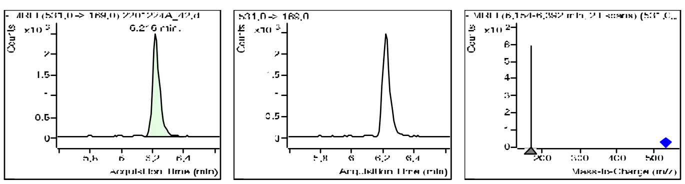

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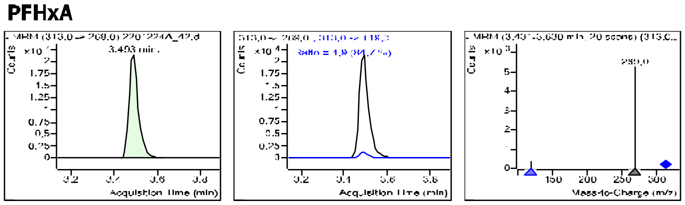

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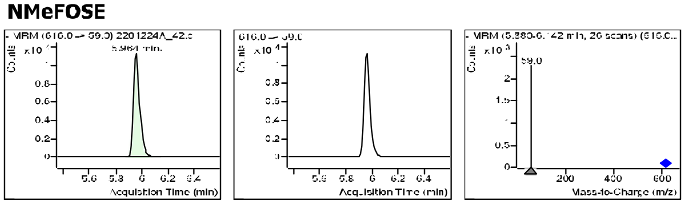

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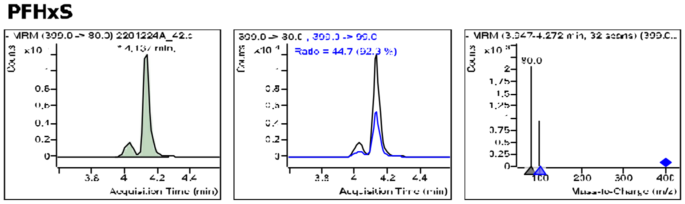

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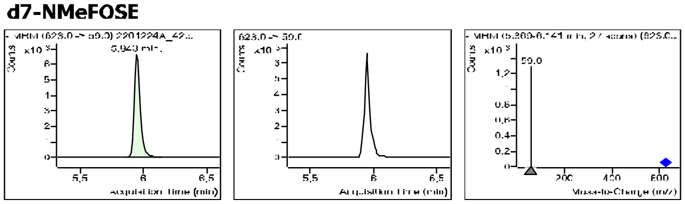

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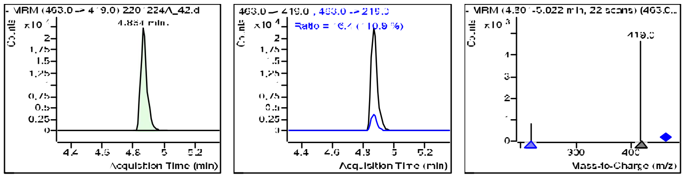

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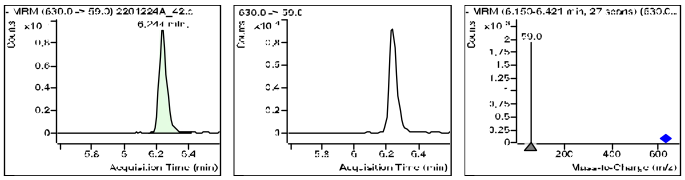

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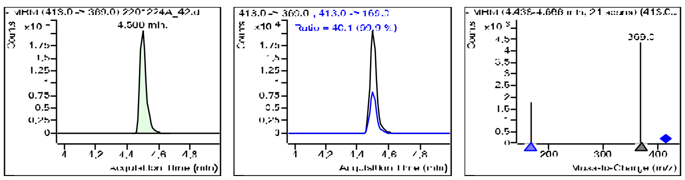

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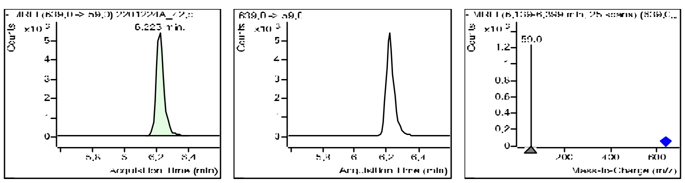

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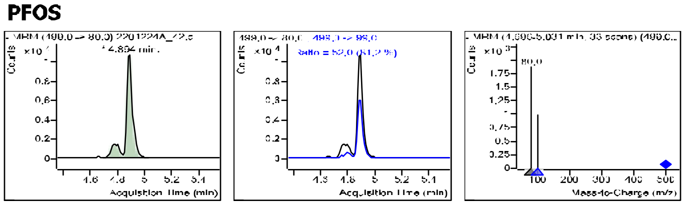

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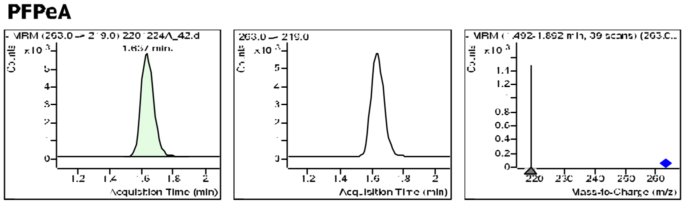

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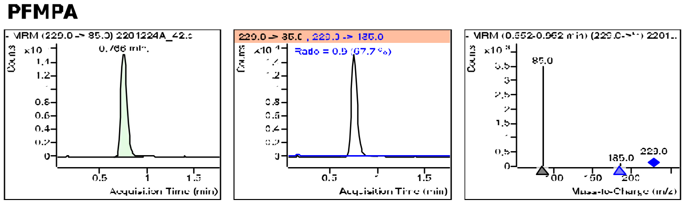

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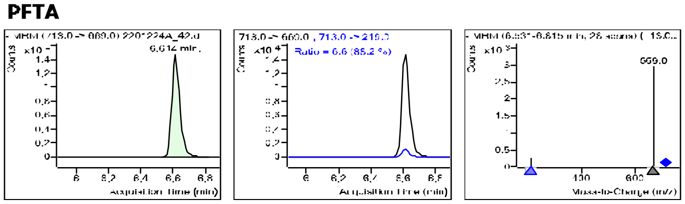

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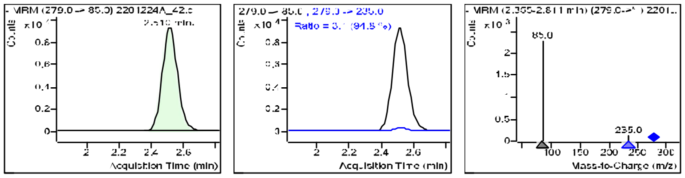

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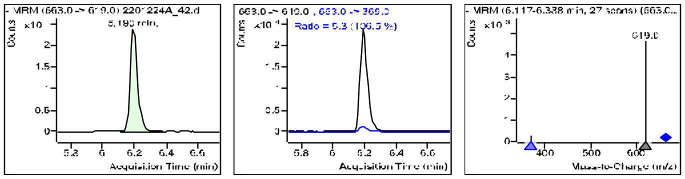

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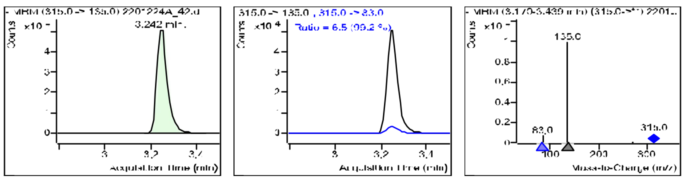

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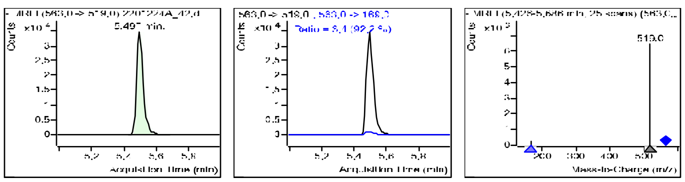

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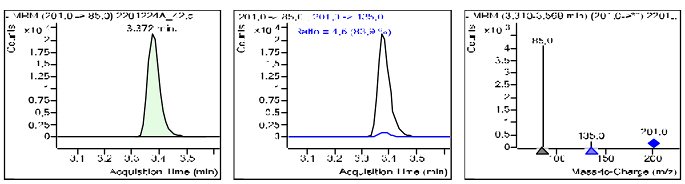

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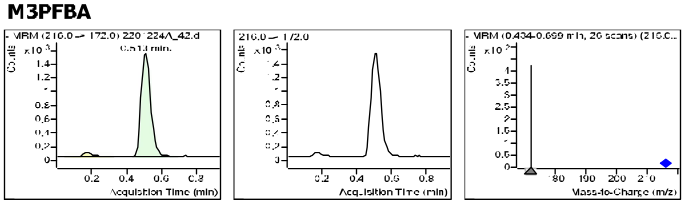

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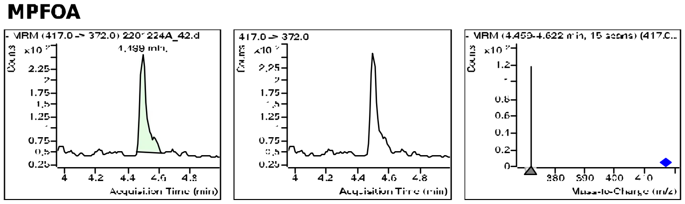


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	LCSD2127845
Collect Date:	NA Time: NA	GCAL Sample ID:	2127845
Matrix:	Water % Moisture: NA	Instrument ID:	QQQ1
Sample Amt:	125 mL	Lab File ID:	2201224A_43.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	12/24/20 Time: 2239
Prep Batch:	700361	Analytical Batch:	700789
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ng/L

CAS	*ANALYTE*	*RESULT*	*Q*	*DL*	*LOD*	*LOQ*
27619-97-2	6:2 Fluorotelomersulfonic acid	71.9		1.79	4.00	10.0
39108-34-4	8:2 Fluorotelomersulfonic acid	79.2		1.63	4.00	10.0
375-73-5	Perfluorobutanesulfonic acid	55.7		1.47	4.00	10.0
375-22-4	Perfluorobutanoic acid	70.6		2.13	4.00	10.0
335-76-2	Perfluorodecanoic acid	66.6		1.65	4.00	10.0
375-85-9	Perfluoroheptanoic acid	74.7		1.85	4.00	10.0
355-46-4	Perfluorohexanesulfonic acid	65.9		1.64	4.00	10.0
307-24-4	Perfluorohexanoic acid	72.7		1.94	4.00	10.0
375-95-1	Perfluorononanoic acid	67.5		1.68	4.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	83.1		1.70	4.00	10.0
335-67-1	Perfluorooctanoic acid	80.4		1.80	4.00	10.0
2706-90-3	Perfluoropentanoic acid	68.7		2.35	4.00	10.0
2058-94-8	Perfluoroundecanoic acid	96.7		1.86	4.00	10.0

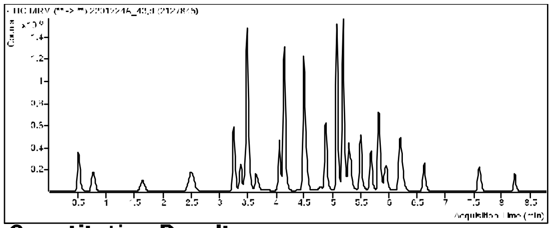
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_43.d	**Position**	Vial 36	**Samp Name**	2127845	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	QC	**Comment**	MRA,QQQ1;700361
Acq Date	12/24/2020 22:39						

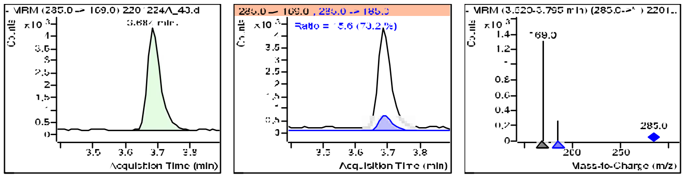
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	193371.743	5.186				113.01	22.6018	113.01	6799.39	1.88	
M2PFHxA	314999.752	3.491				118.16	47.2648	118.16	17728.28	1.60	
M2PFOA	148448.774	4.499				117.49	23.4986	117.49	12052.84	1.98	
M4PFOS	52289.959	4.893				107.44	21.4877	107.44	6577.35	1.31	
M3PFBA	6478.643	0.503				0.00	5.0417	100.83	441.06	1.74	
MPFOA	535.669	4.509				0.00	26.2915	105.17	4.06	1.16	
HFPO-DA	11786.101	3.684	M3HFPODA	2842	3.693	96.91	32.5719	108.57	INF	1.90	
4:2 FTS	36802.710	3.458	M2 4:2 FTS	11816	3.458	106.71	7.9523	85.05	1010.00	1.37	
6:2 FTS	66360.252	4.487	M2 6:2 FTS	21370	4.487	97.39	8.9817	94.54	741.39	1.39	
ADONA	180368.457	4.148	M8PFOA	21899	4.499	104.40	9.3555	93.56	19710.02	1.49	
8:2 FTS	64667.311	5.185	M2 8:2 FTS	9863	5.185	95.77	9.9046	103.17	7041.30	1.49	
FOSA	98307.469	5.293	M8FOSA	19834	5.291	90.15	10.6461	106.46	6520.82	1.58	
9Cl-PF3ONS	413772.157	5.080	M8PFOS	4291	4.893	91.06	9.9452	99.45	9700.05	1.26	
PFDS	12867.387	5.494	M6PFDA	33203	5.186	107.43	7.3396	76.06	880.02	1.63	
11Cl-PF3OUdS	97671.884	5.679	M8PFOS	4291	4.893	91.06	10.2447	102.45	10050.23	1.30	
PFHpS	36350.652	4.539	M8PFOA	21899	4.499	104.40	10.9282	115.03	4635.65	1.86	
10:2 FTS	53461.045	5.827	M2 8:2 FTS	9863	5.185	95.77	17.2353	89.39	6780.48	1.39	
PFNS	14301.619	5.194	M9PFNA	26050	4.863	97.83	9.9423	103.57	1227.18	2.03	
PFDoS	41938.467	6.179	M8PFOS	4291	4.893	91.06	19.7643	107.09	879.58	1.68	
PFPeS	32427.810	3.647	M5PFHxA	28630	3.490	106.58	10.4997	111.70	2392.11	1.55	
PFODA	41174.949	8.216	M2PFHxDA	28530	7.596	84.32	12.8876	64.44	3179.03	2.02	
NEtFOSAA	10805.174	5.505	d5-NEtFOSAA	8745	5.484	69.64	4.4064	44.06	714.93	0.96	
PFHxDA	52510.679	7.599	M2PFHxDA	28530	7.596	84.32	18.8785	94.39	1247.00	1.29	
NMeFOSAA	30435.504	5.329	d3-NMeFOSAA	10010	5.328	105.05	9.3929	93.93	2765.43	1.62	
PFBA	84643.801	0.505	MPFBA	37210	0.501	105.30	8.8242	88.24	609.60	1.63	
PFBS	32062.765	2.475	M3PFBS	14949	2.473	126.73	6.9630	78.68	1312.71	1.10	
NMeFOSA	14936.596	5.928	d-NMeFOSA	9747	5.917	57.98	16.4522	82.26	315.32	1.41	
PFDA	83418.773	5.187	M6PFDA	33203	5.186	107.43	8.3300	83.30	1093.64	1.84	
PFDoA	71927.491	5.818	MPFDoA	36491	5.818	96.92	9.5253	95.25	1348.19	1.59	
NEtFOSA	14570.420	6.227	d-NEtFOSA	7470	6.216	62.95	14.1568	70.78	966.76	1.56	
PFHpA	71745.388	4.067	M4PFHpA	37592	4.067	106.53	9.3420	93.42	825.08	1.60	
PFHxA	68633.424	3.493	M5PFHxA	28630	3.490	106.58	9.0849	90.85	233.59	1.44	
NMeFOSE	39629.319	5.954	d7-NMeFOSE	22023	5.943	94.65	17.2100	86.05	9767.70	1.84	
PFHxS	41903.128	4.137	M3PFHxS	11346	4.136	113.63	8.2427	90.38	2889.64	1.55	m
PFNA	68468.768	4.864	M9PFNA	26050	4.863	97.83	8.4411	84.41	219.71	2.06	
NEtFOSE	38521.184	6.233	d9-NEtFOSE	22387	6.223	107.69	15.6172	78.09	730.72	1.82	
PFOA	61984.138	4.500	M8PFOA	21899	4.499	104.40	10.0438	100.44	2065.29	1.96	
PFOS	40584.261	4.894	M8PFOS	4291	4.893	91.06	10.3852	112.21	1493.92	1.29	m
PFPeA	34868.128	1.637	M5PFPeA	17259	1.624	102.64	8.5922	85.92	451.54	1.13	
PFMPA	71551.802	0.755	M5PFPeA	17259	1.624	102.64	18.2246	91.12	2504.27	1.30	
PFTA	53538.837	6.624	M2PFTA	29574	6.623	93.05	10.2025	102.03	2516.32	1.25	
PFMBA	67770.312	2.520	M5PFHxA	28630	3.490	106.58	17.4879	87.44	2839.05	1.04	
PFTrDA	82593.650	6.190	MPFDoA	36491	5.818	96.92	10.5680	105.68	457.36	1.64	
PFEESA	172029.299	3.253	M3PFHxS	11346	4.136	113.63	16.4354	92.33	12358.46	1.34	
PFUnA	81346.437	5.507	M7PFUnA	31494	5.506	60.02	12.0834	120.83	648.68	0.92	
NFDHA	70677.760	3.382	M4PFHpA	37592	4.067	106.53	19.0835	95.42	5404.05	1.27	

HFPO-DA



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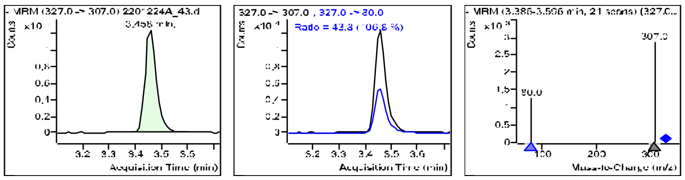

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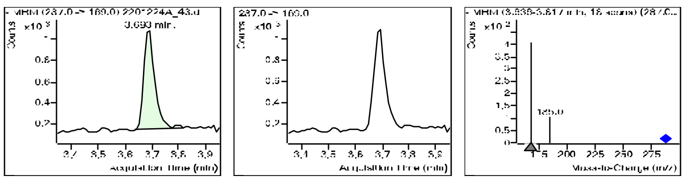

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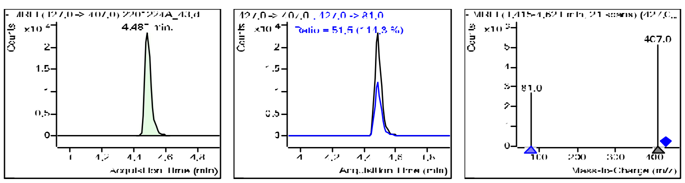

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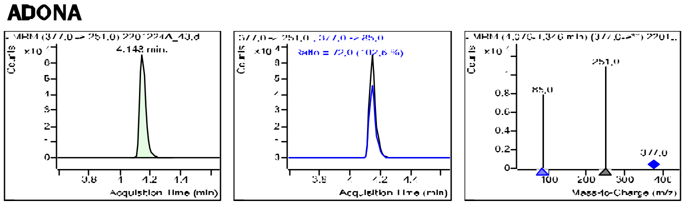

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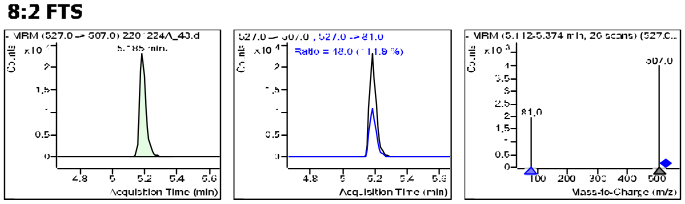
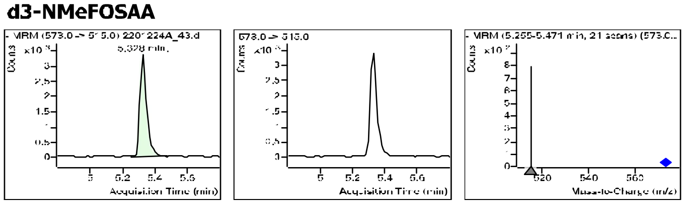


d3-NMeFOSAA



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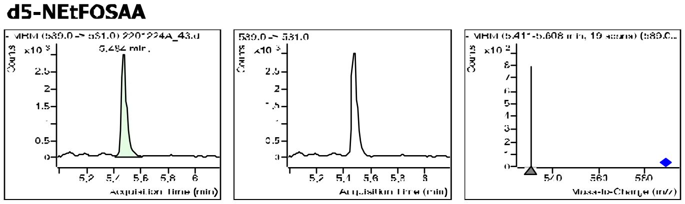

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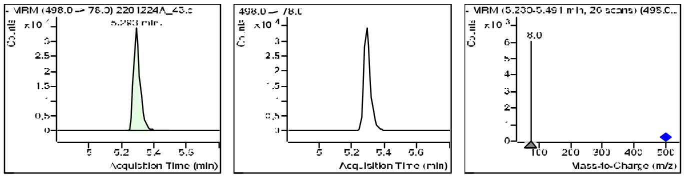

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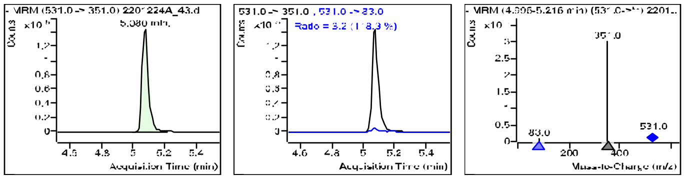

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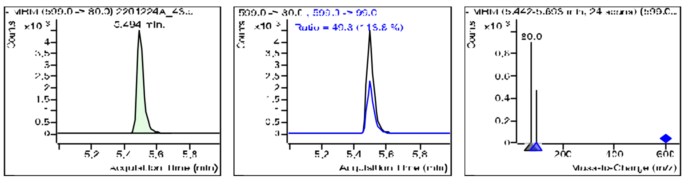

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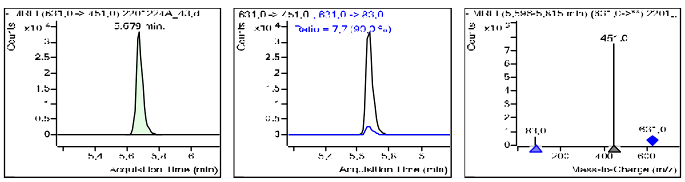

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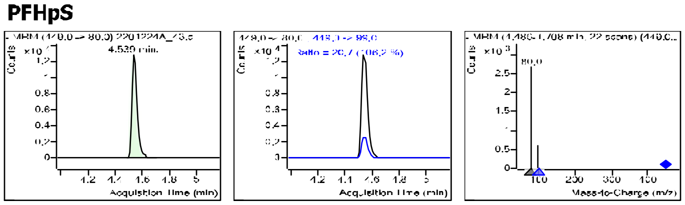

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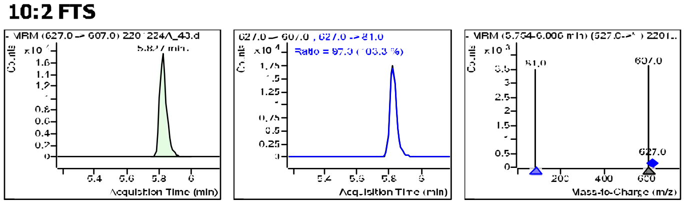

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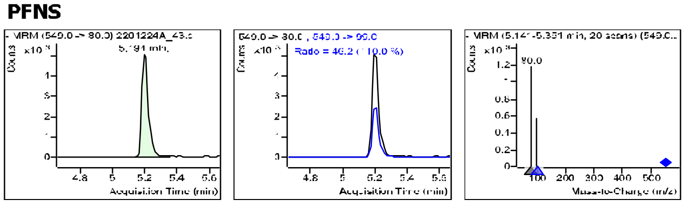

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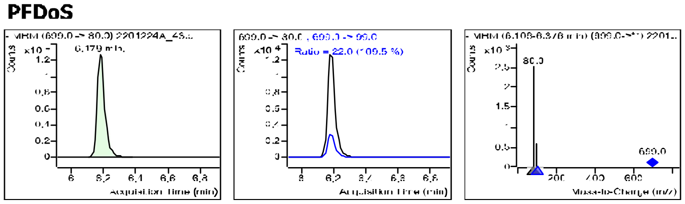

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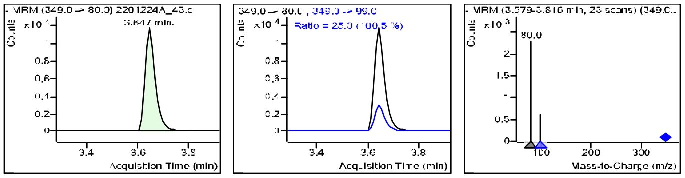

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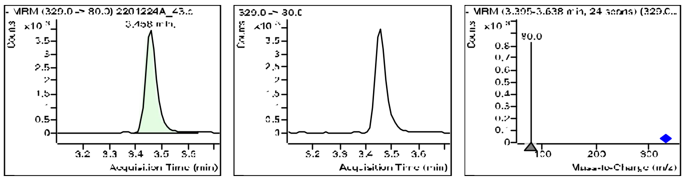

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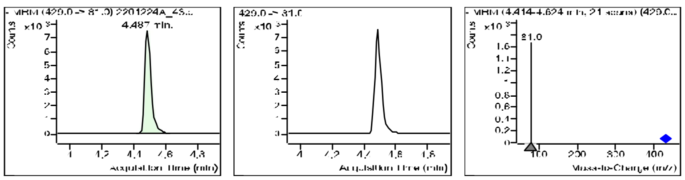

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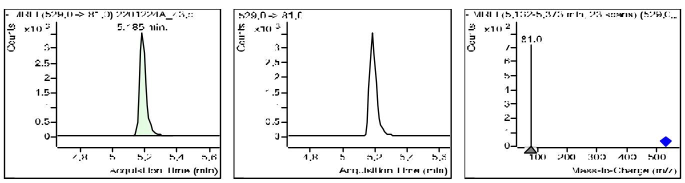

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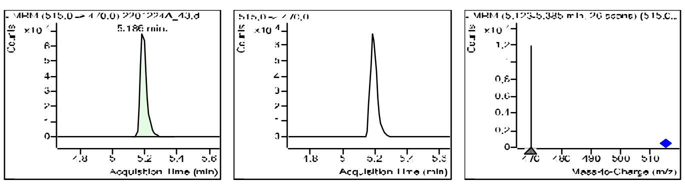

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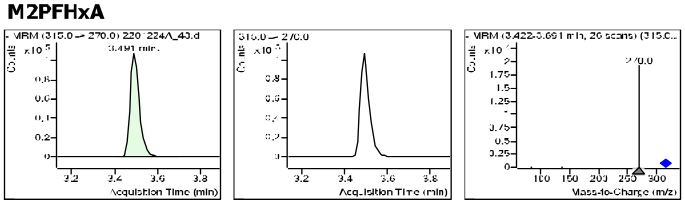

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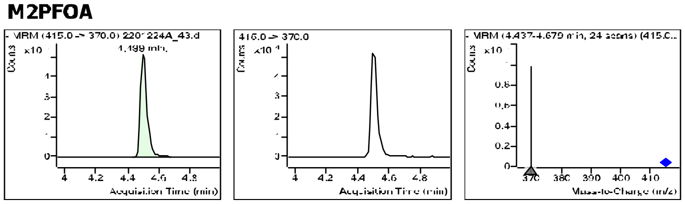

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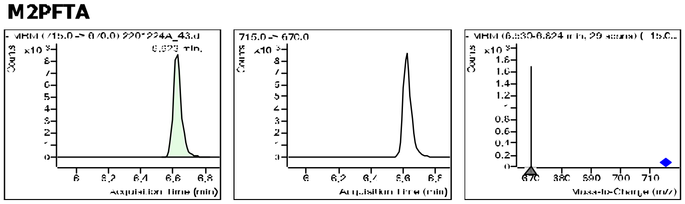

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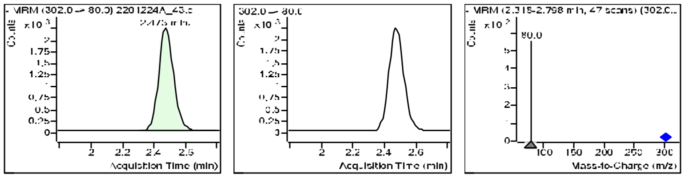

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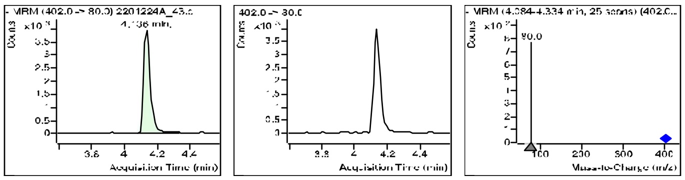

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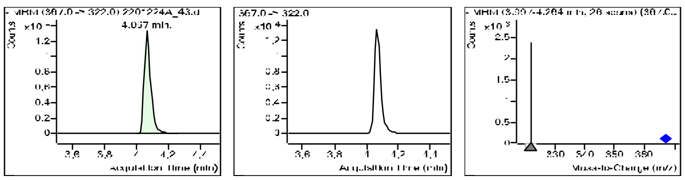

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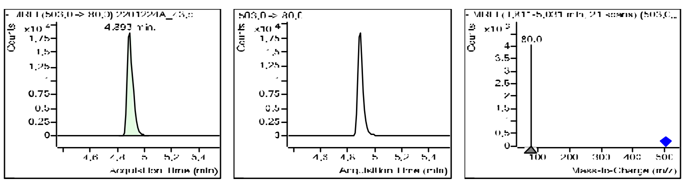

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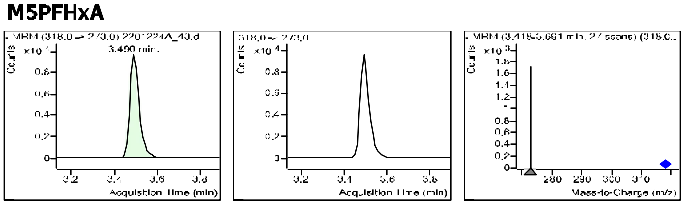

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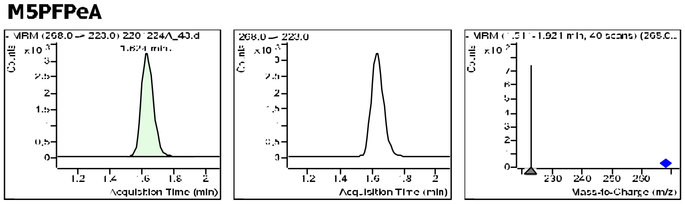

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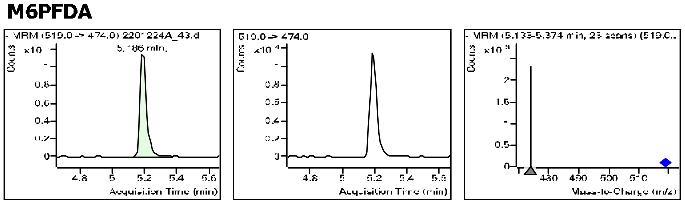

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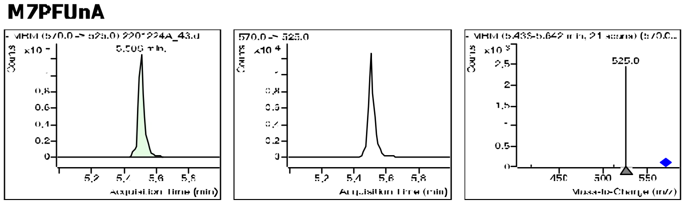

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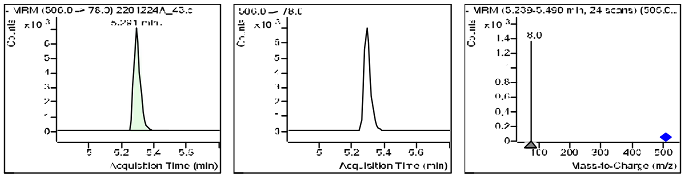

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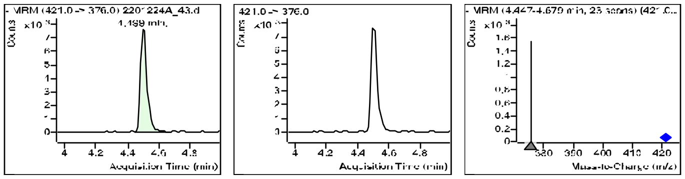

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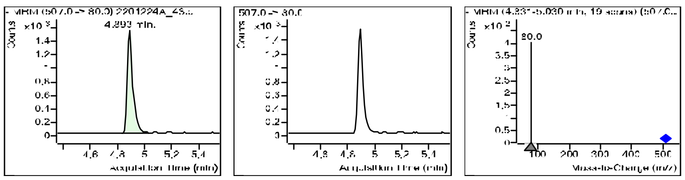

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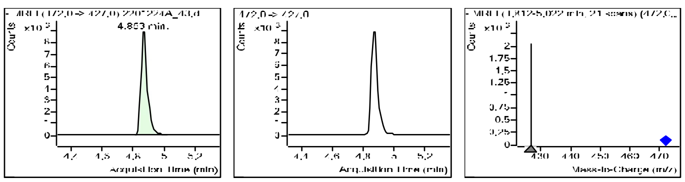

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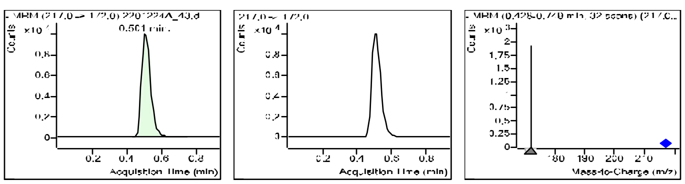

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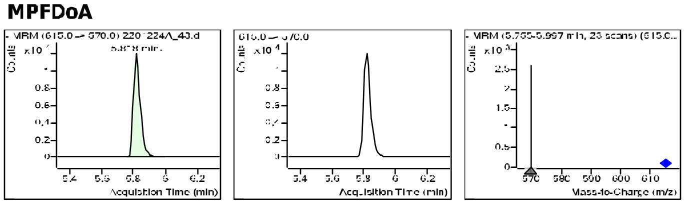

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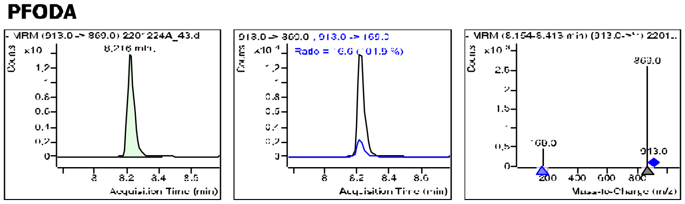

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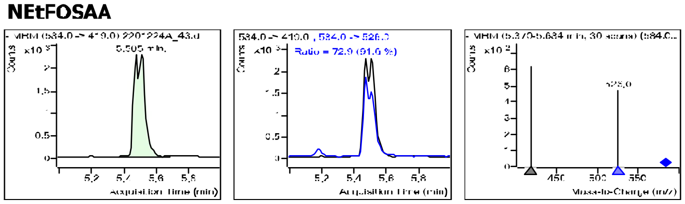

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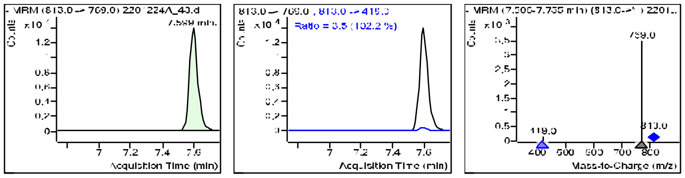

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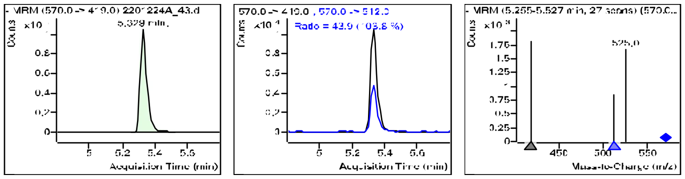

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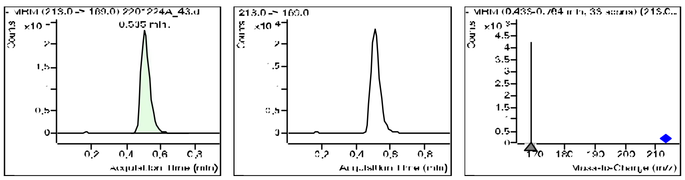

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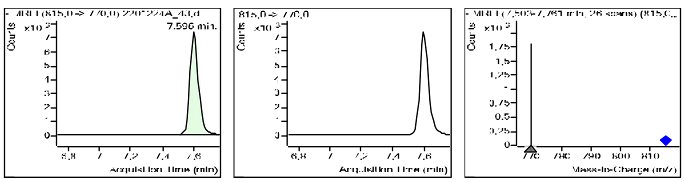

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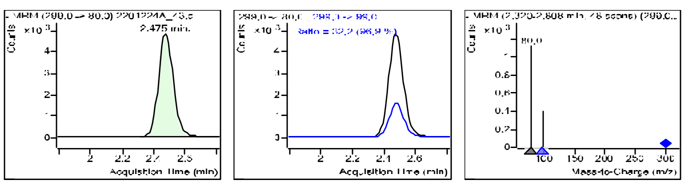

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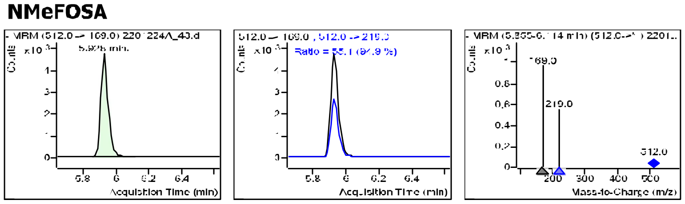

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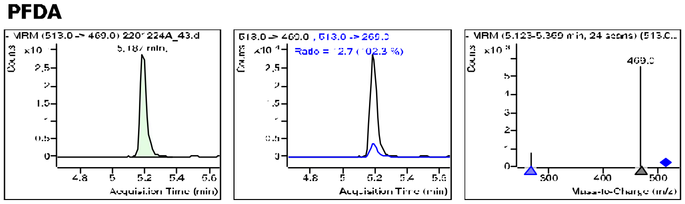

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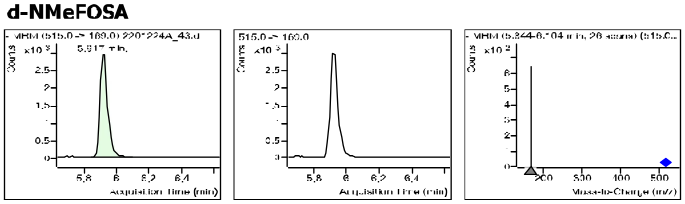

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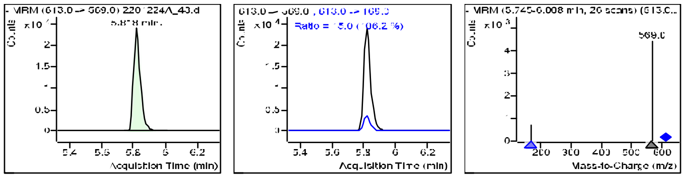

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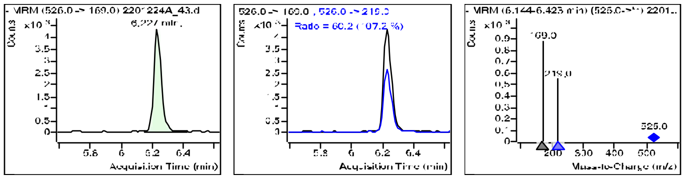

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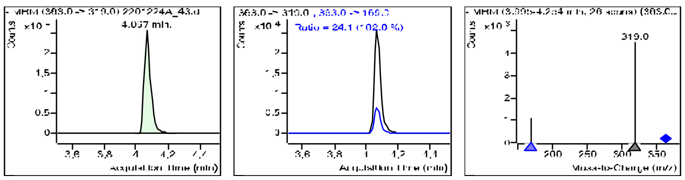

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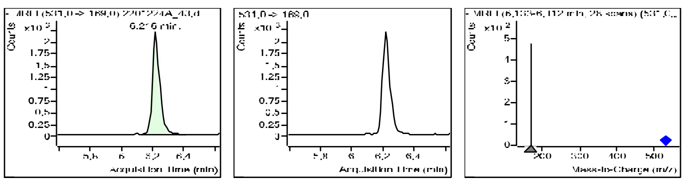

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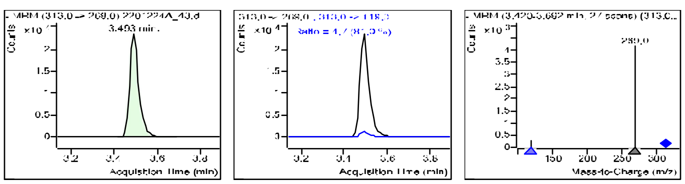

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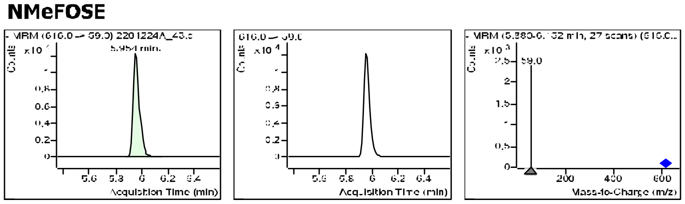

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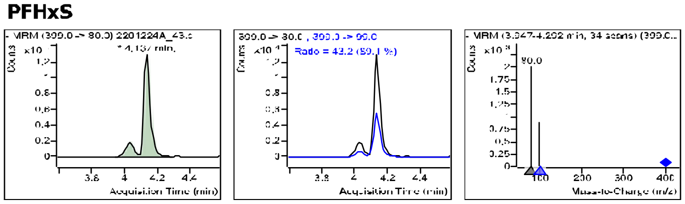

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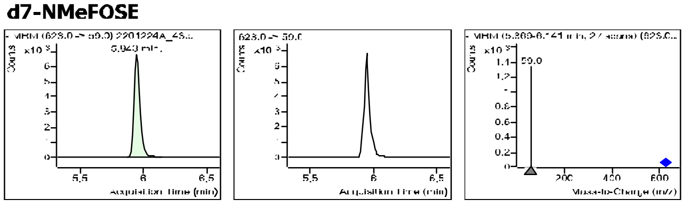

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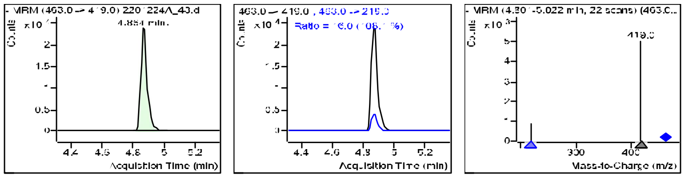

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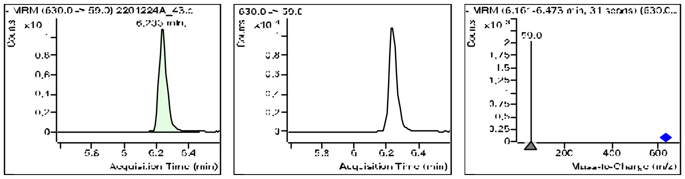

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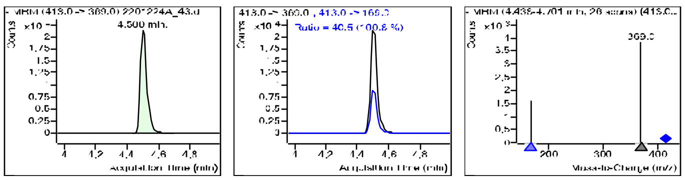

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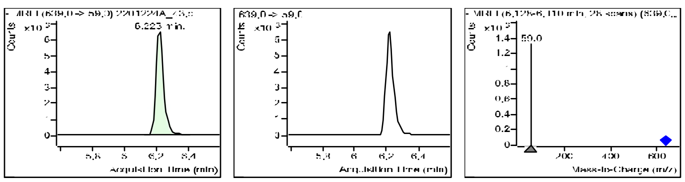

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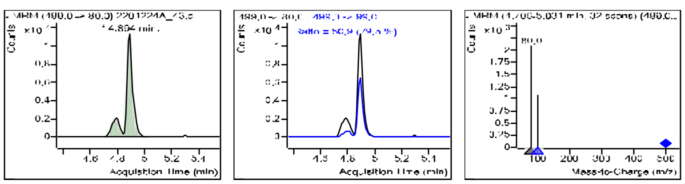

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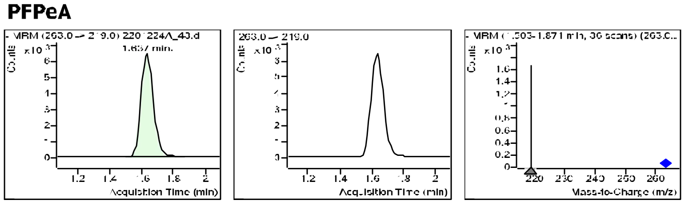

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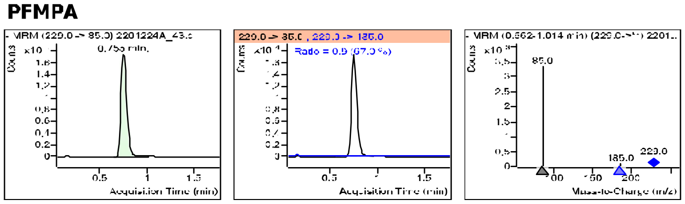

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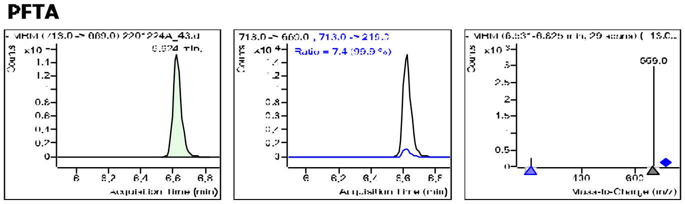

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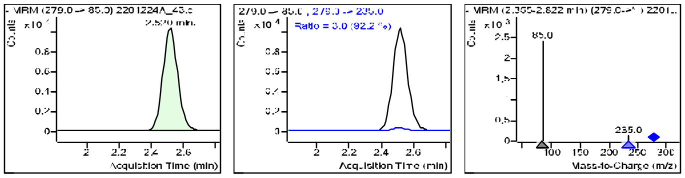

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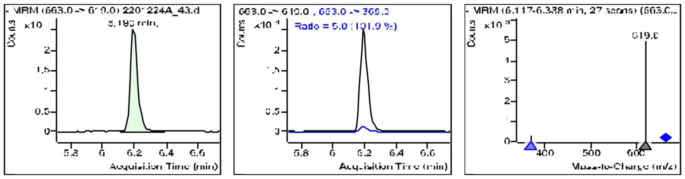

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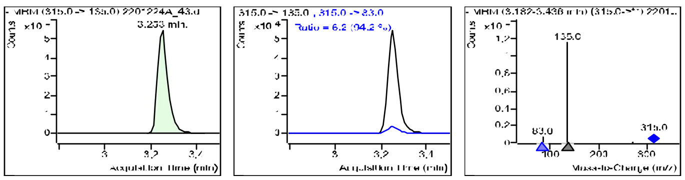

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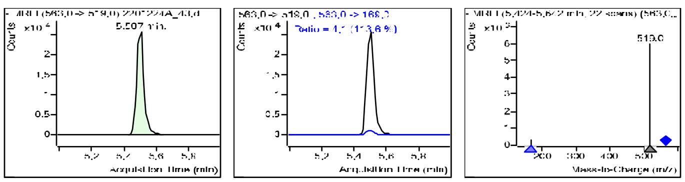

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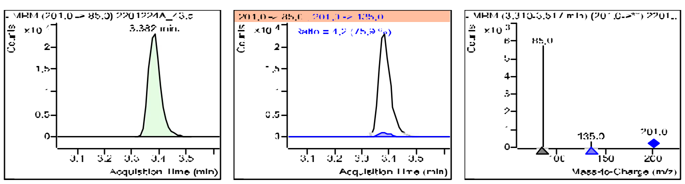

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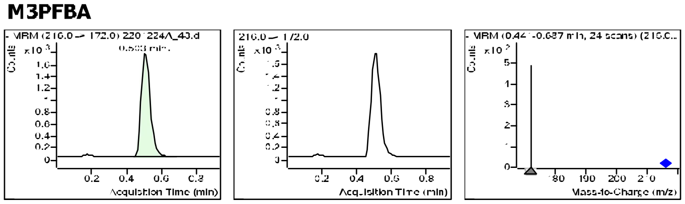

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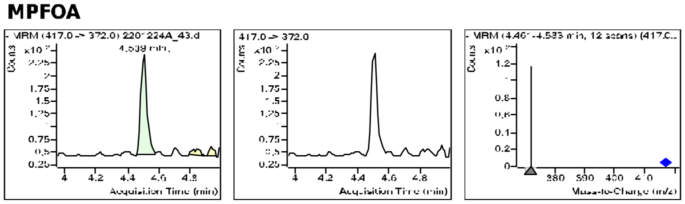


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	MB2128031
Collect Date:	NA Time: NA	GCAL Sample ID:	2128031
Matrix:	Solid % Moisture: NA	Instrument ID:	QQQ2
Sample Amt:	5 g	Lab File ID:	2210104B_22.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	01/04/21 Time: 2123
Prep Batch:	700444	Analytical Batch:	701166
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ug/kg

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
27619-97-2	6:2 Fluorotelomersulfonic acid	0.400	U	0.170	0.400	1.00
39108-34-4	8:2 Fluorotelomersulfonic acid	0.400	U	0.260	0.400	1.00
375-73-5	Perfluorobutanesulfonic acid	0.483	J	0.120	0.400	1.00
375-22-4	Perfluorobutanoic acid	0.400	U	0.130	0.400	1.00
335-76-2	Perfluorodecanoic acid	0.400	U	0.120	0.400	1.00
375-85-9	Perfluoroheptanoic acid	0.520	J	0.130	0.400	1.00
355-46-4	Perfluorohexanesulfonic acid	0.492	J	0.140	0.400	1.00
307-24-4	Perfluorohexanoic acid	0.400	U	0.150	0.400	1.00
375-95-1	Perfluorononanoic acid	0.521	J	0.090	0.400	1.00
1763-23-1	Perfluorooctanesulfonic acid	0.465	J	0.180	0.400	1.00
335-67-1	Perfluorooctanoic acid	0.605	J	0.150	0.400	1.00
2706-90-3	Perfluoropentanoic acid	0.400	U	0.150	0.400	1.00
2058-94-8	Perfluoroundecanoic acid	0.400	U	0.140	0.400	1.00

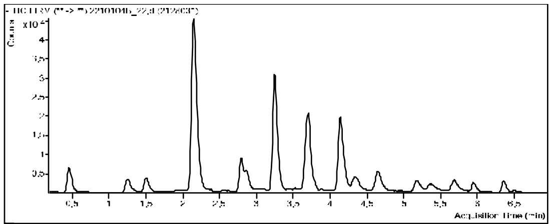
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_22.d	**Position**	P1-B9	**Samp Name**	2128031	**Dilution**	1
Acq Method	PFAS40Poroshell093020	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ2;700444
Acq Date	1/4/2021 21:23						

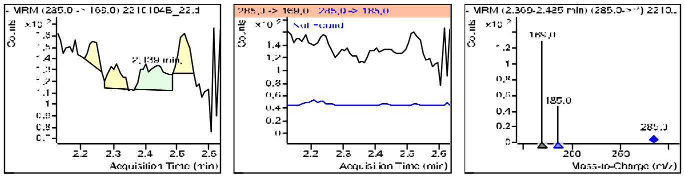
Sample Chromatogram



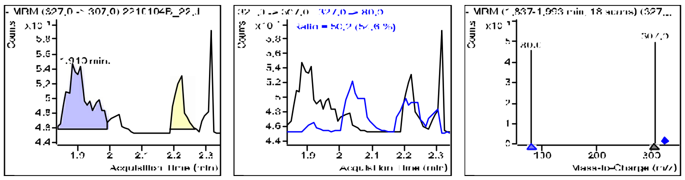
Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	78795.463	4.149				113.47	22.6934		3058.63	1.42	
M2PFHxA	206846.269	2.152				106.48	42.5926		7449.07	1.36	
M2PFOA	86232.098	3.248				109.03	21.8063		3596.54	1.70	
M4PFOS	55195.507	3.712				109.19	21.8385		3977.28	1.37	
MPFOA	352.014	3.248				0.00	31.4869		3.17	1.66	
M3PFBA	3493.794	0.464				0.00	4.7653		43.15	1.73	
HFPO-DA	111.670	2.439	M3HFPODA	566	2.393	84.59	1.3010		0.54	0.86	
4:2 FTS	39.722	1.910	M2 4:2 FTS	2574	2.104	104.31	0.0489		1.84	1.07	
6:2 FTS	68.439	3.245	M2 6:2 FTS	5000	3.225	110.62	0.0425		4.82	1.06	
ADONA	57.503	2.878	M8PFOA	23968	3.247	109.20	0.0036		2.11	1.86	
9Cl-PF3ONS	67.331	3.951	M8PFOS	11512	3.711	111.72	0.0061		0.59	0.94	
11Cl-PF3OUdS	23.504	4.970	M8PFOS	11512	3.711	111.72	0.0023		0.62	1.17	
PFDoS	36.879	5.669	M8PFOS	11512	3.711	111.72	0.0106		1.30	0.79	
PFPeS	18.571	2.231	M5PFHxA	21734	2.151	104.89	0.0085		0.31	0.75	
PFODA	27.939	6.706	M2PFHxDA	12841	6.348	115.05	0.0183		4.74	2.13	
NEtFOSAA	33.823	4.513	d5-NEtFOSAA	12630	4.632	116.59	0.0095		1.54	0.68	
PFHxDA	127.599	6.361	M2PFHxDA	12841	6.348	115.05	0.0541		11.32	1.17	
NMeFOSAA	37.065	4.356	d3-NMeFOSAA	7848	4.374	101.68	0.0115		6.96	1.14	
PFBA	279.934	0.457	MPFBA	23430	0.463	95.58	0.0322		4.62	1.15	
PFBS	5961.899	1.507	M3PFBS	9676	1.505	105.72	2.4167		266.02	1.36	
PFDA	77.495	4.131	M6PFDA	16851	4.149	108.23	0.0198		3.65	1.50	
PFDoA	19.409	5.215	MPFDoA	15758	5.177	116.52	0.0064		4.22	0.75	
NEtFOSA	19.357	5.778	d-NEtFOSA	5142	5.684	82.07	0.0150		1.26	1.17	
PFHpA	13740.619	2.798	M4PFHpA	22212	2.797	108.35	2.5995		350.08	1.50	
PFHxA	215.004	2.171	M5PFHxA	21734	2.151	104.89	0.0434		2.55	0.73	
PFHxS	7007.367	2.875	M3PFHxS	10489	2.874	109.85	2.4607		312.04	0.84	m
PFNA	13409.866	3.679	M9PFNA	23262	3.678	112.53	2.6046		253.01	1.52	
PFOA	15770.846	3.249	M8PFOA	23968	3.247	109.20	3.0267		75.60	1.70	m
PFOS	8520.737	3.704	M8PFOS	11512	3.711	111.72	2.3237		112.05	0.79	m
PFPeA	125.979	1.253	M5PFPeA	17108	1.263	100.77	0.0231		2.89	1.27	
PFMPA	13.609	0.698	M5PFPeA	17108	1.263	100.77	0.0028		1.49	0.72	
PFTA	37.140	5.984	M2PFTA	10494	5.954	110.96	0.0205		4.94	0.95	
PFTrDA	34.620	5.634	MPFDoA	15758	5.177	116.52	0.0145		1.91	1.52	
PFEESA	84.718	1.913	M3PFHxS	10489	2.874	109.85	0.0092		1.90	0.68	
PFUnA	14.404	4.647	M7PFUnA	18605	4.662	111.44	0.0037		0.54	2.00	
NFDHA	18.233	2.165	M4PFHpA	22212	2.797	108.35	0.0042		1.49	0.83	

HFPO-DA



4:2 FTS



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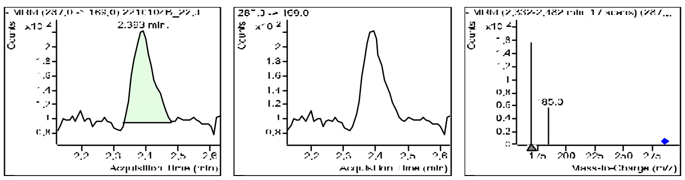

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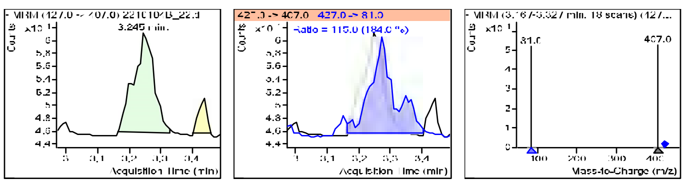
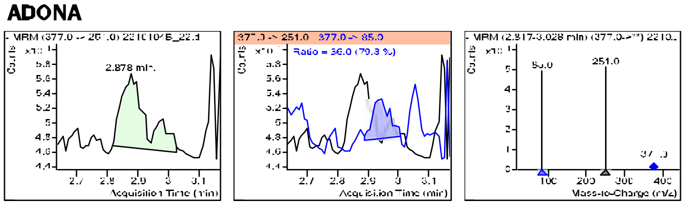
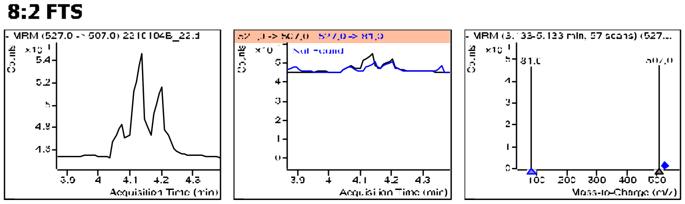


ADONA



8:2 FTS



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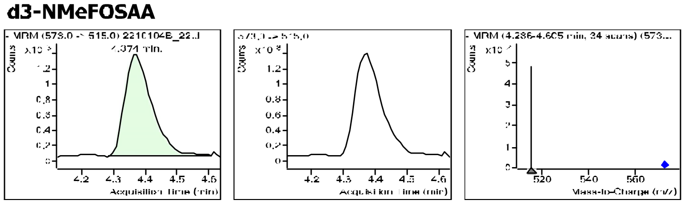

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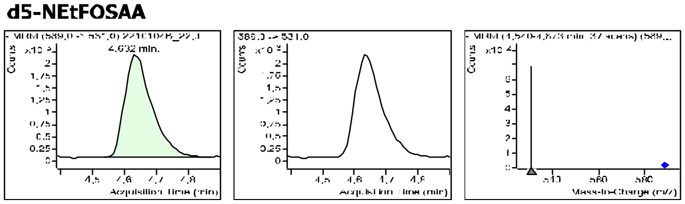
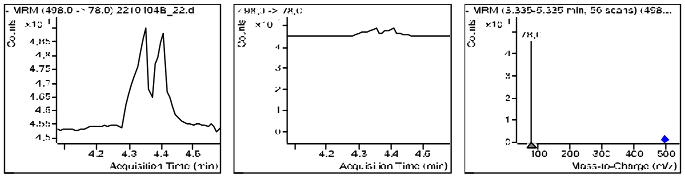


FOSA



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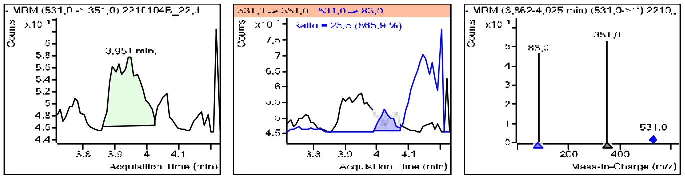

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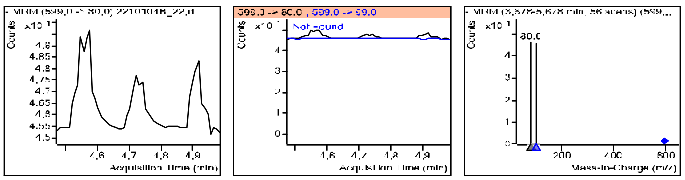

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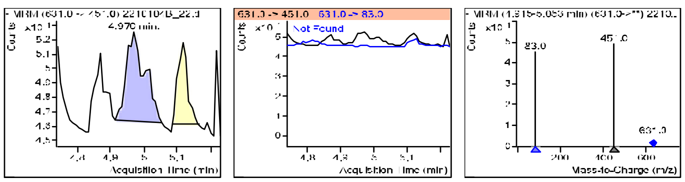

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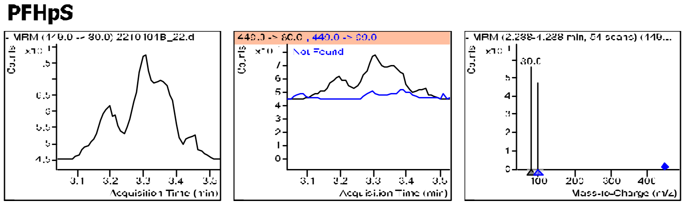
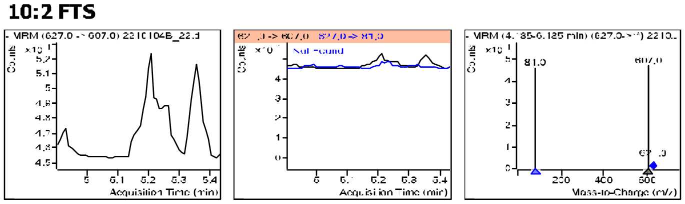


10:2 FTS



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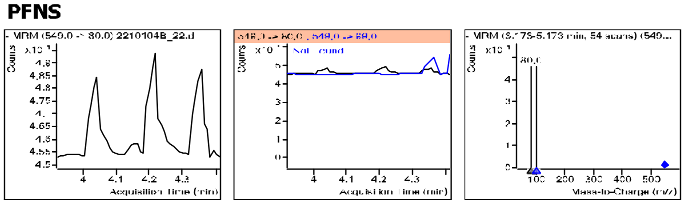

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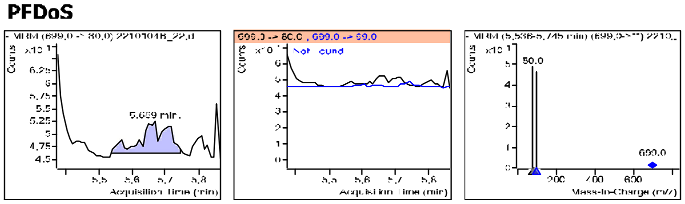

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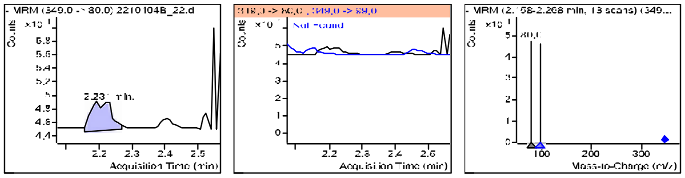

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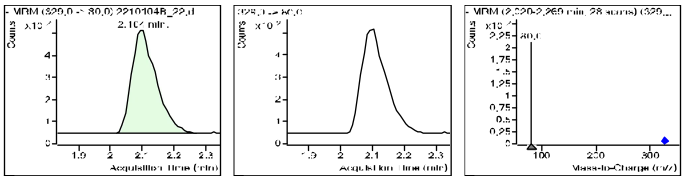

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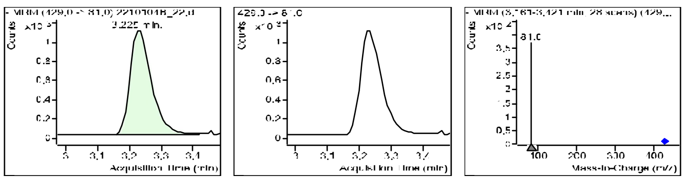
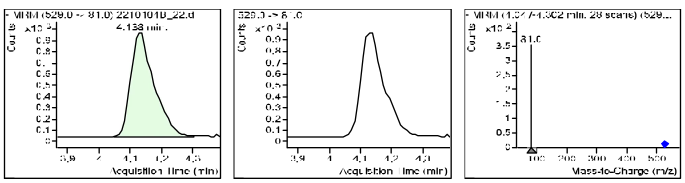


M2 8:2 FTS



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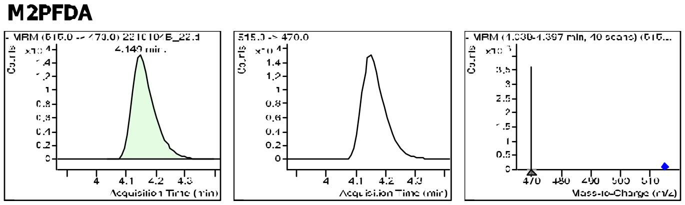

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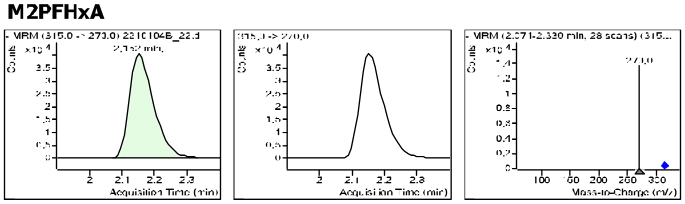

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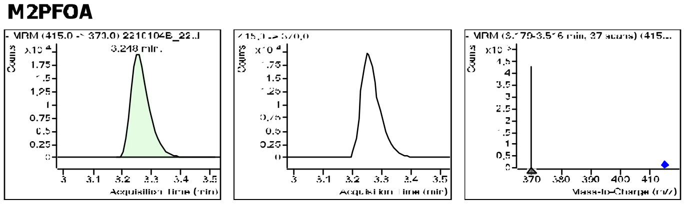

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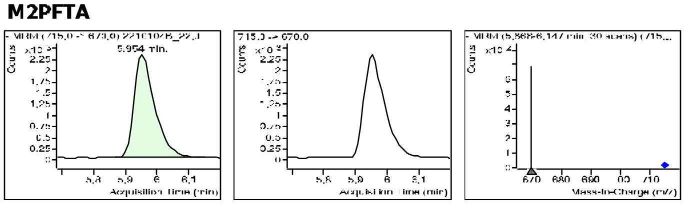

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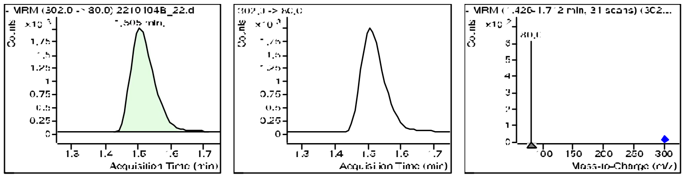

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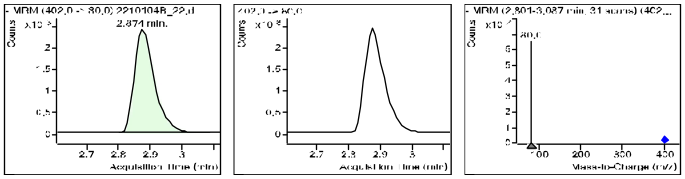

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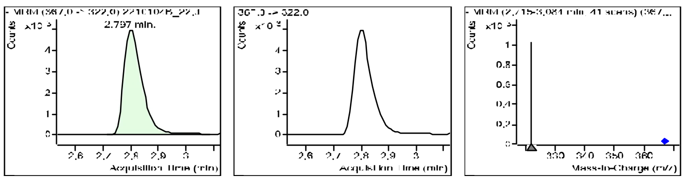

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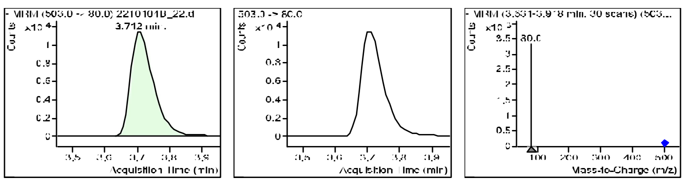

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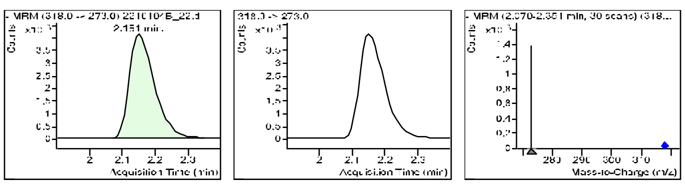

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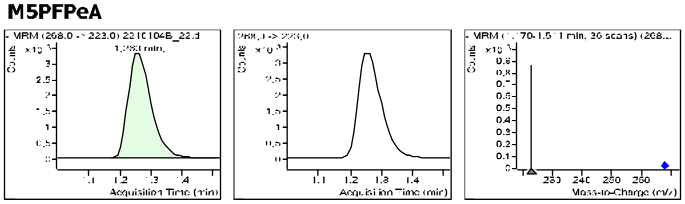

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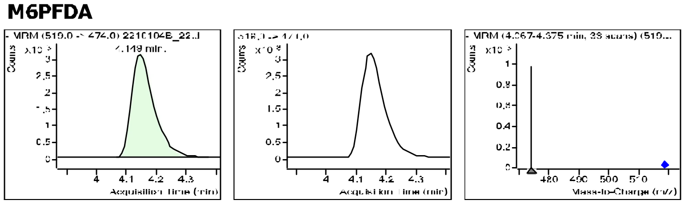

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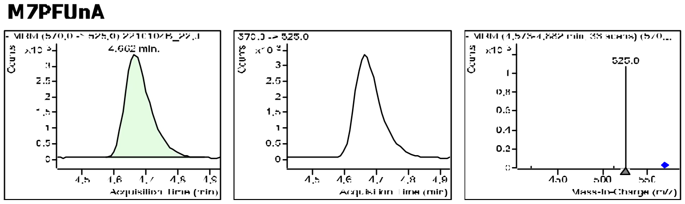

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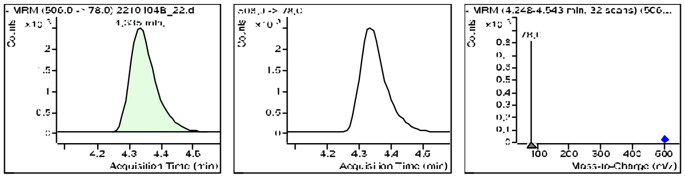

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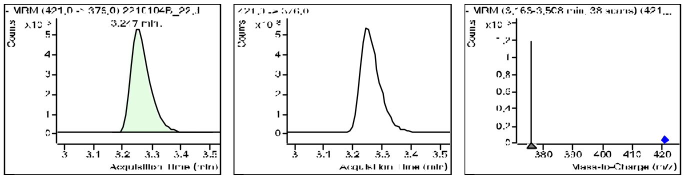

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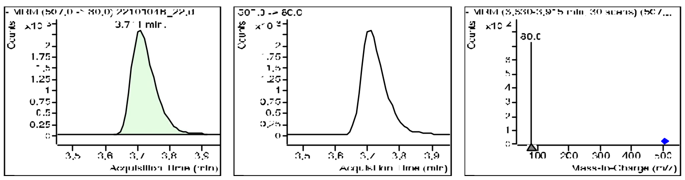

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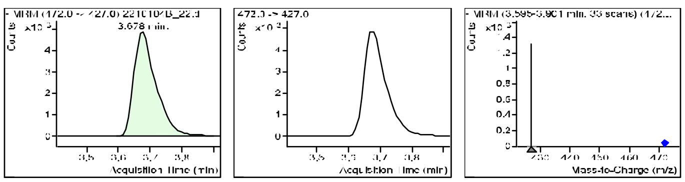

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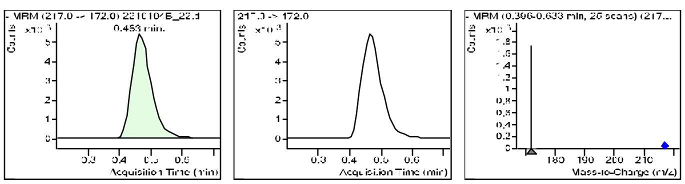

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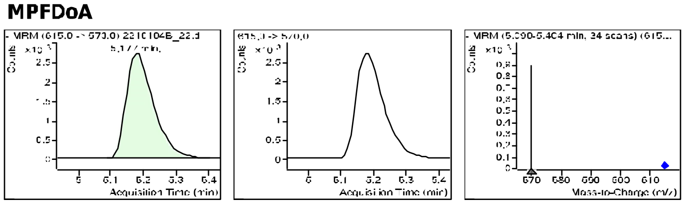

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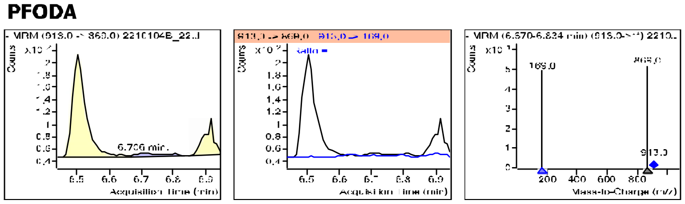

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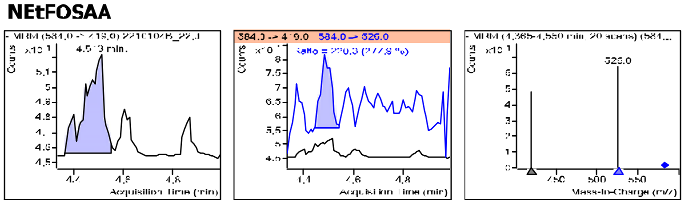
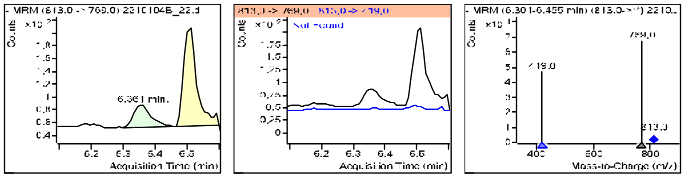


Quantitative Analysis Sample Report

PFHxDA



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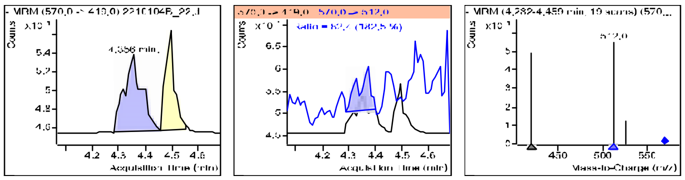

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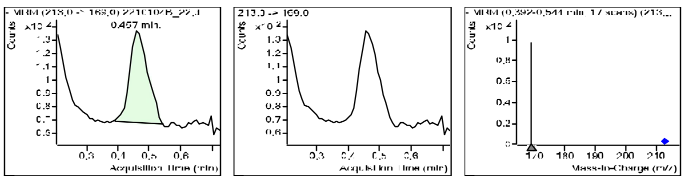

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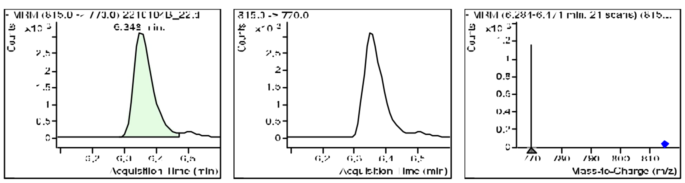

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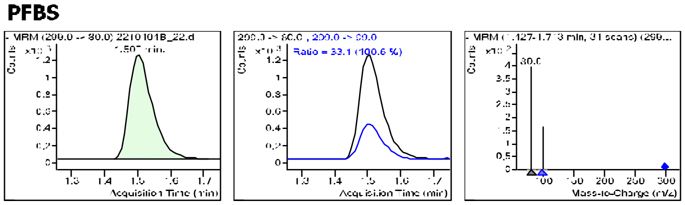

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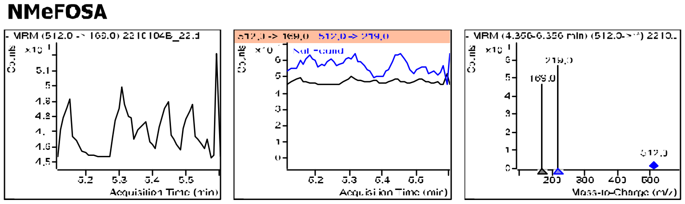

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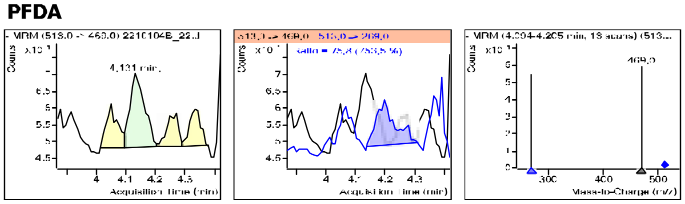

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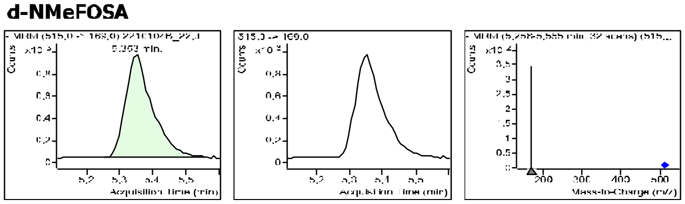

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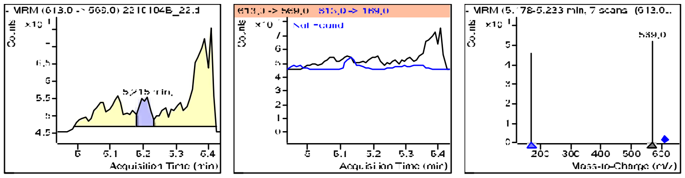

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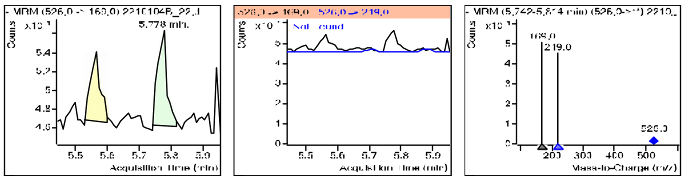

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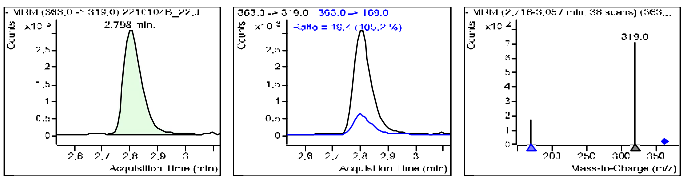

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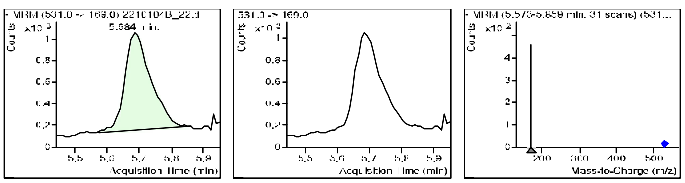

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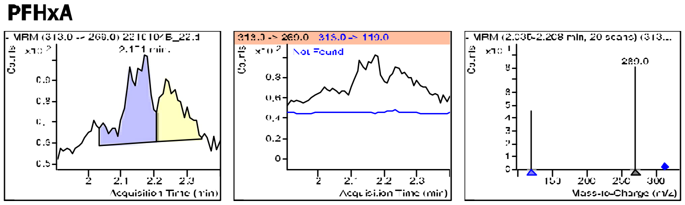

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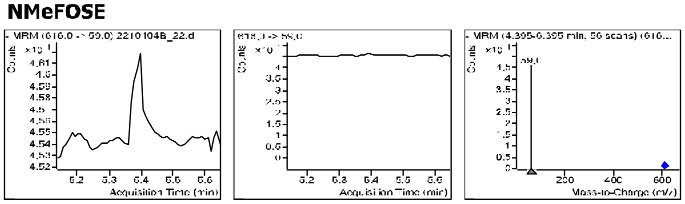

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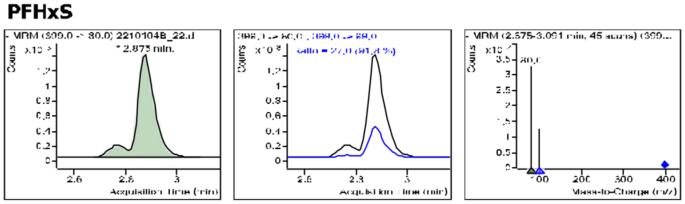

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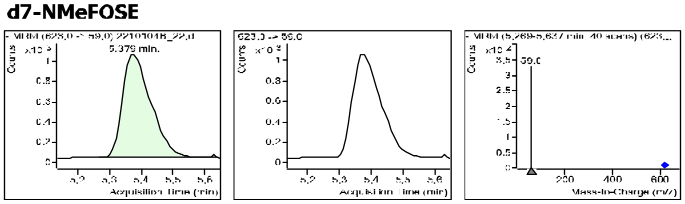

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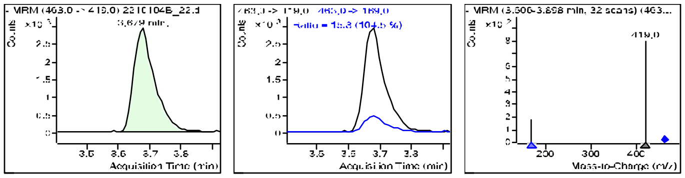
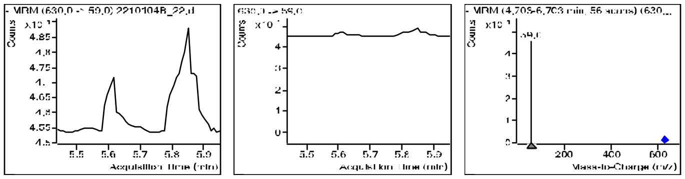


NEtFOSE



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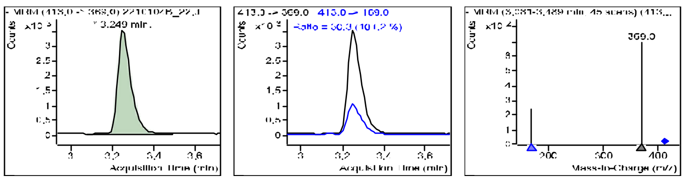

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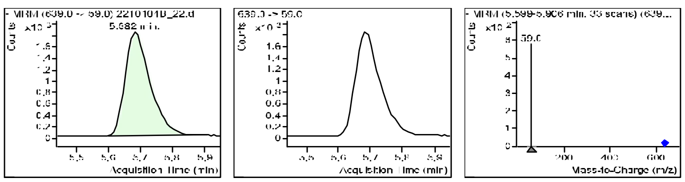

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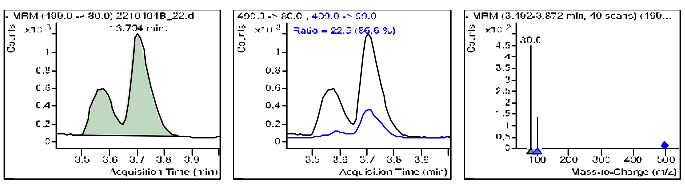

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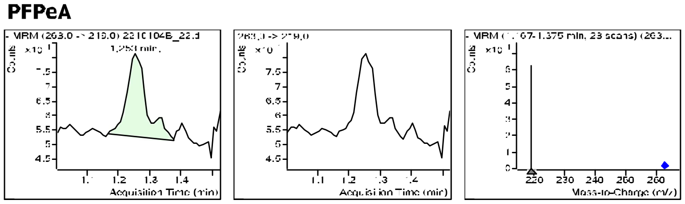

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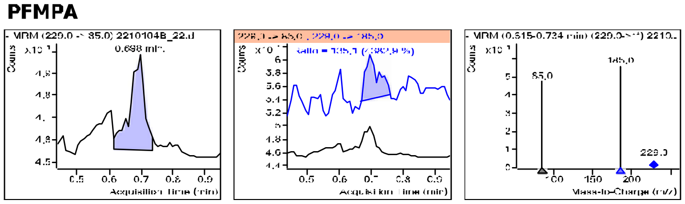

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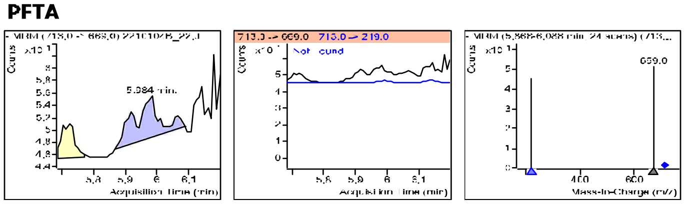

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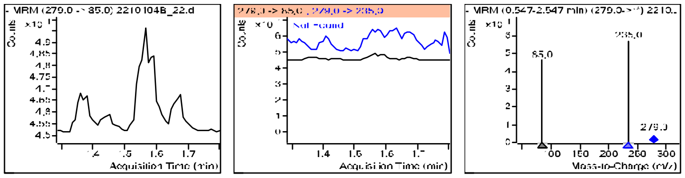

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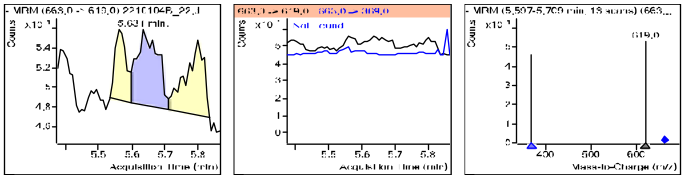

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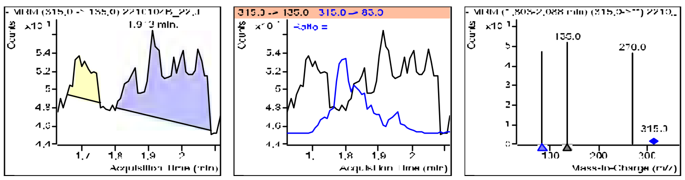

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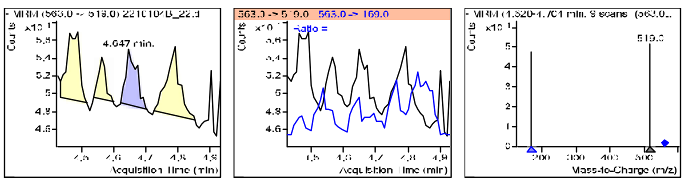

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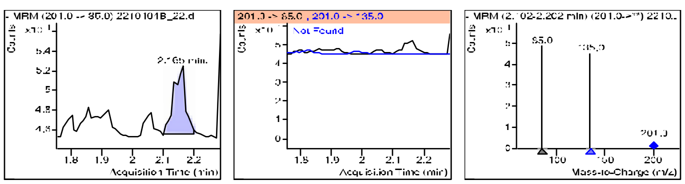

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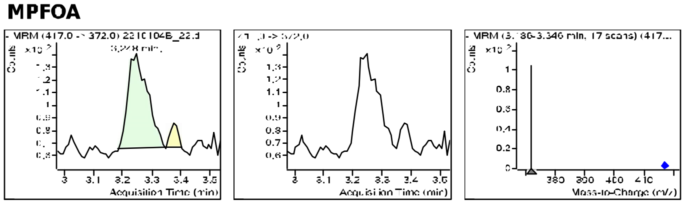

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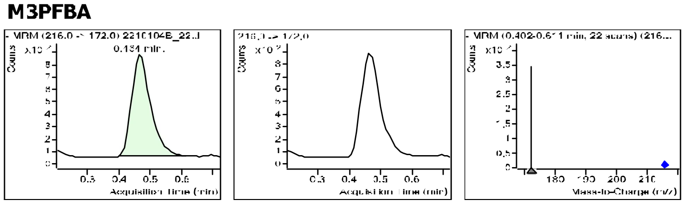


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	LCS2128032
Collect Date:	NA Time: NA	GCAL Sample ID:	2128032
Matrix:	Solid % Moisture: NA	Instrument ID:	QQQ2
Sample Amt:	5 g	Lab File ID:	2210104B_23.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	01/04/21 Time: 2136
Prep Batch:	700444	Analytical Batch:	701166
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ug/kg

CAS	*ANALYTE*	*RESULT*	*Q*	*DL*	*LOD*	*LOQ*
27619-97-2	6:2 Fluorotelomersulfonic acid	1.70		0.170	0.400	1.00
39108-34-4	8:2 Fluorotelomersulfonic acid	1.91		0.260	0.400	1.00
375-73-5	Perfluorobutanesulfonic acid	1.70		0.120	0.400	1.00
375-22-4	Perfluorobutanoic acid	1.74		0.130	0.400	1.00
335-76-2	Perfluorodecanoic acid	1.67		0.120	0.400	1.00
375-85-9	Perfluoroheptanoic acid	1.86		0.130	0.400	1.00
355-46-4	Perfluorohexanesulfonic acid	1.64		0.140	0.400	1.00
307-24-4	Perfluorohexanoic acid	1.71		0.150	0.400	1.00
375-95-1	Perfluorononanoic acid	1.86		0.090	0.400	1.00
1763-23-1	Perfluorooctanesulfonic acid	1.79		0.180	0.400	1.00
335-67-1	Perfluorooctanoic acid	2.00		0.150	0.400	1.00
2706-90-3	Perfluoropentanoic acid	1.71		0.150	0.400	1.00
2058-94-8	Perfluoroundecanoic acid	1.69		0.140	0.400	1.00

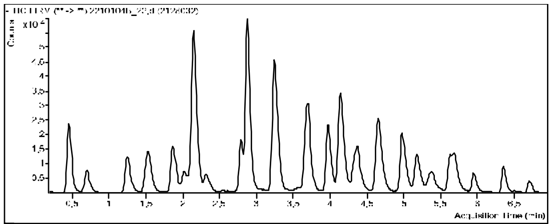
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path	D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update	1/5/2021 14:27

Data File	2210104B_23.d	**Position**	P1-C1	**Samp Name**	2128032	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	QC	**Comment**	MRA,QQQ2;700444
Acq Date	1/4/2021 21:36						

Sample Chromatogram

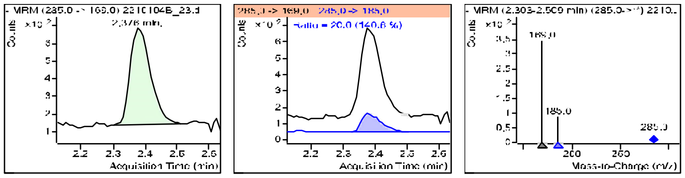


Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	76114.166	4.149				109.61	21.9211	109.61	4750.05	1.42	
M2PFHxA	205762.729	2.152				105.92	42.3695	105.92	6458.78	1.44	
M2PFOA	85981.218	3.248				108.71	21.7429	108.71	2446.47	1.50	
M4PFOS	55147.414	3.703				109.10	21.8195	109.10	3158.91	1.52	
MPFOA	403.912	3.248				0.00	36.1291	144.52	9.81	1.89	
M3PFBA	3489.281	0.464				0.00	4.7591	95.18	70.75	1.71	
HFPO-DA	2445.955	2.376	M3HFPODA	722	2.384	107.93	22.3343	111.67	4.27	1.41	
4:2 FTS	6979.129	2.095	M2 4:2 FTS	2496	2.095	101.13	8.8591	94.55	26.18	1.56	
6:2 FTS	14757.600	3.226	M2 6:2 FTS	5394	3.226	119.32	8.4951	89.33	3234.74	1.42	
ADONA	152039.229	2.887	M8PFOA	24237	3.247	110.42	9.4021	99.49	6147.01	1.36	
8:2 FTS	16698.923	4.129	M2 8:2 FTS	4867	4.129	117.37	9.5523	99.50	3354.75	1.65	
FOSA	27711.248	4.335	M8FOSA	12999	4.335	96.35	7.7965	77.96	91.49	1.50	
9Cl-PF3ONS	110325.826	3.979	M8PFOS	11200	3.702	108.70	10.2936	110.33	3052.48	1.35	
PFDS	23284.385	4.676	M6PFDA	16737	4.149	107.49	8.5386	88.48	199.16	1.59	
11Cl-PF3OUdS	107040.539	4.979	M8PFOS	11200	3.702	108.70	10.5777	112.17	3451.00	1.50	
PFHpS	22666.838	3.297	M8PFOA	24237	3.247	110.42	8.2989	87.08	98.23	1.42	
10:2 FTS	16130.281	5.174	M2 8:2 FTS	4867	4.129	117.37	9.1981	95.42	581.68	1.64	
PFNS	23346.127	4.172	M9PFNA	22458	3.678	108.64	8.2360	85.61	7157.71	1.42	
PFDoS	30079.126	5.623	M8PFOS	11200	3.702	108.70	8.8939	91.88	1010.73	1.45	
PFPeS	18349.187	2.314	M5PFHxA	21668	2.151	104.57	8.4214	89.49	1799.66	1.80	
PFODA	14417.320	6.706	M2PFHxDA	13311	6.348	119.26	9.0999	91.00	876.85	1.42	
NEtFOSAA	33343.854	4.642	d5-NEtFOSAA	12214	4.641	112.75	9.6534	96.53	2174.25	1.57	
PFHxDA	23474.848	6.351	M2PFHxDA	13311	6.348	119.26	9.6026	96.03	774.01	1.63	
NMeFOSAA	36482.037	4.375	d3-NMeFOSAA	8468	4.374	109.72	10.4805	104.81	166.11	1.50	
PFBA	75397.640	0.466	MPFBA	23338	0.463	95.20	8.7053	87.05	1293.41	1.40	
PFBS	20788.977	1.507	M3PFBS	9572	1.505	104.58	8.5187	96.04	750.72	1.29	
NMeFOSA	10434.149	5.354	d-NMeFOSA	5429	5.353	90.28	9.2791	92.79	952.29	1.50	
PFDA	32357.914	4.150	M6PFDA	16737	4.149	107.49	8.3254	83.25	1041.55	1.42	
PFDoA	27947.148	5.187	MPFDoA	15265	5.177	112.87	9.5635	95.64	1304.56	1.36	
NEtFOSA	11305.323	5.695	d-NEtFOSA	5556	5.694	88.69	8.0879	80.88	1752.01	1.50	
PFHpA	48165.599	2.798	M4PFHpA	21751	2.797	106.10	9.3054	93.05	1760.72	1.42	
PFHxA	42368.367	2.153	M5PFHxA	21668	2.151	104.57	8.5696	85.70	2022.94	1.46	
NMeFOSE	15793.521	5.398	d7-NMeFOSE	6284	5.379	85.96	8.5607	85.61	247.66	1.35	
PFHxS	22958.718	2.875	M3PFHxS	10332	2.874	108.21	8.1848	89.55	1787.21	0.80	m
PFNA	46198.038	3.670	M9PFNA	22458	3.678	108.64	9.2943	92.94	588.97	1.60	
NEtFOSE	17580.869	5.703	d9-NEtFOSE	8354	5.682	84.72	10.2659	102.66	134.84	1.40	
PFOA	52785.632	3.249	M8PFOA	24237	3.247	110.42	10.0183	100.18	628.62	1.50	m
PFOS	31972.717	3.704	M8PFOS	11200	3.702	108.70	8.9620	96.57	543.12	0.79	m
PFPeA	45509.113	1.253	M5PFPeA	16658	1.248	98.12	8.5537	85.54	52.14	1.53	
PFMPA	35660.351	0.698	M5PFPeA	16658	1.248	98.12	7.6605	76.60	380.22	1.36	
PFTA	18158.776	5.957	M2PFTA	10910	5.954	115.36	9.6560	96.56	692.50	1.39	
PFMBA	44009.159	1.547	M5PFHxA	21668	2.151	104.57	8.1601	81.60	11286.46	1.48	
PFTrDA	22684.803	5.625	MPFDoA	15265	5.177	112.87	9.8195	98.20	45.02	1.68	
PFEESA	76279.661	1.876	M3PFHxS	10332	2.874	108.21	8.4465	94.90	2728.32	1.30	
PFUnA	32770.818	4.665	M7PFUnA	18448	4.662	110.50	8.4557	84.56	1316.36	1.57	
NFDHA	33113.365	2.027	M4PFHpA	21751	2.797	106.10	7.7020	77.02	59337.36	1.43	

Quantitative Analysis Sample Report

HFPO-DA



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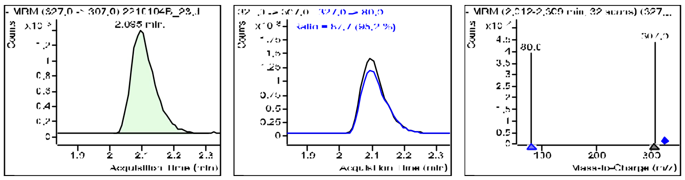

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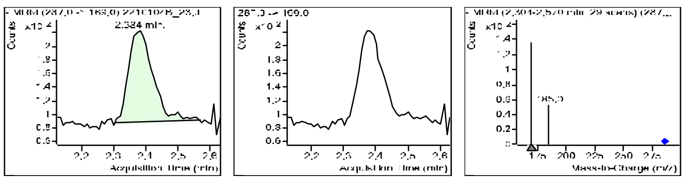

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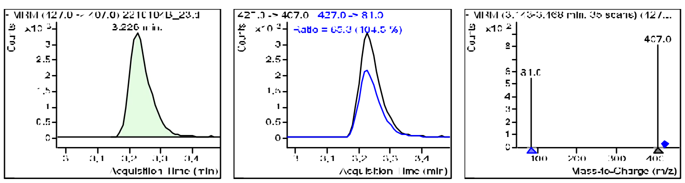

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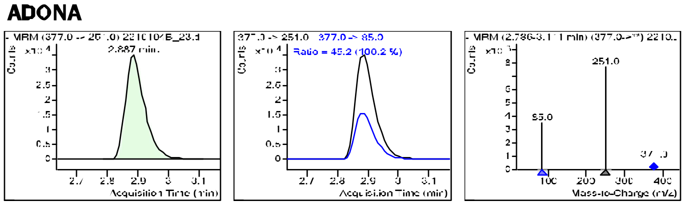

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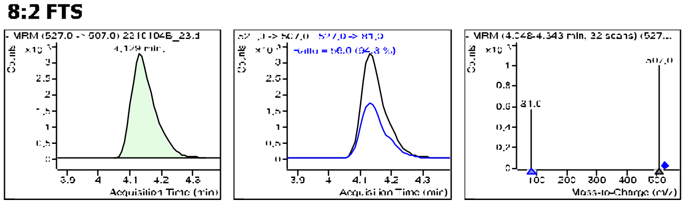

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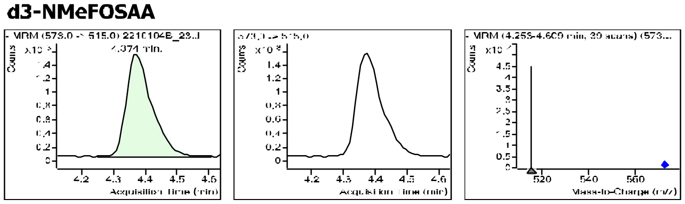

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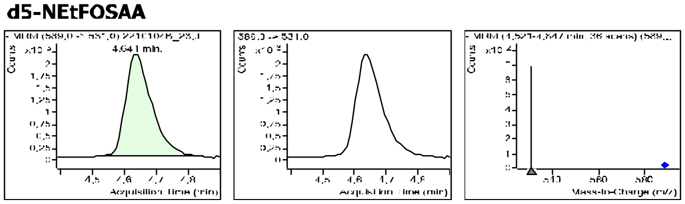

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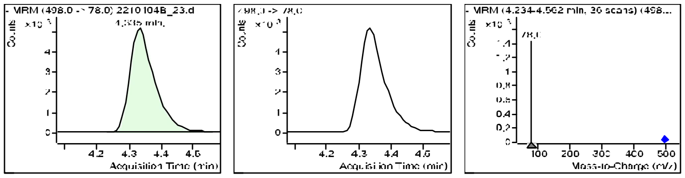

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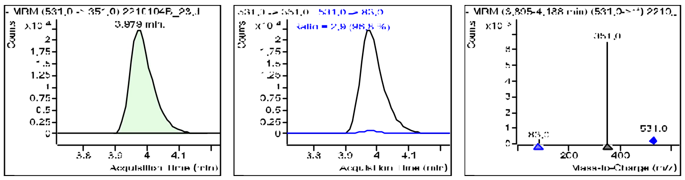

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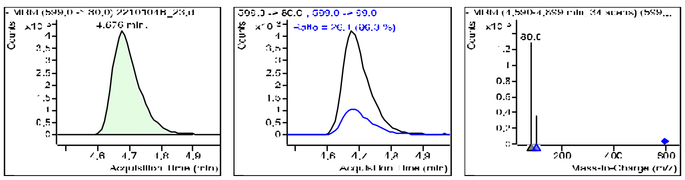

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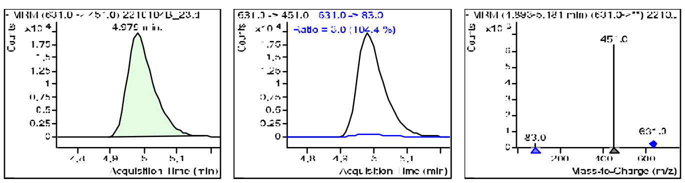

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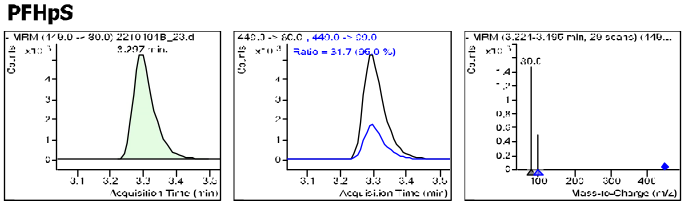

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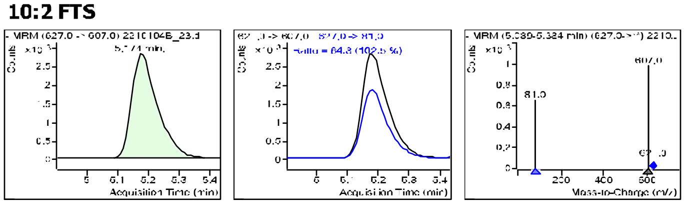

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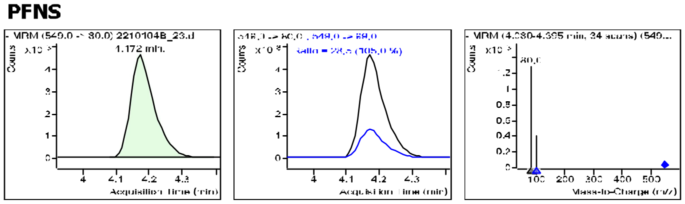

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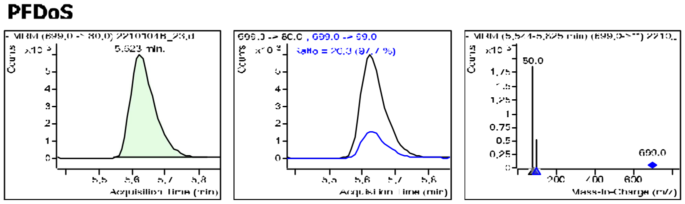

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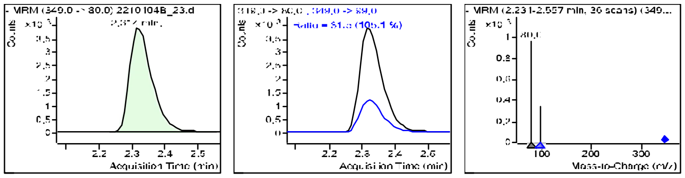

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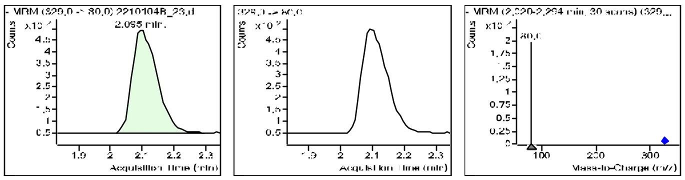

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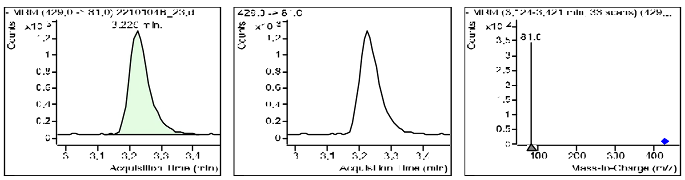

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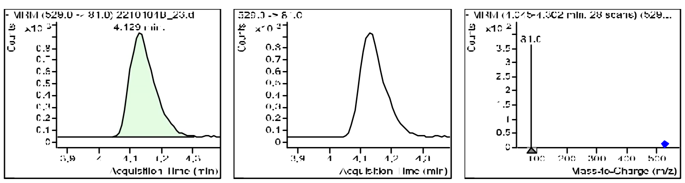

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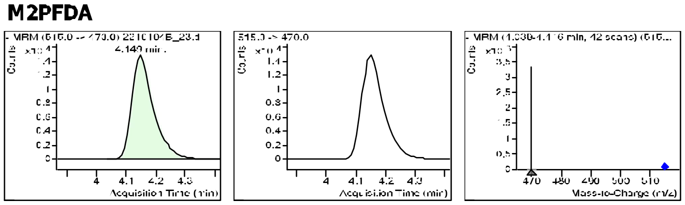

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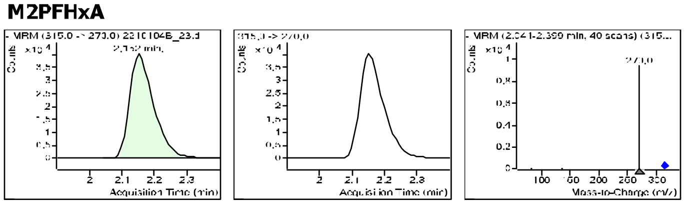

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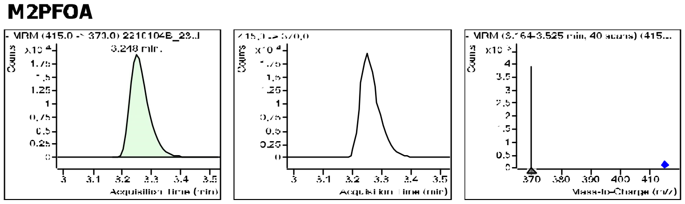

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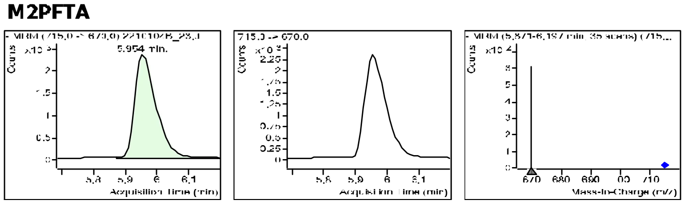

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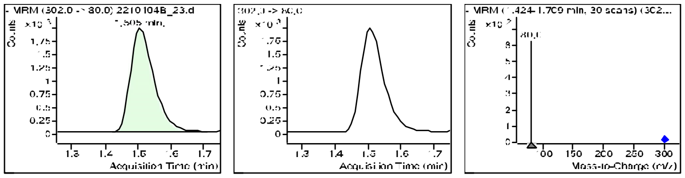

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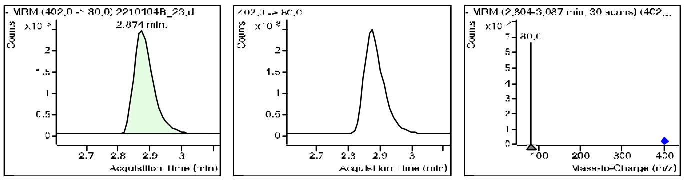

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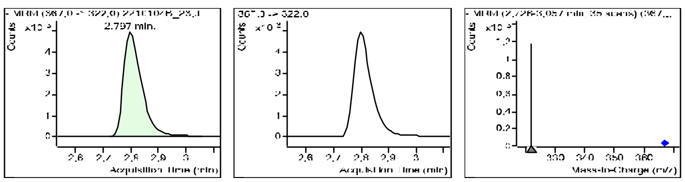

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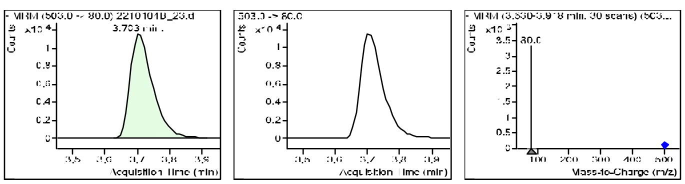

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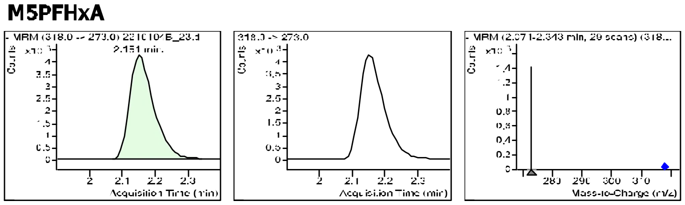

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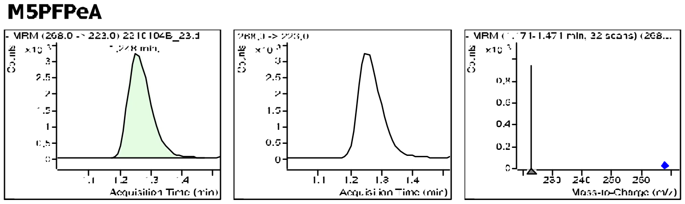

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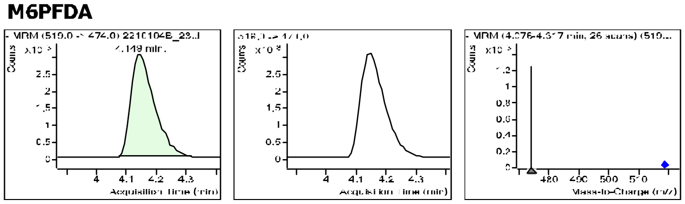

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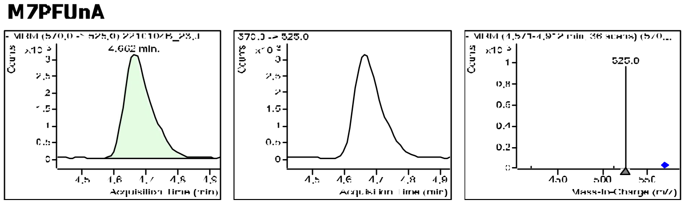

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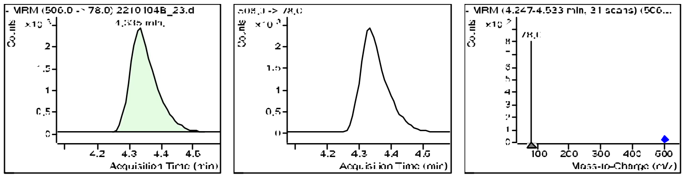

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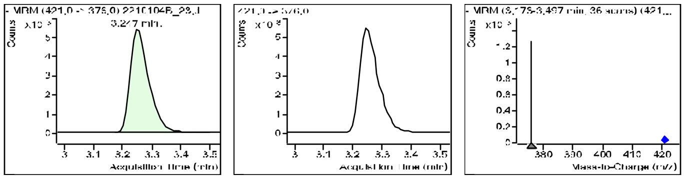

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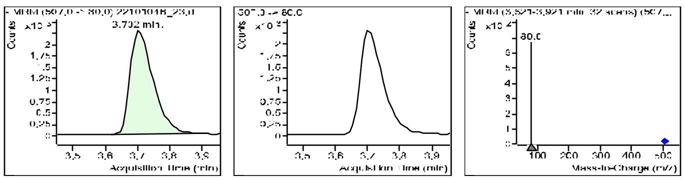

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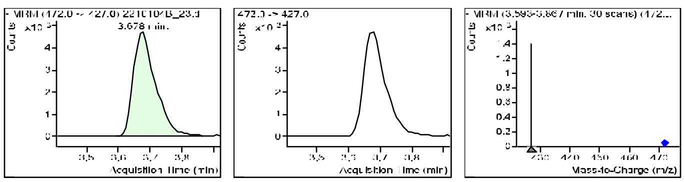

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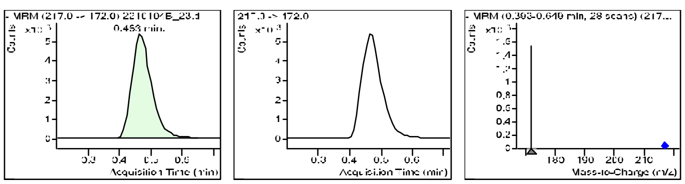

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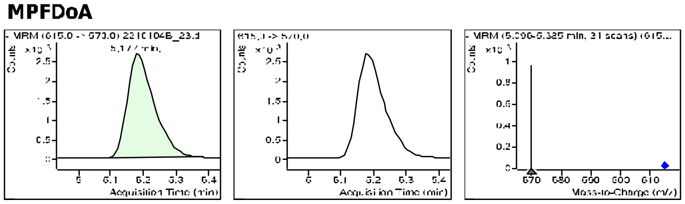

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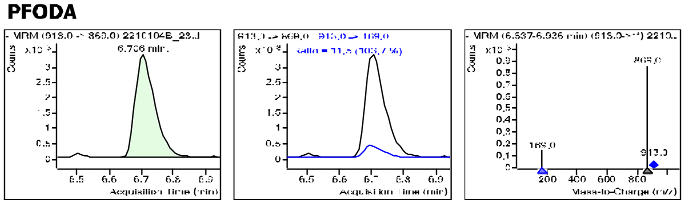

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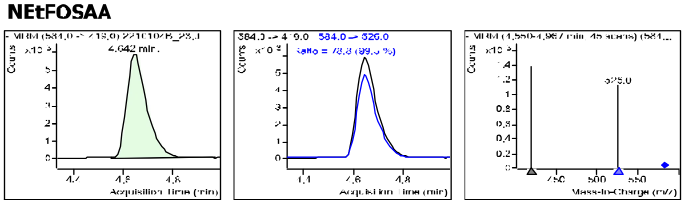

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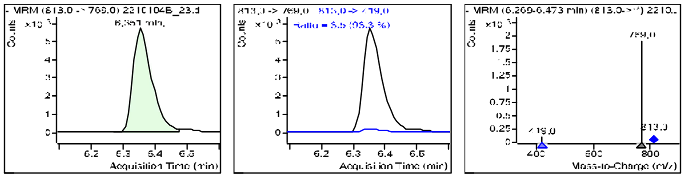

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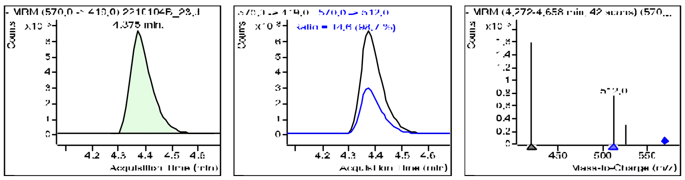

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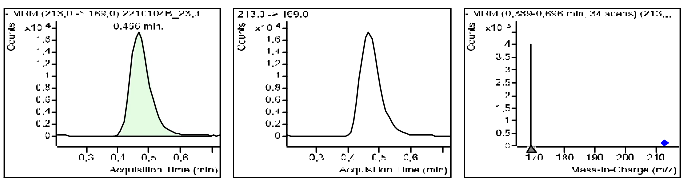

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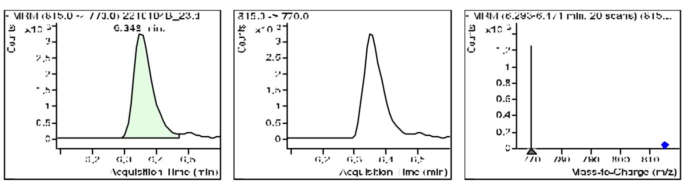

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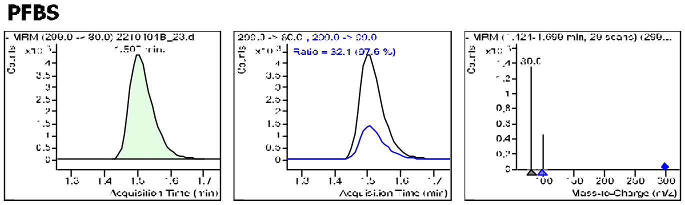

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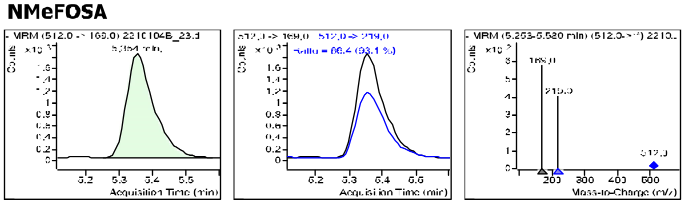

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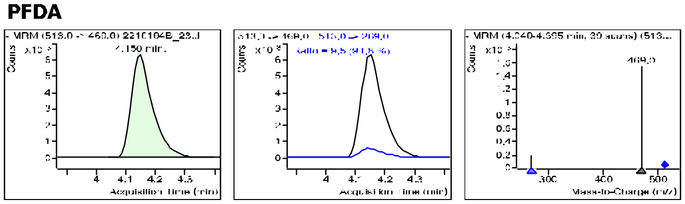

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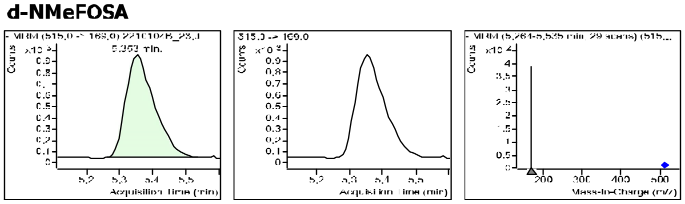

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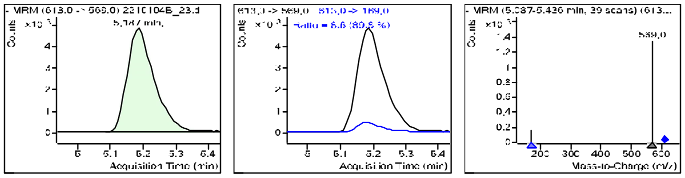

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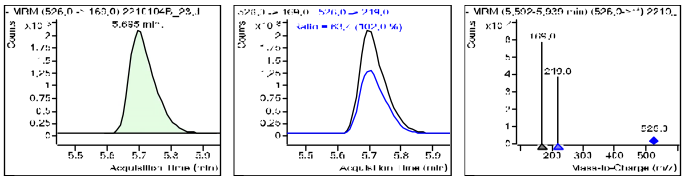

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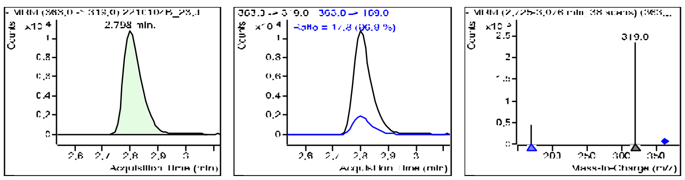

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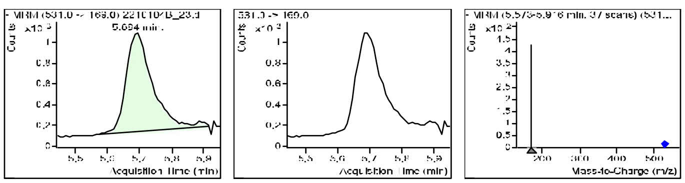

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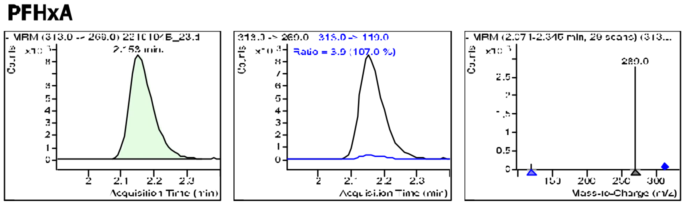

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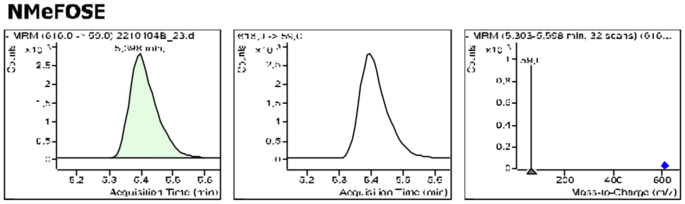

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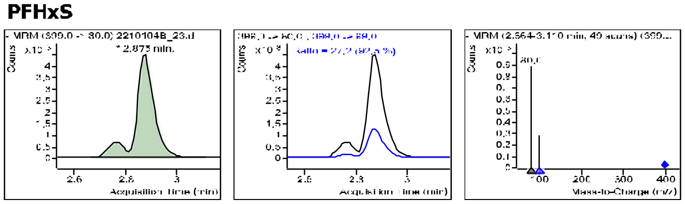

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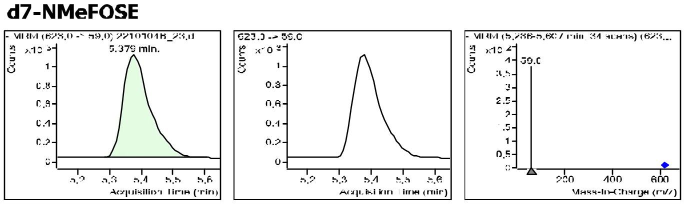

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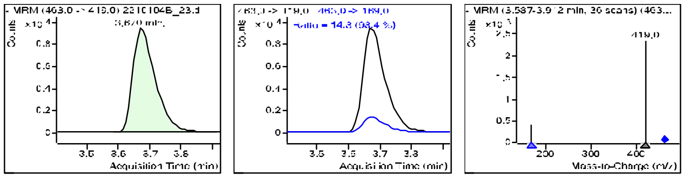

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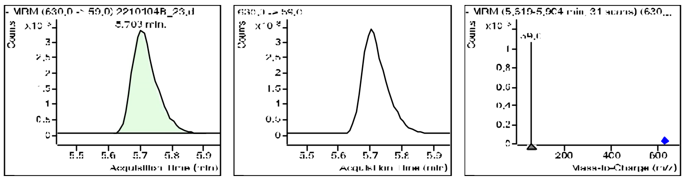

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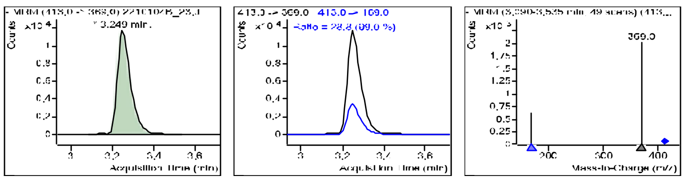

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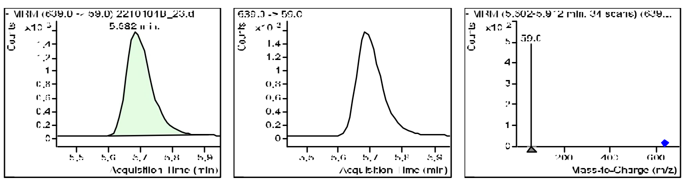

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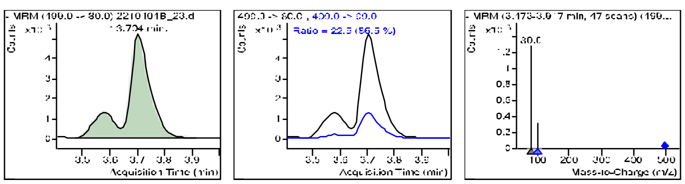

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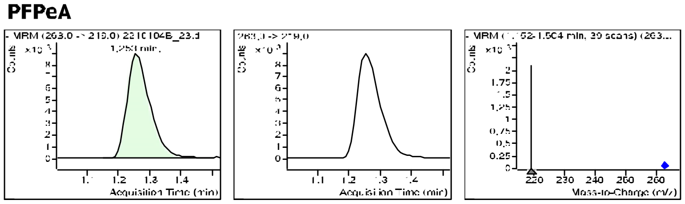

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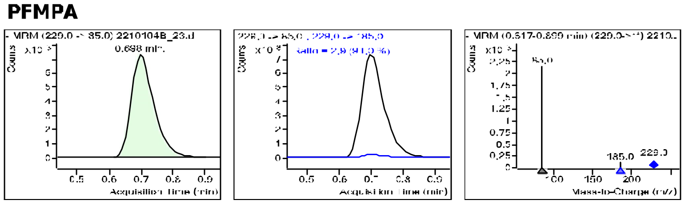

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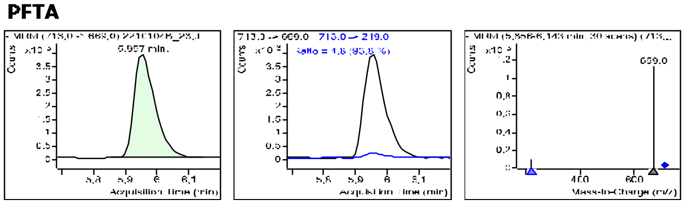

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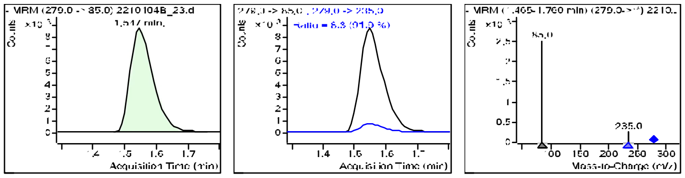

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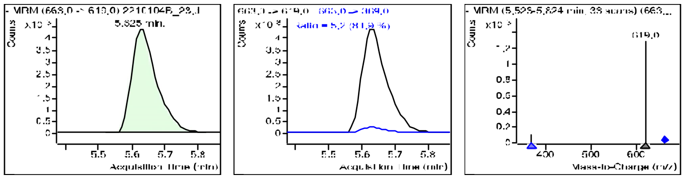

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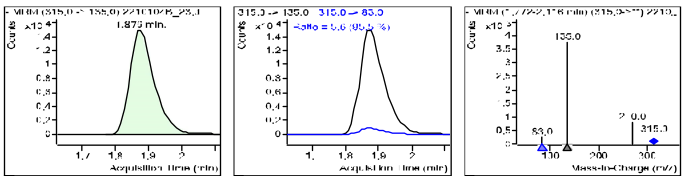

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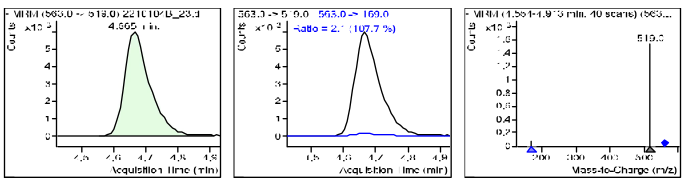

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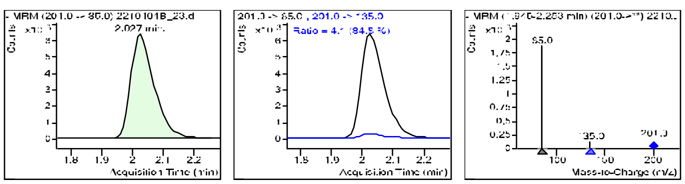

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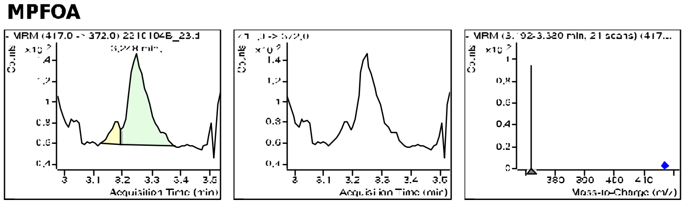

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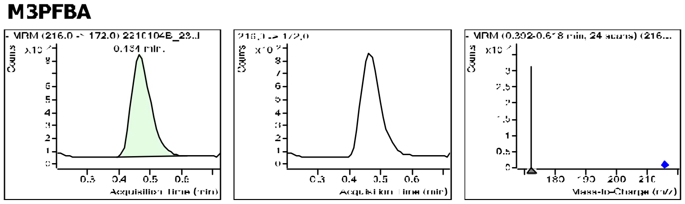


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	LCSD2128033
Collect Date:	NA Time: NA	GCAL Sample ID:	2128033
Matrix:	Solid % Moisture: NA	Instrument ID:	QQQ2
Sample Amt:	5 g	Lab File ID:	2210104B_24.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	01/04/21 Time: 2149
Prep Batch:	700444	Analytical Batch:	701166
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ug/kg

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
27619-97-2	6:2 Fluorotelomersulfonic acid	1.75		0.170	0.400	1.00
39108-34-4	8:2 Fluorotelomersulfonic acid	2.05		0.260	0.400	1.00
375-73-5	Perfluorobutanesulfonic acid	1.80		0.120	0.400	1.00
375-22-4	Perfluorobutanoic acid	1.68		0.130	0.400	1.00
335-76-2	Perfluorodecanoic acid	1.54		0.120	0.400	1.00
375-85-9	Perfluoroheptanoic acid	1.92		0.130	0.400	1.00
355-46-4	Perfluorohexanesulfonic acid	1.83		0.140	0.400	1.00
307-24-4	Perfluorohexanoic acid	1.71		0.150	0.400	1.00
375-95-1	Perfluorononanoic acid	2.06		0.090	0.400	1.00
1763-23-1	Perfluorooctanesulfonic acid	1.93		0.180	0.400	1.00
335-67-1	Perfluorooctanoic acid	2.22		0.150	0.400	1.00
2706-90-3	Perfluoropentanoic acid	1.71		0.150	0.400	1.00
2058-94-8	Perfluoroundecanoic acid	1.68		0.140	0.400	1.00

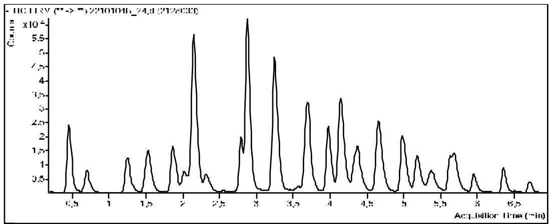
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_24.d	**Position**	P1-C2	**Samp Name**	2128033	**Dilution**	1
Acq Method	PFAS40Poroshell093020	**Inj Vol**	2	**Samp Type**	QC	**Comment**	MRA,QQQ2;700444
Acq Date	1/4/2021 21:49						

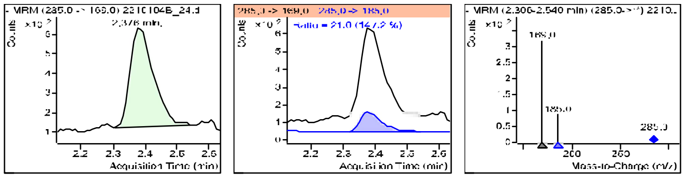
Sample Chromatogram



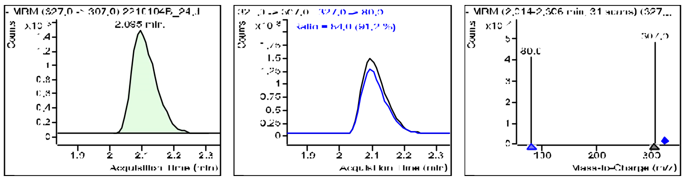
Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	76610.411	4.149				110.32	22.0641	110.32	2998.59	1.49	
M2PFHxA	207089.339	2.152				106.61	42.6427	106.61	12866.11	1.44	
M2PFOA	85605.156	3.248				108.24	21.6478	108.24	3033.96	1.70	
M4PFOS	55148.309	3.703				109.10	21.8198	109.10	224.48	1.60	
MPFOA	308.794	3.248				0.00	27.6210	110.48	1.11	2.47	
M3PFBA	3558.786	0.464				0.00	4.8539	97.08	16.04	1.66	
HFPO-DA	2579.011	2.376	M3HFPODA	581	2.384	86.81	29.2764	146.38	16.59	1.58	
4:2 FTS	7557.539	2.095	M2 4:2 FTS	2717	2.104	110.11	8.8109	94.03	56.05	1.56	
6:2 FTS	14785.992	3.226	M2 6:2 FTS	5236	3.225	115.83	8.7678	92.20	1164.68	1.50	
ADONA	158128.356	2.887	M8PFOA	24063	3.247	109.63	9.8494	104.23	9596.47	1.36	
8:2 FTS	17553.114	4.138	M2 8:2 FTS	4757	4.129	114.72	10.2728	107.01	317.28	1.49	
FOSA	29553.262	4.335	M8FOSA	13022	4.335	96.53	8.3000	83.00	2085.47	1.50	
9Cl-PF3ONS	110049.512	3.979	M8PFOS	11211	3.711	108.81	10.2571	109.94	178.66	1.35	
PFDS	23644.116	4.685	M6PFDA	17461	4.149	112.15	8.3106	86.12	168.91	1.39	
11Cl-PF3OUdS	108129.275	4.989	M8PFOS	11211	3.711	108.81	10.6742	113.19	7532.10	1.37	
PFHpS	22413.353	3.297	M8PFOA	24063	3.247	109.63	8.2765	86.85	1601.38	1.42	
10:2 FTS	17198.251	5.192	M2 8:2 FTS	4757	4.129	114.72	10.0335	104.08	2409.87	1.37	
PFNS	23482.776	4.172	M9PFNA	22883	3.678	110.70	8.1304	84.52	874.46	1.49	
PFDoS	29911.039	5.623	M8PFOS	11211	3.711	108.81	8.8497	91.42	3258.22	1.60	
PFPeS	19943.193	2.323	M5PFHxA	21672	2.151	104.59	9.1513	97.25	123.29	1.42	
PFODA	14215.150	6.706	M2PFHxDA	12790	6.348	114.59	9.3379	93.38	763.17	1.60	
NEtFOSAA	34649.868	4.651	d5-NEtFOSAA	12845	4.641	118.58	9.5384	95.38	53.12	1.58	
PFHxDA	23433.405	6.351	M2PFHxDA	12790	6.348	114.59	9.9762	99.76	779.63	1.63	
NMeFOSAA	39872.748	4.375	d3-NMeFOSAA	7867	4.365	101.93	12.3295	123.30	3857.44	1.50	
PFBA	76060.004	0.466	MPFBA	24375	0.463	99.43	8.4081	84.08	611.97	1.31	
PFBS	21960.873	1.507	M3PFBS	9579	1.505	104.66	8.9925	101.38	1108.55	1.36	
NMeFOSA	10489.384	5.354	d-NMeFOSA	6010	5.353	99.94	8.4270	84.27	101.33	1.58	
PFDA	31278.818	4.150	M6PFDA	17461	4.149	112.15	7.7137	77.14	99.03	1.50	
PFDoA	28632.116	5.187	MPFDoA	14376	5.186	106.30	10.4039	104.04	1037.53	1.55	
NEtFOSA	12091.666	5.704	d-NEtFOSA	5662	5.694	90.37	8.4895	84.90	365.55	1.43	
PFHpA	52188.919	2.798	M4PFHpA	22864	2.797	111.53	9.5918	95.92	1998.99	1.42	
PFHxA	42366.145	2.153	M5PFHxA	21672	2.151	104.59	8.5675	85.68	134.06	1.39	
NMeFOSE	16785.232	5.398	d7-NMeFOSE	6840	5.388	93.57	8.3583	83.58	143.58	1.47	
PFHxS	25173.039	2.875	M3PFHxS	10136	2.874	106.16	9.1474	100.08	219.49	0.80	m
PFNA	52204.057	3.679	M9PFNA	22883	3.678	110.70	10.3075	103.08	1247.64	1.52	
NEtFOSE	18239.121	5.703	d9-NEtFOSE	9256	5.682	93.87	9.6120	96.12	5045.84	1.63	
PFOA	58019.031	3.249	M8PFOA	24063	3.247	109.63	11.0911	110.91	505.48	1.70	m
PFOS	34492.303	3.704	M8PFOS	11211	3.711	108.81	9.6582	104.08	INF	0.79	m
PFPeA	46041.953	1.253	M5PFPeA	16825	1.248	99.11	8.5680	85.68	1918.54	1.53	
PFMPA	37149.445	0.698	M5PFPeA	16825	1.248	99.11	7.9012	79.01	2619.04	1.50	
PFTA	18679.849	5.957	M2PFTA	10157	5.954	107.39	10.6698	106.70	985.38	1.47	
PFMBA	45009.297	1.547	M5PFHxA	21672	2.151	104.59	8.3439	83.44	2403.34	1.48	
PFTrDA	22950.107	5.634	MPFDoA	14376	5.186	106.30	10.5488	105.49	770.81	1.37	
PFEESA	77724.639	1.876	M3PFHxS	10136	2.874	106.16	8.7725	98.57	4141.54	1.30	
PFUnA	32425.092	4.665	M7PFUnA	18328	4.672	109.77	8.4214	84.21	1704.20	1.57	
NFDHA	34063.863	2.027	M4PFHpA	22864	2.797	111.53	7.5373	75.37	1419.33	1.43	

HFPO-DA



4:2 FTS



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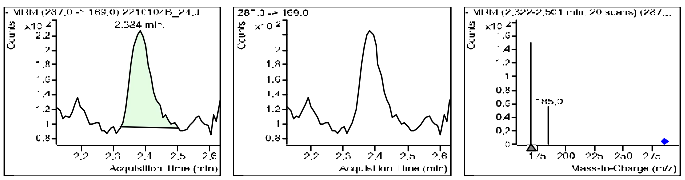

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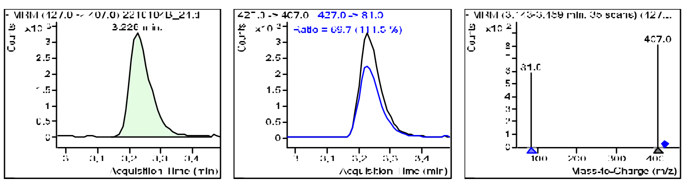

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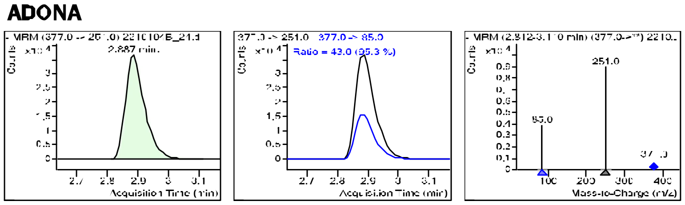

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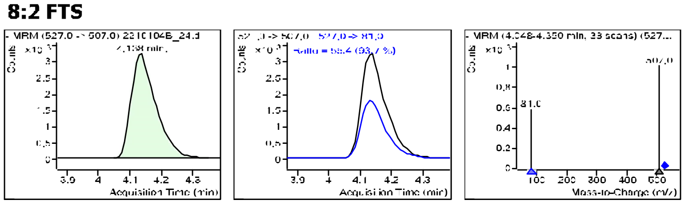

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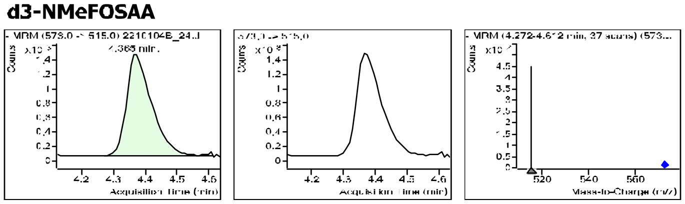

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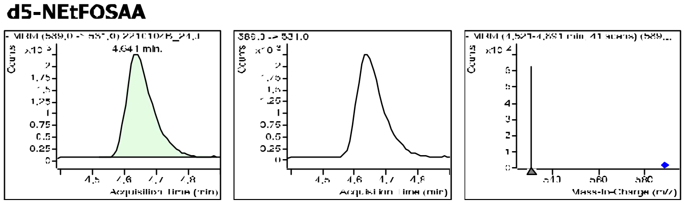
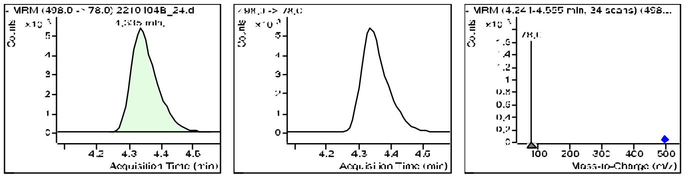


Quantitative Analysis Sample Report

FOSA



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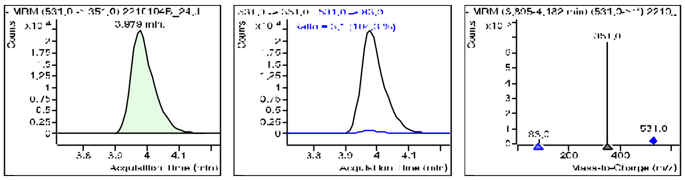

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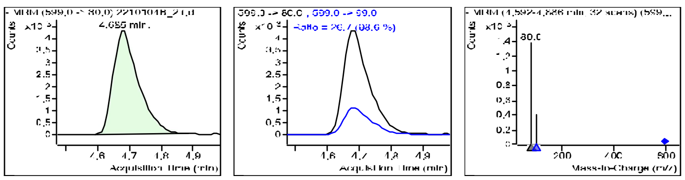

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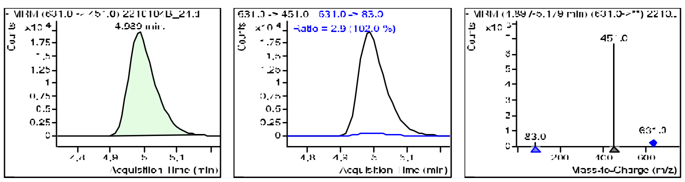

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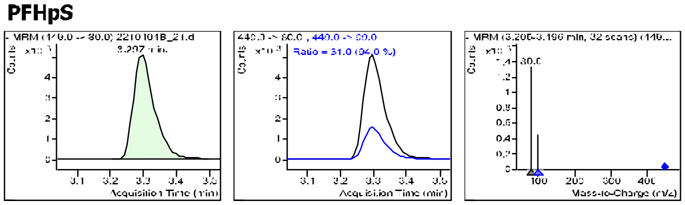

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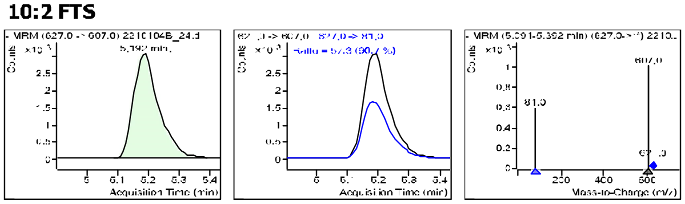

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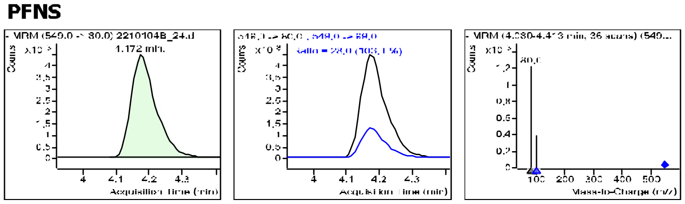

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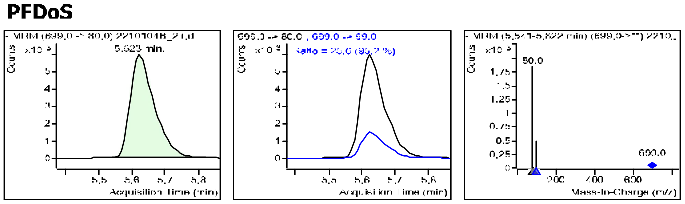

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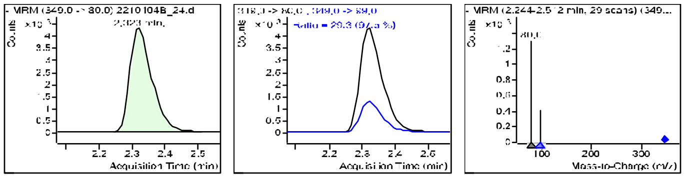

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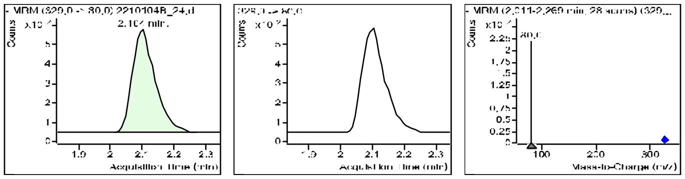

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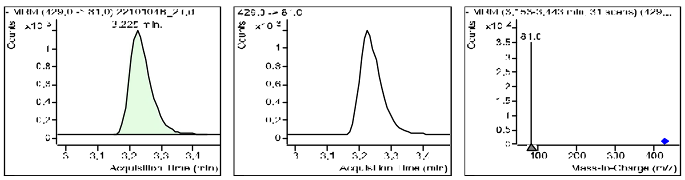

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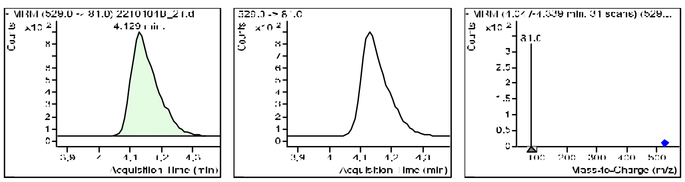

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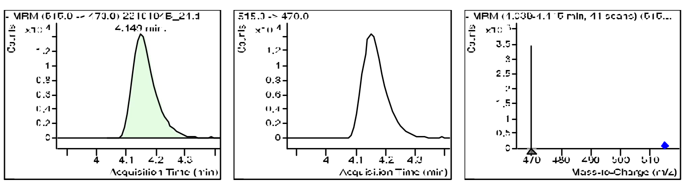

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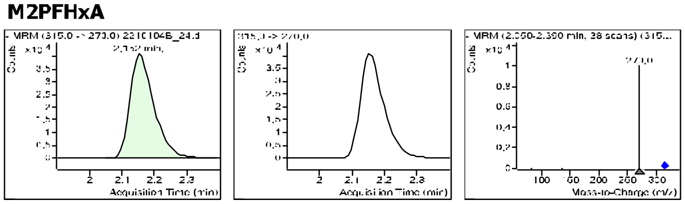

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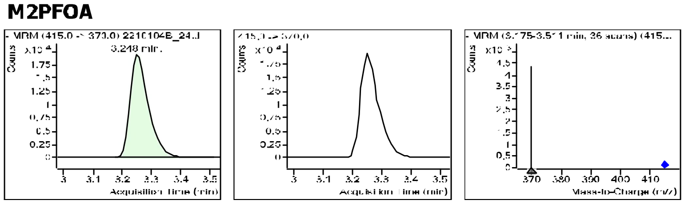

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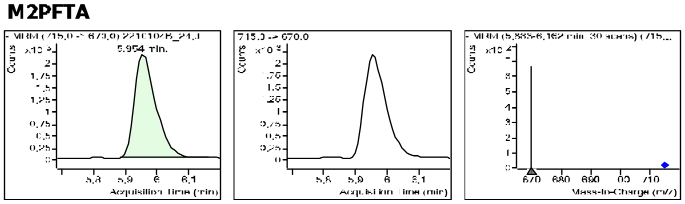

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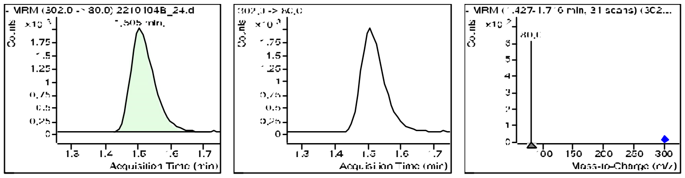

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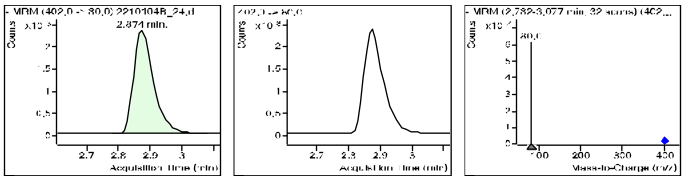

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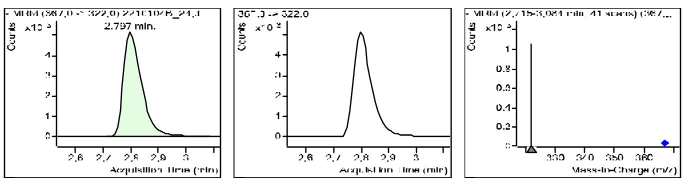

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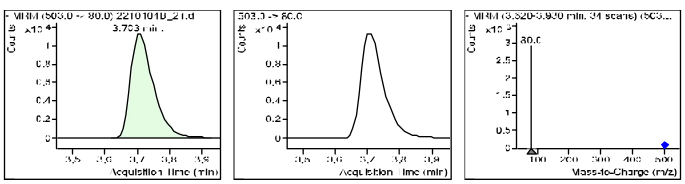

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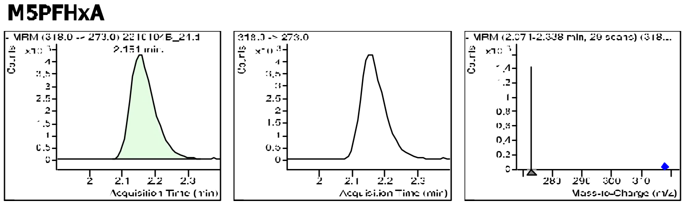

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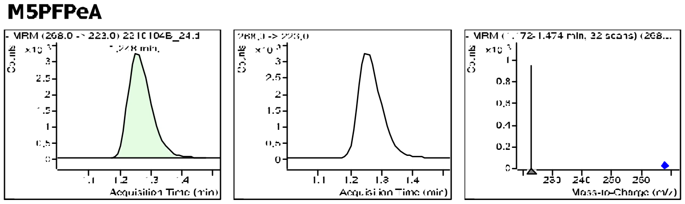

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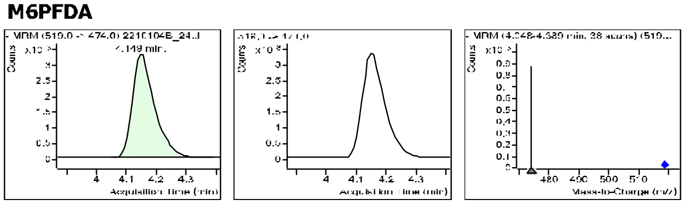

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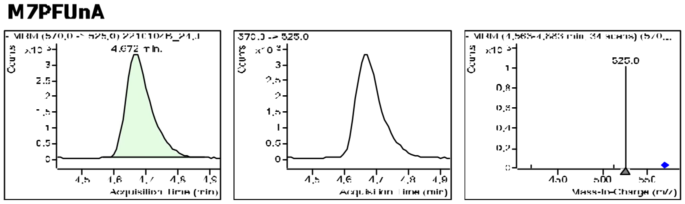

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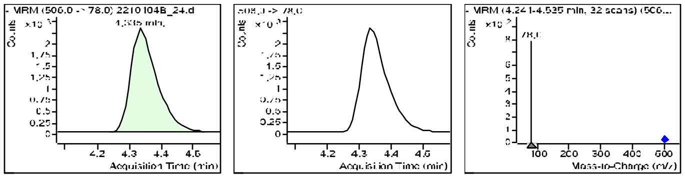

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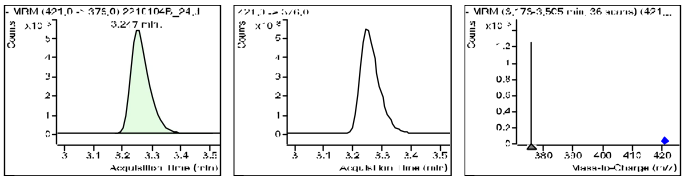

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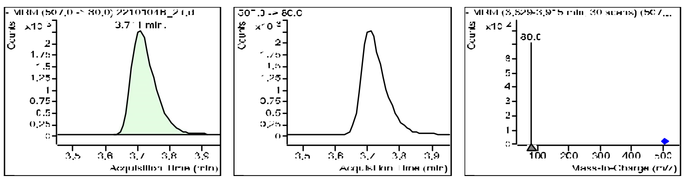

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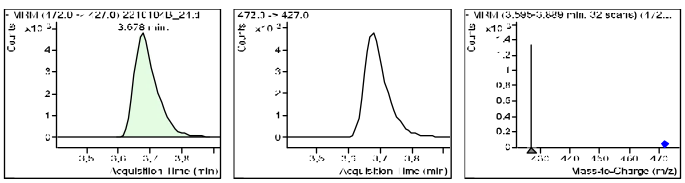

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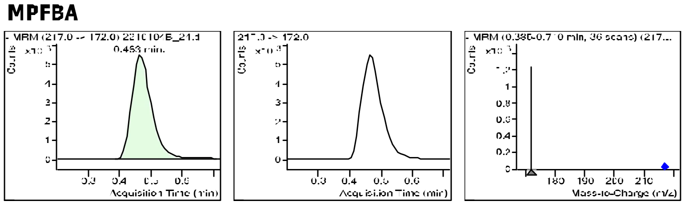

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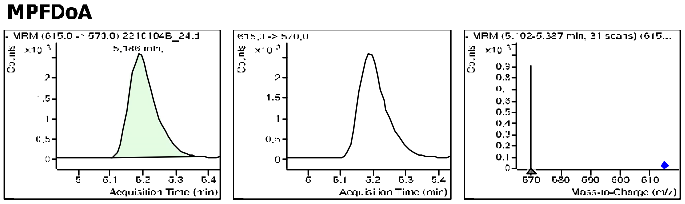

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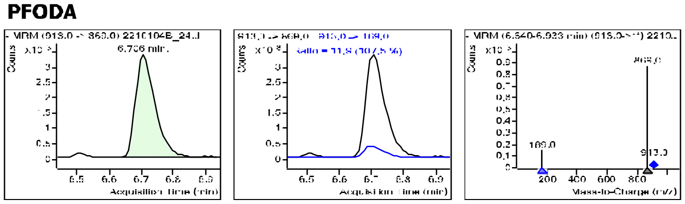

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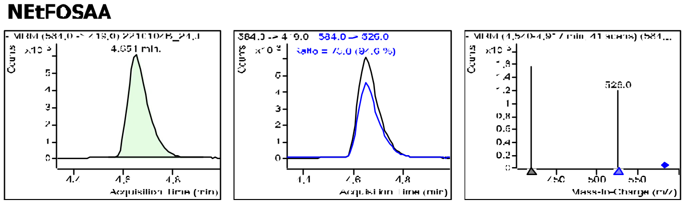

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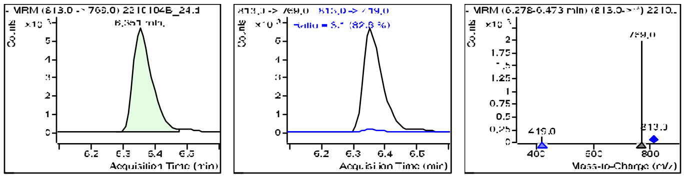

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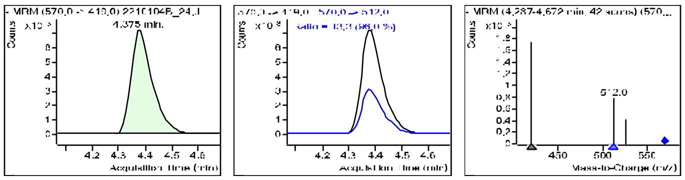

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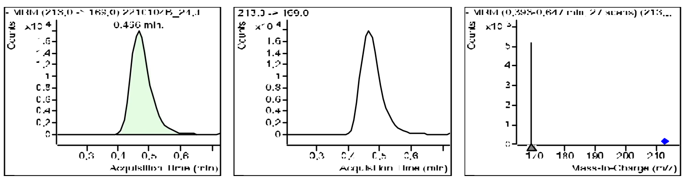

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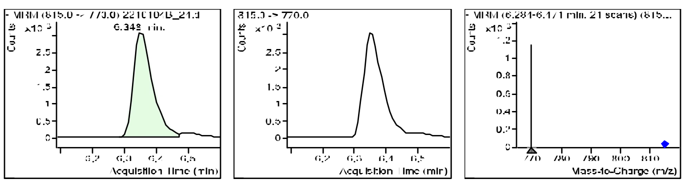

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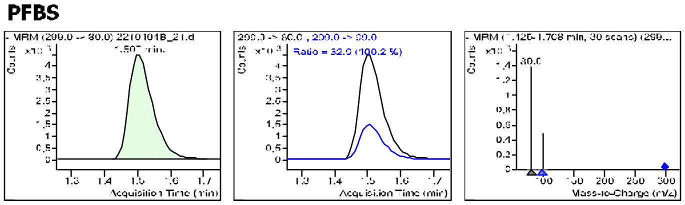

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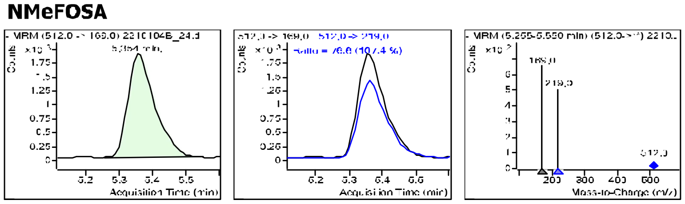

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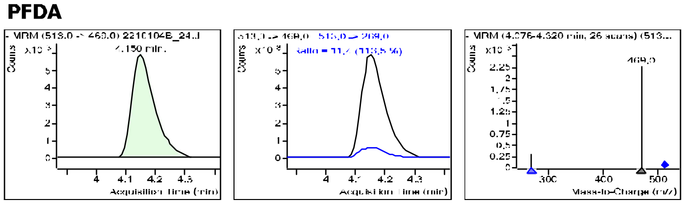

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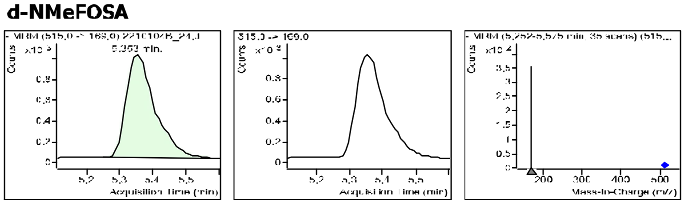

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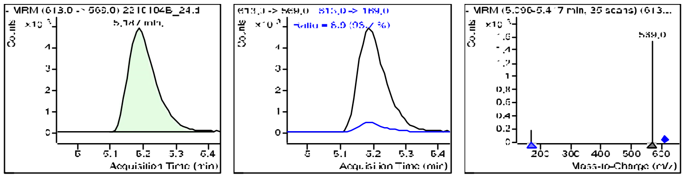

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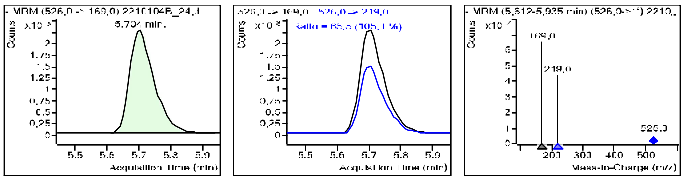

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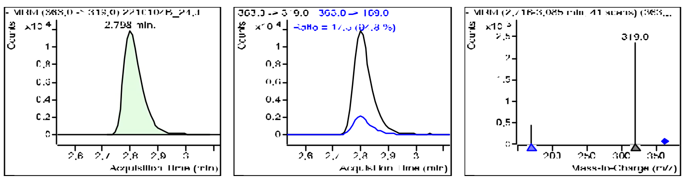

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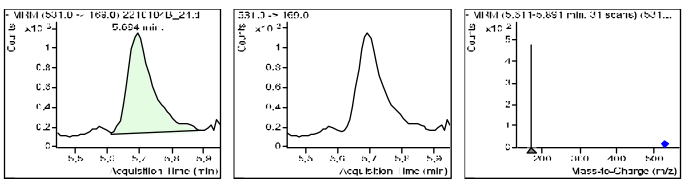

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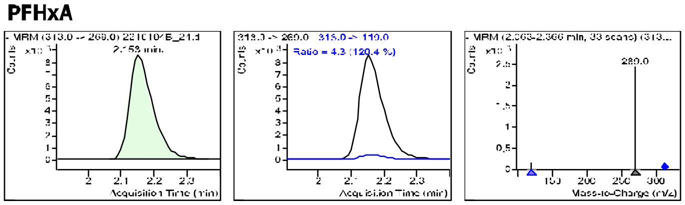

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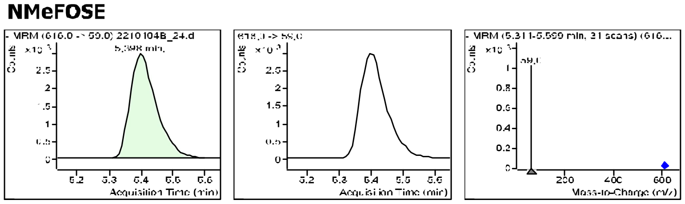

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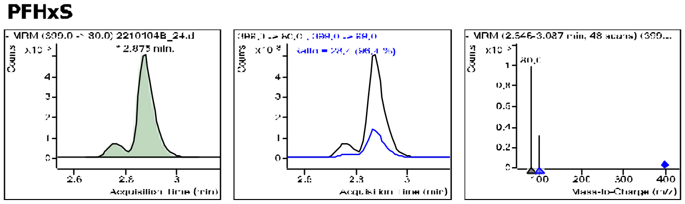

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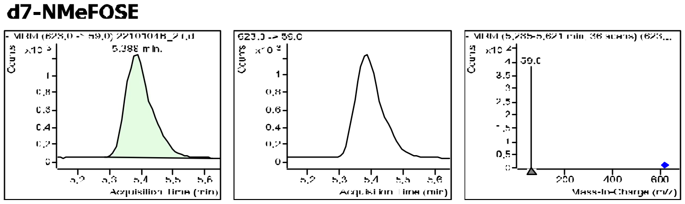

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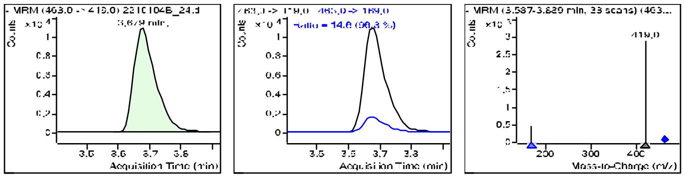

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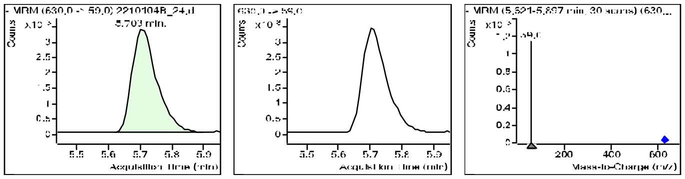

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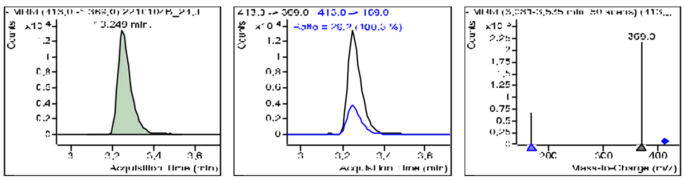

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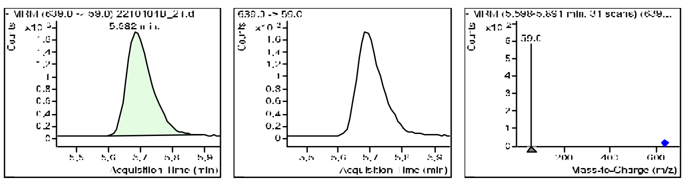

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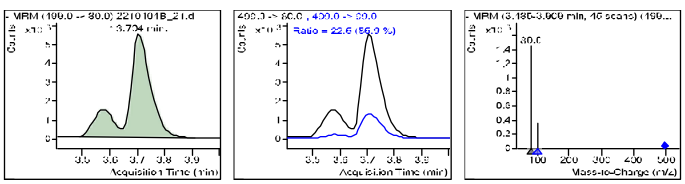

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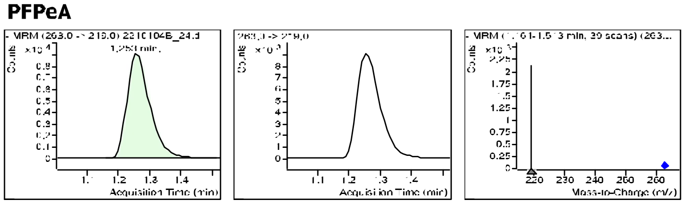

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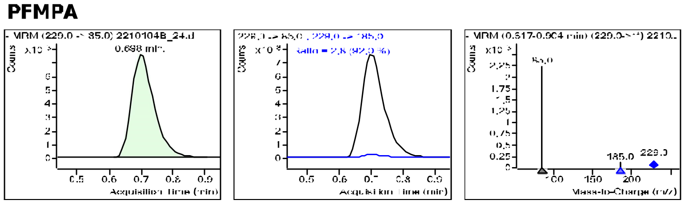

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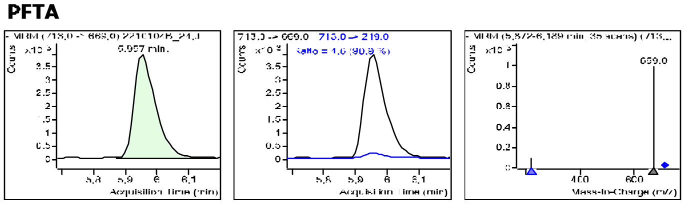

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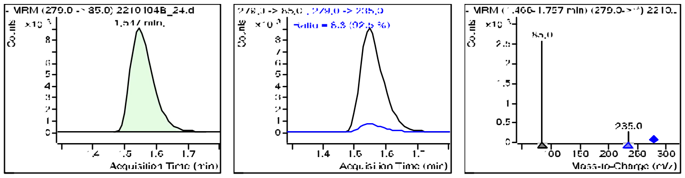

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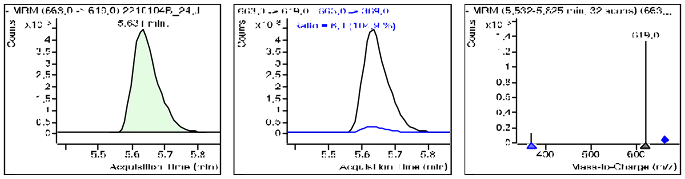

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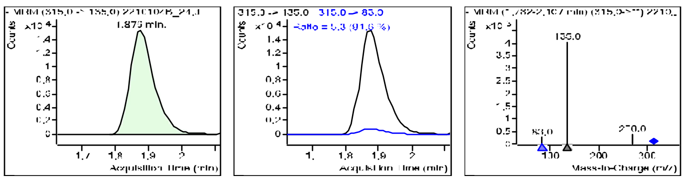

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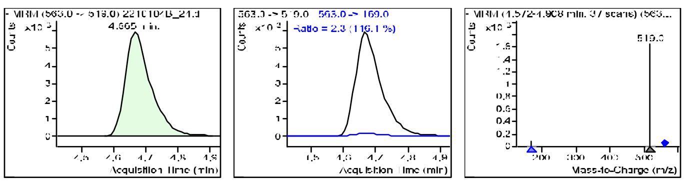

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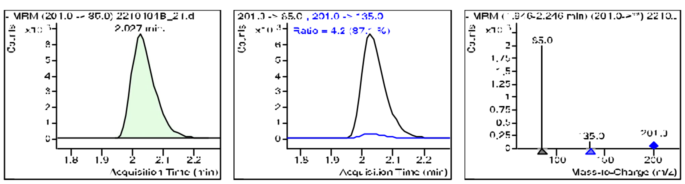

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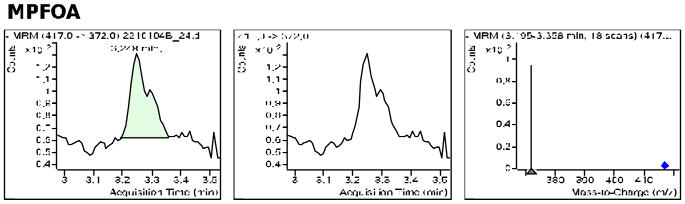

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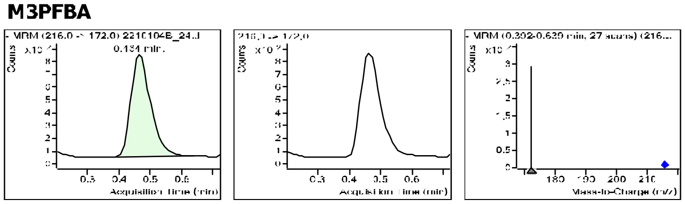


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279		Client Sample ID:	SMP 1, EXP 12CDUP	
Collect Date:	05/27/20	Time: 0100	GCAL Sample ID:	2131564	
Matrix:	Solid	% Moisture: NA	Instrument ID:	QQQ2	
Sample Amt:	.66	g	Lab File ID:	2210104B_26.d	
Injection Vol.:	1.0	(µL)	GC Column:	ACC-C18-30M	ID 2.1 (mm)
Prep Final Vol.:	5000000	(µL)	Dilution Factor:	1	Analyst: MRA
Prep Date:			Analysis Date:	01/04/21	Time: 2216
Prep Batch:	700444		Analytical Batch:	701166	
Prep Method:	PFAS ID QSM B15 Prep		Analytical Method:	PFAS Isotope Dilution QSM B15	

CONCENTRATION UNITS: ug/kg

CAS	*ANALYTE*	*RESULT*	*Q*	*DL*	*LOD*	*LOQ*
375-73-5	Perfluorobutanesulfonic acid	499000		4550	15200	37900
375-85-9	Perfluoroheptanoic acid	472000		4920	15200	37900
355-46-4	Perfluorohexanesulfonic acid	516000		5300	15200	37900
375-95-1	Perfluorononanoic acid	494000		3410	15200	37900
1763-23-1	Perfluorooctanesulfonic acid	491000		6820	15200	37900
335-67-1	Perfluorooctanoic acid	497000		5680	15200	37900

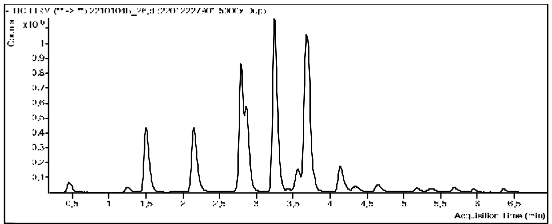
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_26.d	**Position**	P1-C4	**Samp Name**	22012227901	**Dilution**	1
Acq Method	PFAS40Poroshell093020	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ2;700444
Acq Date	1/4/2021 22:16						

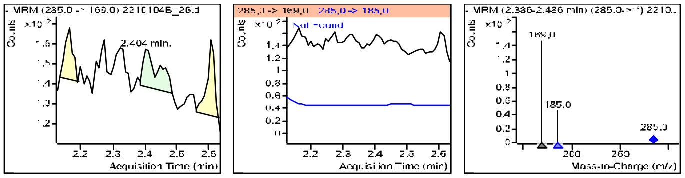
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	68596.656	4.149				98.78	19.7561		2777.87	1.42	
M2PFHxA	196781.139	2.152				101.30	40.5201		8379.56	1.44	
M2PFOA	77024.798	3.248				97.39	19.4780		4404.18	1.70	
M4PFOS	48978.311	3.703				96.89	19.3786		3817.42	1.60	
MPFOA	432.152	3.266				0.00	38.6551		2.88	1.45	
M3PFBA	3803.785	0.464				0.00	5.1881		INF	1.61	
HFPO-DA	66.657	2.404	M3HFPODA	683	2.393	102.08	0.6435		0.71	2.72	
4:2 FTS	19.036	2.002	M2 4:2 FTS	2625	2.095	106.36	0.0230		0.47	1.00	m
6:2 FTS	11.987	3.236	M2 6:2 FTS	4462	3.225	98.72	0.0083		0.95	1.25	m
ADONA	17.529	2.887	M8PFOA	22806	3.256	103.91	0.0012		0.79	1.69	
8:2 FTS	18.918	4.147	M2 8:2 FTS	4425	4.128	106.71	0.0119		1.39	1.00	
9Cl-PF3ONS	50.019	3.913	M8PFOS	10220	3.711	99.19	0.0051		0.75	2.86	
11Cl-PF3OUdS	10.640	4.998	M8PFOS	10220	3.711	99.19	0.0012		1.19	1.00	
PFHpS	1895.731	3.288	M8PFOA	22806	3.256	103.91	0.7376		65.76	1.70	
10:2 FTS	19.056	5.128	M2 8:2 FTS	4425	4.128	106.71	0.0120		6.34	0.79	
PFDoS	56.191	5.494	M8PFOS	10220	3.711	99.19	0.0182		2.41	3.41	
PFPeS	292.197	2.332	M5PFHxA	21228	2.151	102.45	0.1369		5.80	1.21	
PFODA	503.645	6.504	M2PFHxDA	10788	6.348	96.65	0.3922		16.22	1.75	
NEtFOSAA	4.459	4.791	d5-NEtFOSAA	11758	4.637	103.97	0.0014		7.08	0.91	m
PFHxDA	139.790	6.351	M2PFHxDA	10788	6.348	96.65	0.0706		2.62	1.53	
NMeFOSAA	70.105	4.394	d3-NMeFOSAA	7999	4.374	103.64	0.0213		2.54	1.04	
PFBA	114.502	0.457	MPFBA	24503	0.463	99.95	0.0126		2.63	1.48	
PFBS	154745.335	1.507	M3PFBS	9222	1.505	100.76	65.8157		1089.03	1.36	
PFDA	56.617	4.150	M6PFDA	16182	4.149	103.93	0.0151		0.39	1.30	
PFDoA	109.177	5.205	MPFDoA	13791	5.177	101.97	0.0414		7.37	0.88	
PFHpA	292952.654	2.798	M4PFHpA	19743	2.807	96.31	62.3518		275.80	1.42	
PFHxA	325.837	2.143	M5PFHxA	21228	2.151	102.45	0.0673		1.53	1.53	
PFHxS	169640.484	2.875	M3PFHxS	9180	2.874	96.15	68.0627		12271.98	1.23	m
PFNA	302992.936	3.679	M9PFNA	21007	3.678	101.62	65.1681		7251.19	1.52	
PFOA	325534.523	3.249	M8PFOA	22806	3.256	103.91	65.6589		1294.66	1.70	
PFOS	210837.986	3.704	M8PFOS	10220	3.711	99.19	64.7629		INF	0.78	m
PFPeA	164.003	1.253	M5PFPeA	17065	1.248	100.52	0.0301		0.74	1.96	
PFTA	19.938	5.957	M2PFTA	9240	5.954	97.70	0.0125		1.19	1.43	
PFTrDA	9.806	5.615	MPFDoA	13791	5.177	101.97	0.0047		0.13	1.23	
PFEESA	105.443	1.876	M3PFHxS	9180	2.874	96.15	0.0131		6.28	1.51	
PFUnA	189.564	4.665	M7PFUnA	17201	4.662	103.03	0.0525		1.93	1.63	
NFDHA	14.090	1.908	M4PFHpA	19743	2.807	96.31	0.0036		1.12	1.47	

HFPO-DA



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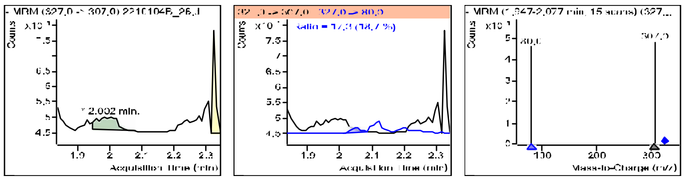

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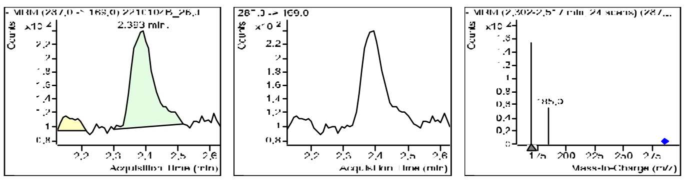
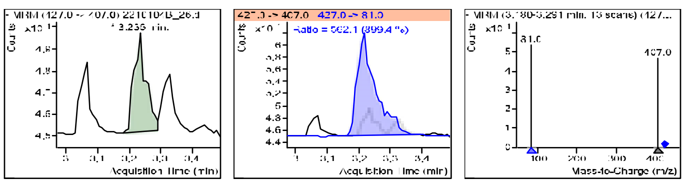
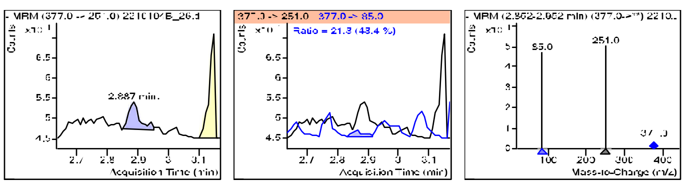


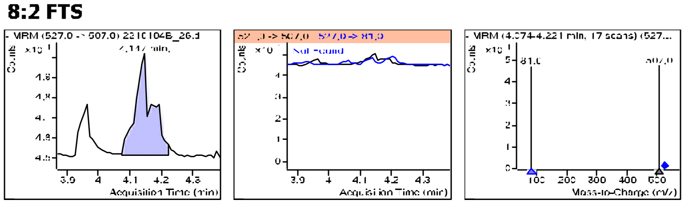
6:2 FTS



ADONA



8:2 FTS



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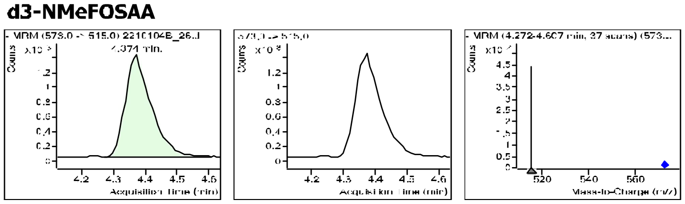

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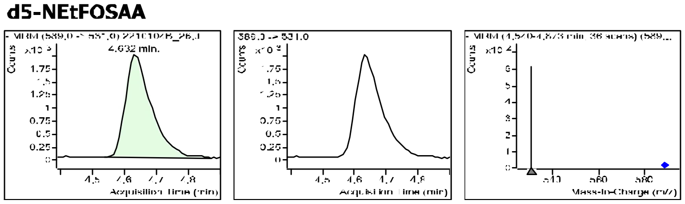

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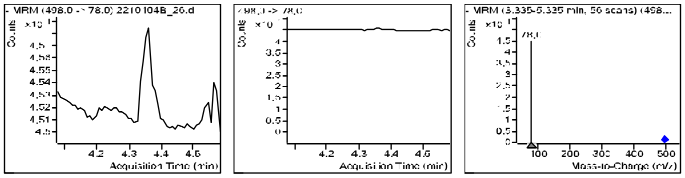

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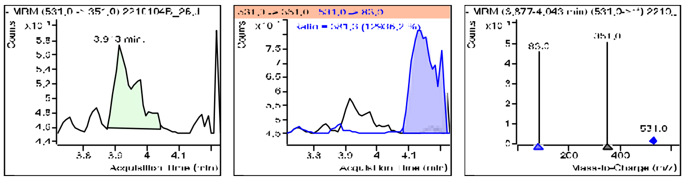

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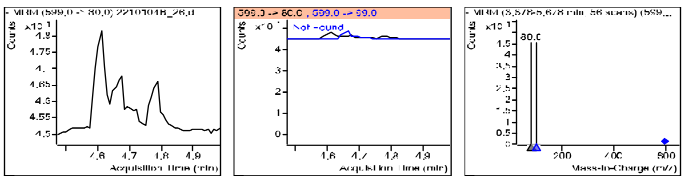

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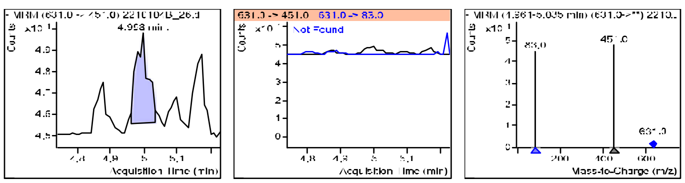

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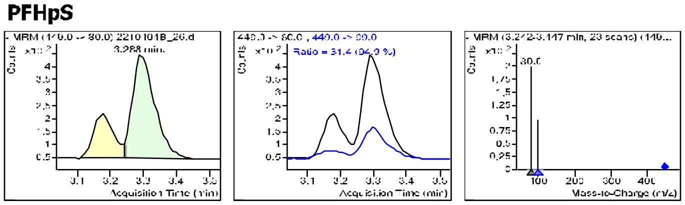
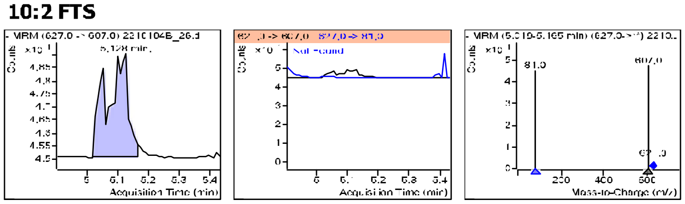


10:2 FTS



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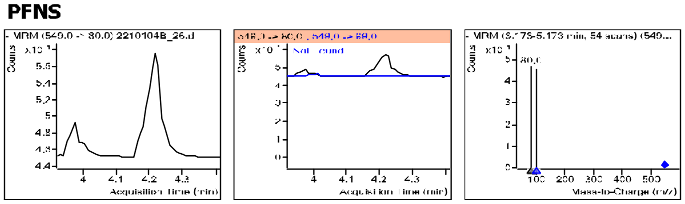

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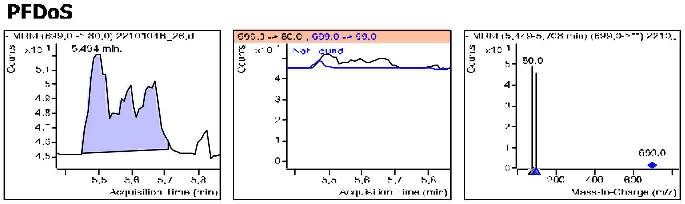

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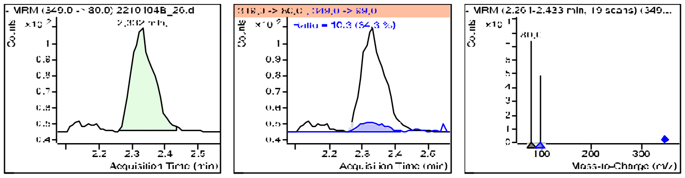

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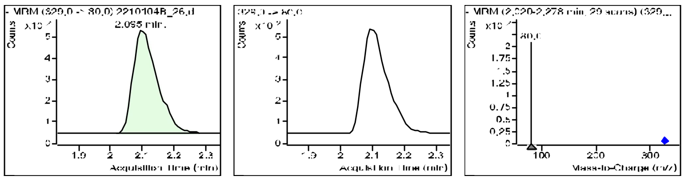

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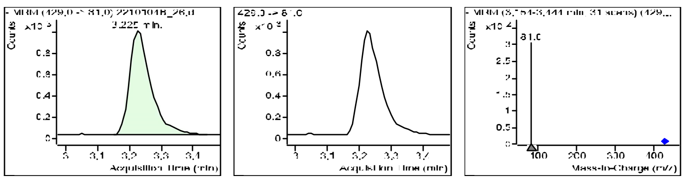

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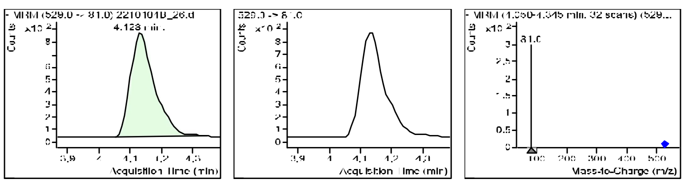

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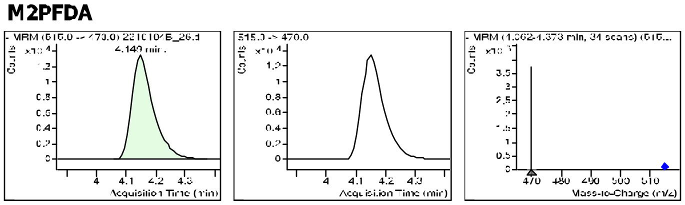

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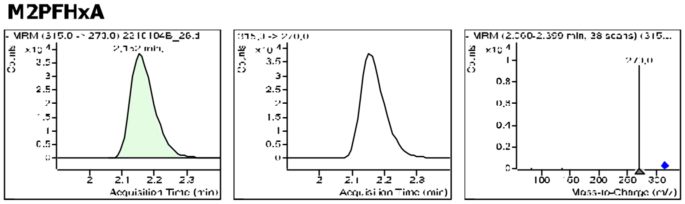

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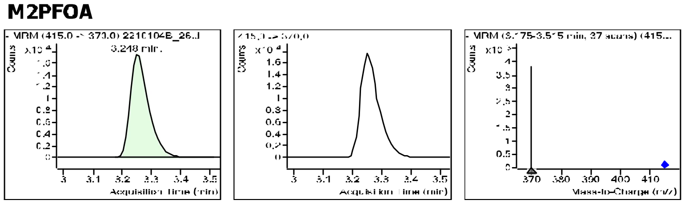

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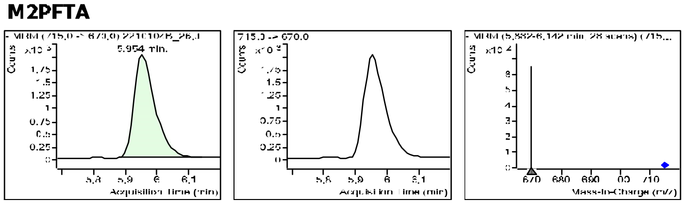

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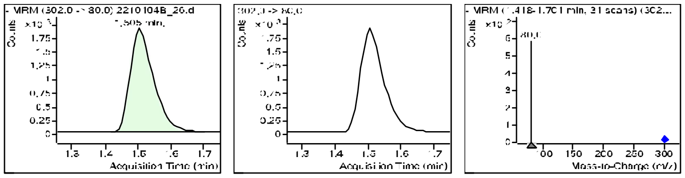

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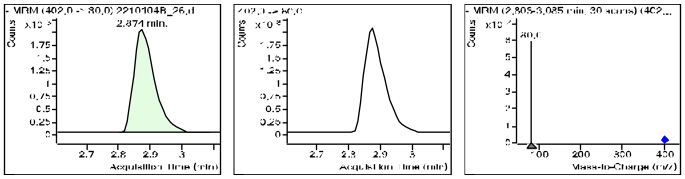

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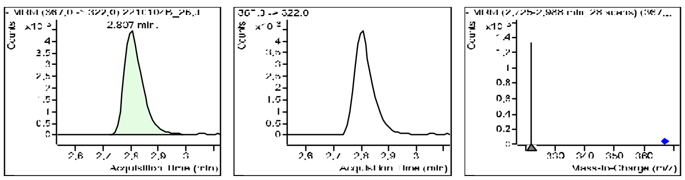

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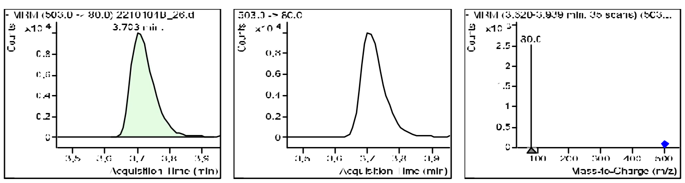

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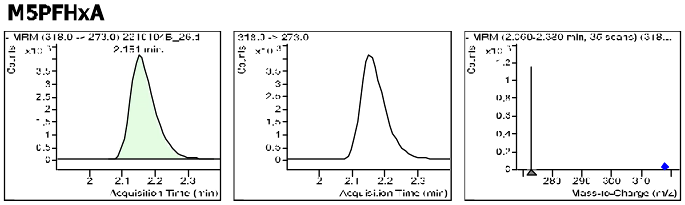

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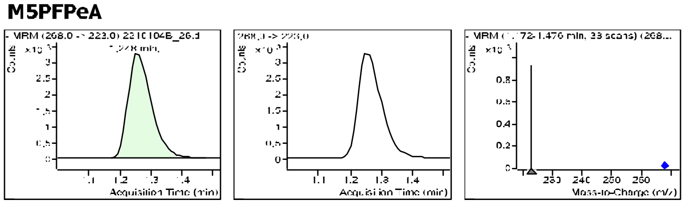

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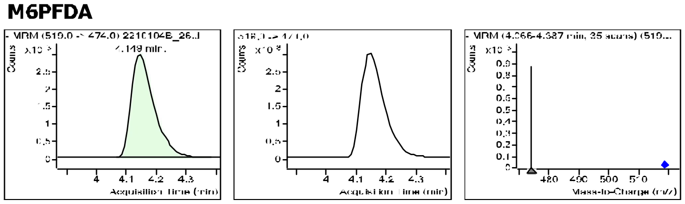

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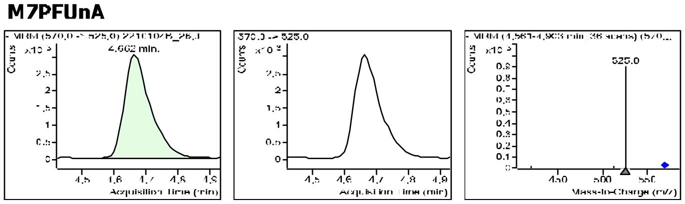

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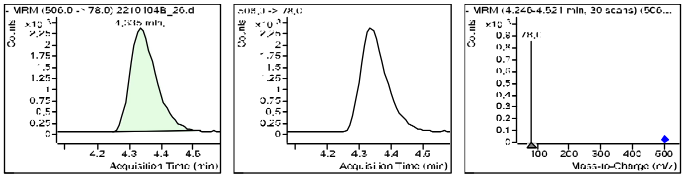

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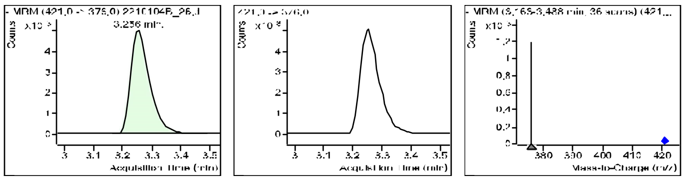

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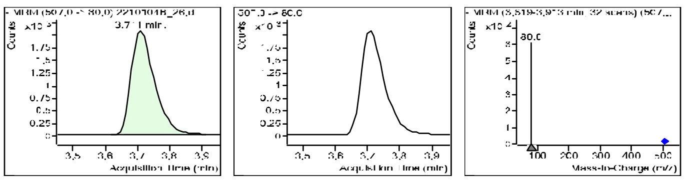

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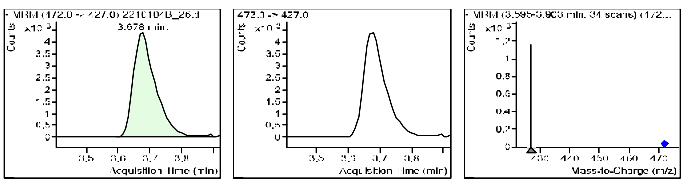

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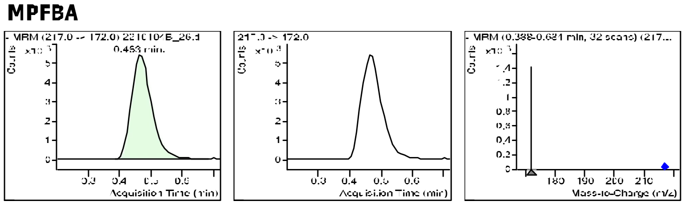

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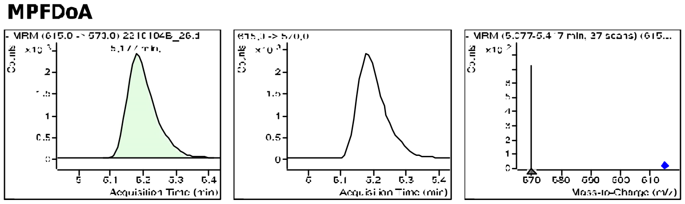

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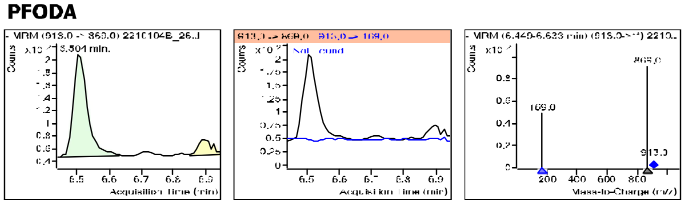

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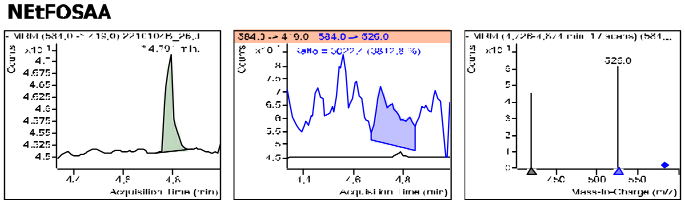

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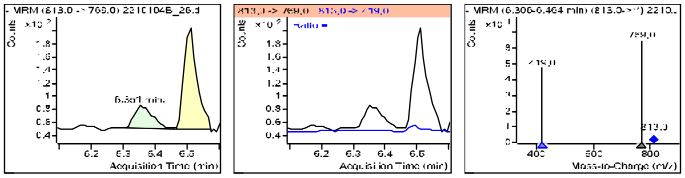

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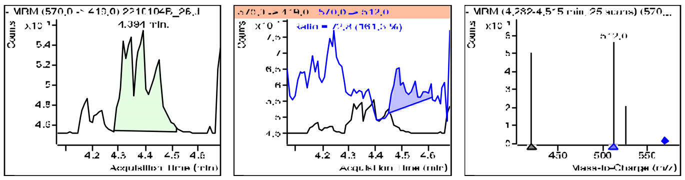

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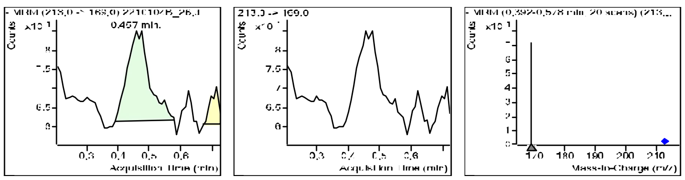

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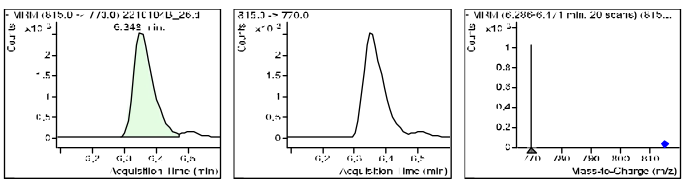

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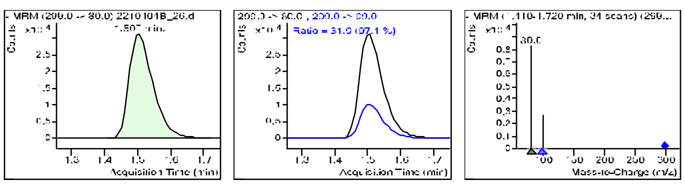

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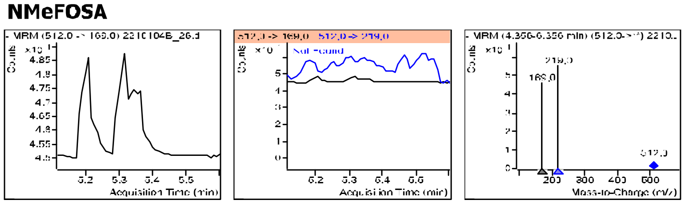

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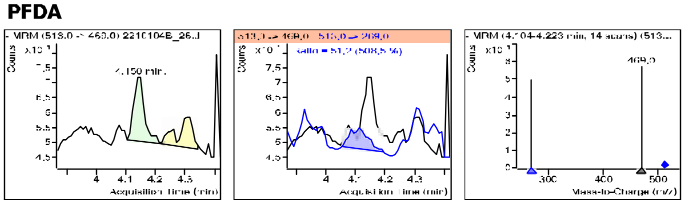

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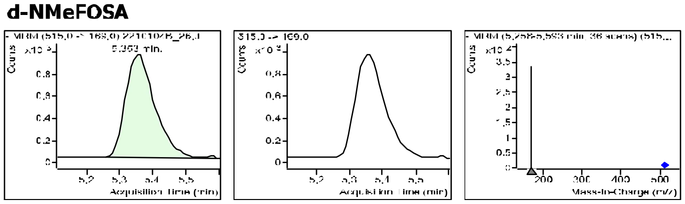

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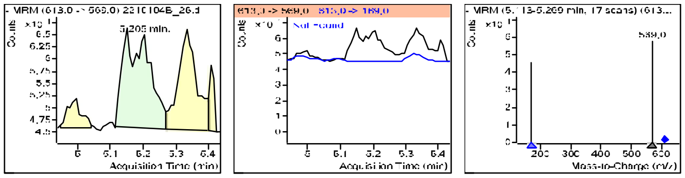

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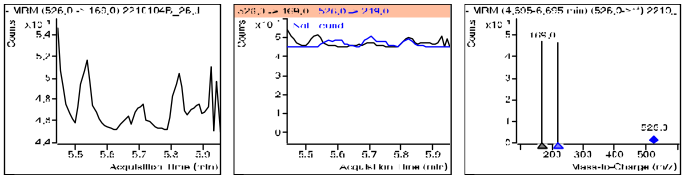

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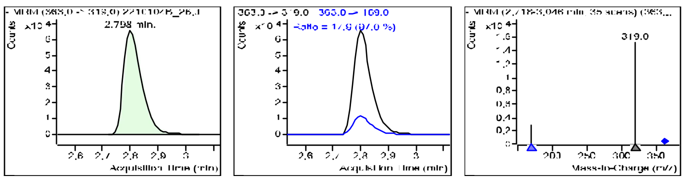

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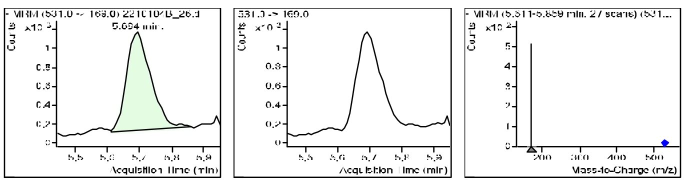

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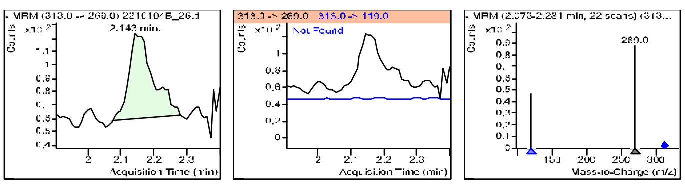

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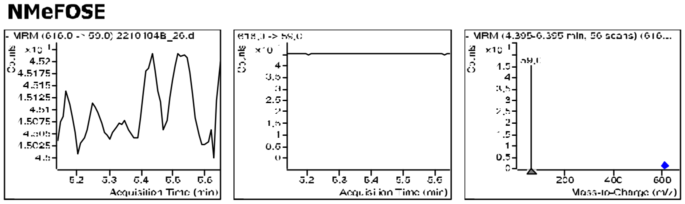

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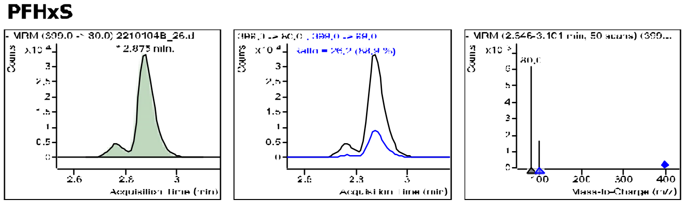

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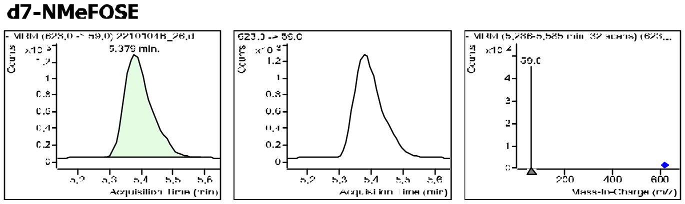

Quantitative Analysis Sample Report

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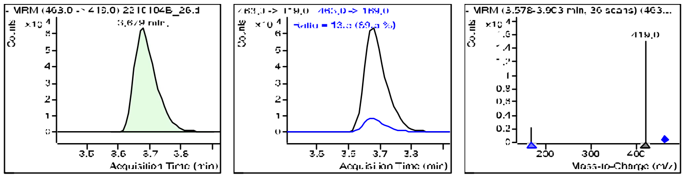

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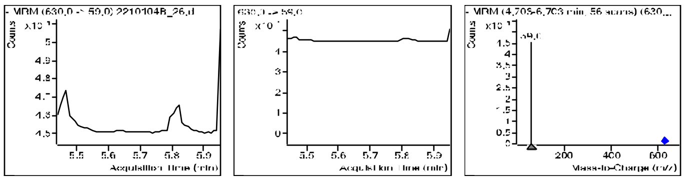

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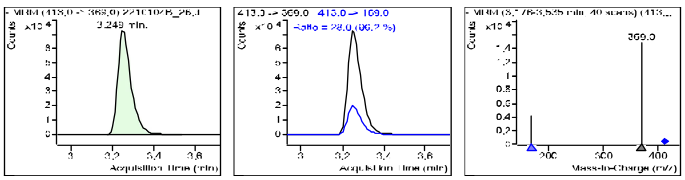

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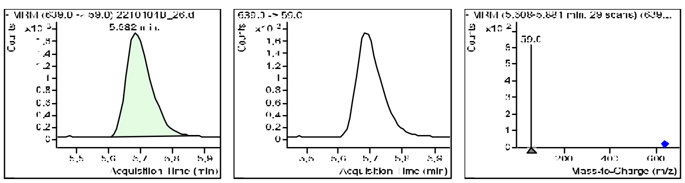

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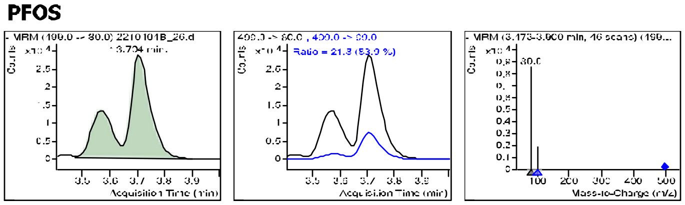

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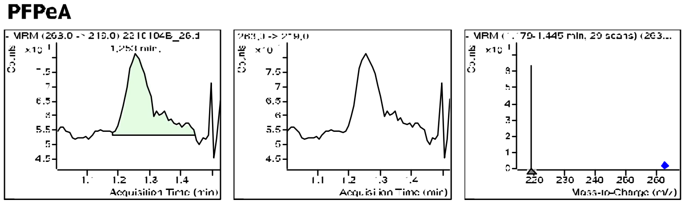

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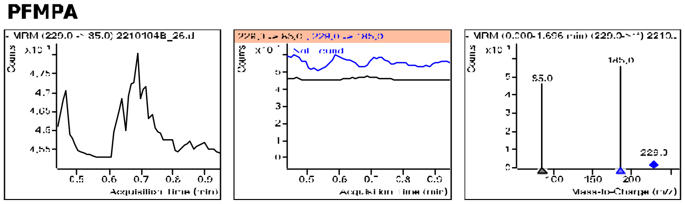

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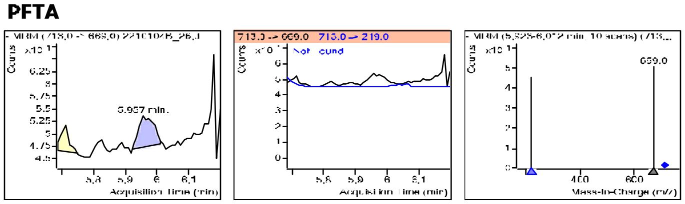

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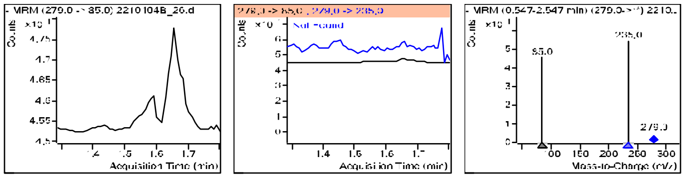

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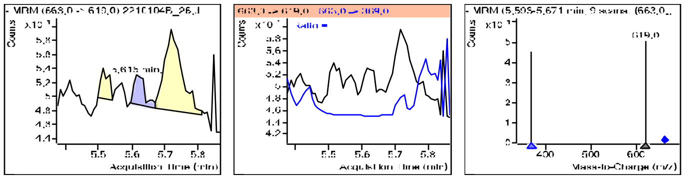

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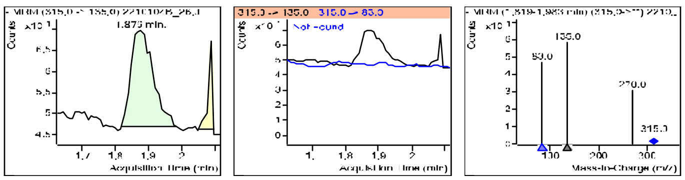

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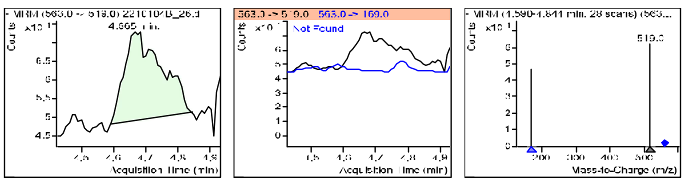

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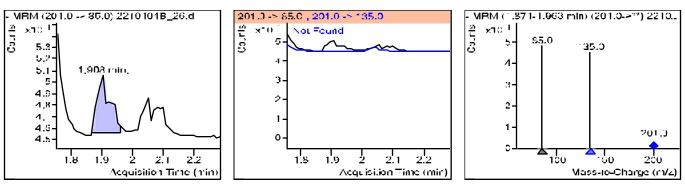

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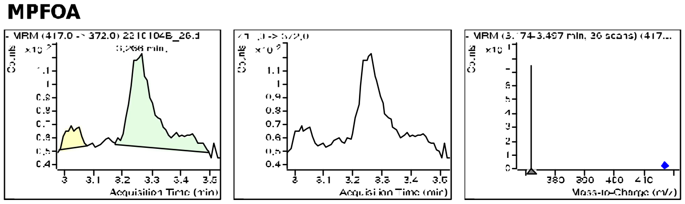
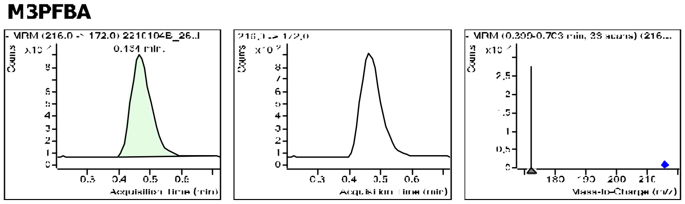


M3PFBA



1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 1, EXP 12CMS
Collect Date:	05/27/20 Time: 0100	GCAL Sample ID:	2131565
Matrix:	Solid % Moisture: NA	Instrument ID:	QQQ2
Sample Amt:	.66 g	Lab File ID:	2210104B_27.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	5000000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	01/04/21 Time: 2229
Prep Batch:	700444	Analytical Batch:	701166
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ug/kg

CAS	*ANALYTE*	*RESULT*	*Q*	*DL*	*LOD*	*LOQ*
27619-97-2	6:2 Fluorotelomersulfonic acid	63700		6440	15200	37900
39108-34-4	8:2 Fluorotelomersulfonic acid	66700		9850	15200	37900
375-22-4	Perfluorobutanoic acid	55400		4920	15200	37900
335-76-2	Perfluorodecanoic acid	55500		4550	15200	37900
307-24-4	Perfluorohexanoic acid	57300		5680	15200	37900
2706-90-3	Perfluoropentanoic acid	56100		5680	15200	37900
2058-94-8	Perfluoroundecanoic acid	56300		5300	15200	37900

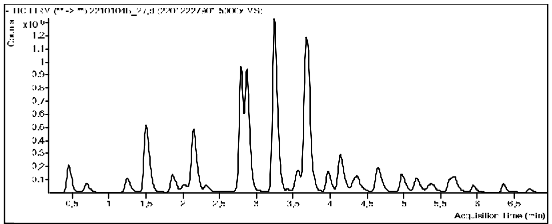
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_27.d	**Position**	P1-C5	**Samp Name**	22012227901	**Dilution**	1
Acq Method	PFAS40Poroshell093020	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ2;700444
Acq Date	1/4/2021 22:29						

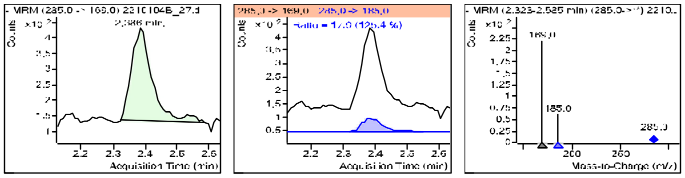
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	64599.709	4.149				93.02	18.6049		96.02	1.42	
M2PFHxA	180167.346	2.152				92.75	37.0990		7947.29	1.36	
M2PFOA	72035.020	3.248				91.08	18.2162		2350.05	1.70	
M4PFOS	44917.596	3.703				88.86	17.7720		213.70	1.60	
MPFOA	429.392	3.248				0.00	38.4082		2.01	2.77	
M3PFBA	3610.230	0.464				0.00	4.9241		34.56	1.55	
HFPO-DA	1337.370	2.386	M3HFPODA	628	2.384	93.83	14.0459		3.97	1.50	
4:2 FTS	5830.293	2.095	M2 4:2 FTS	2772	2.095	112.30	6.6645		287.01	1.48	
6:2 FTS	11896.796	3.226	M2 6:2 FTS	4394	3.226	97.21	8.4059		339.68	1.50	
ADONA	106315.912	2.887	M8PFOA	21836	3.247	99.49	7.2972		5435.47	1.44	
8:2 FTS	13129.085	4.129	M2 8:2 FTS	4153	4.129	100.16	8.8010		418.10	1.49	
FOSA	26074.143	4.335	M8FOSA	13064	4.335	96.83	7.2998		770.57	1.50	
9Cl-PF3ONS	76219.451	3.970	M8PFOS	9608	3.702	93.24	8.2899		3635.39	1.56	
PFDS	18446.894	4.676	M6PFDA	15325	4.139	98.42	7.3878		1908.66	1.51	
11Cl-PF3OUdS	71947.772	4.979	M8PFOS	9608	3.702	93.24	8.2881		12826.67	1.37	
PFHpS	20137.623	3.297	M8PFOA	21836	3.247	99.49	8.1833		INF	1.42	
10:2 FTS	13471.919	5.174	M2 8:2 FTS	4153	4.129	100.16	9.0025		1198.50	1.56	
PFNS	18211.865	4.172	M9PFNA	20212	3.678	97.78	7.1386		634.11	1.42	
PFDoS	22887.230	5.623	M8PFOS	9608	3.702	93.24	7.9070		79.76	1.45	
PFPeS	15815.610	2.314	M5PFHxA	19784	2.151	95.48	7.9497		842.21	1.50	
PFODA	10760.000	6.706	M2PFHxDA	10126	6.348	90.72	8.9278		710.04	1.60	
NEtFOSAA	22689.936	4.642	d5-NEtFOSAA	10715	4.632	98.91	7.4876		160.66	1.04	m
PFHxDA	16334.013	6.351	M2PFHxDA	10126	6.348	90.72	8.7833		894.53	1.63	
NMeFOSAA	25585.367	4.375	d3-NMeFOSAA	7829	4.374	101.44	7.9502		115.14	0.85	m
PFBA	65281.103	0.466	MPFBA	24054	0.463	98.12	7.3127		1813.10	1.31	
PFBS	174662.964	1.497	M3PFBS	8388	1.505	91.65	81.6710		6516.99	1.50	
NMeFOSA	9638.037	5.354	d-NMeFOSA	5068	5.353	84.29	9.1812		303.13	1.38	
PFDA	26052.066	4.150	M6PFDA	15325	4.139	98.42	7.3204		1067.28	1.49	
PFDoA	21139.654	5.178	MPFDoA	13419	5.177	99.22	8.2293		30.24	1.55	
NEtFOSA	11073.898	5.695	d-NEtFOSA	5304	5.684	84.65	8.2997		113.21	1.50	
PFHpA	334626.293	2.798	M4PFHpA	19346	2.797	94.37	72.6833		8352.70	1.42	
PFHxA	34136.512	2.153	M5PFHxA	19784	2.151	95.48	7.5620		640.55	1.46	
NMeFOSE	14630.664	5.398	d7-NMeFOSE	7017	5.367	95.99	7.1014		78.37	1.35	
PFHxS	186932.103	2.875	M3PFHxS	8742	2.874	91.56	78.7585		556.45	1.32	m
PFNA	345659.597	3.679	M9PFNA	20212	3.678	97.78	77.2678		258.60	1.37	
NEtFOSE	16735.400	5.703	d9-NEtFOSE	9182	5.682	93.12	8.8907		6938.94	1.40	
PFOA	372458.101	3.249	M8PFOA	21836	3.247	99.49	78.4592		2152.56	1.70	
PFOS	242718.640	3.704	M8PFOS	9608	3.702	93.24	79.3094		INF	0.78	m
PFPeA	38291.814	1.253	M5PFPeA	16180	1.248	95.31	7.4097		270.74	1.38	
PFMPA	33462.175	0.698	M5PFPeA	16180	1.248	95.31	7.4005		879.95	1.36	
PFTA	13007.212	5.946	M2PFTA	9235	5.954	97.65	8.1711		666.78	1.72	
PFMBA	36977.776	1.547	M5PFHxA	19784	2.151	95.48	7.5091		2011.66	1.34	
PFTrDA	17691.621	5.625	MPFDoA	13419	5.177	99.22	8.7118		72.53	1.60	
PFEESA	63818.528	1.867	M3PFHxS	8742	2.874	91.56	8.3515		173.92	1.51	
PFUnA	25924.570	4.665	M7PFUnA	16606	4.653	99.46	7.4311		1042.96	1.38	
NFDHA	26283.127	2.036	M4PFHpA	19346	2.797	94.37	6.8731		1494.72	1.25	

HFPO-DA



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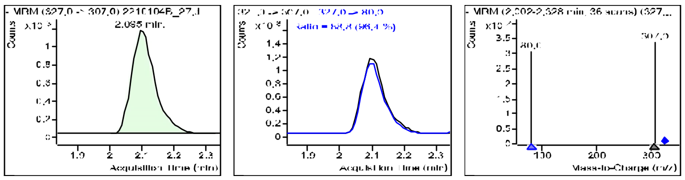

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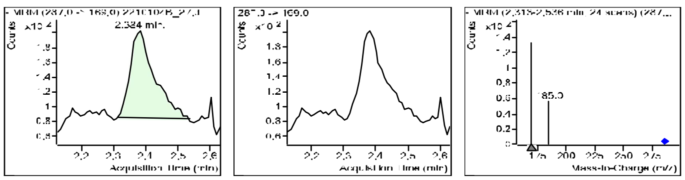

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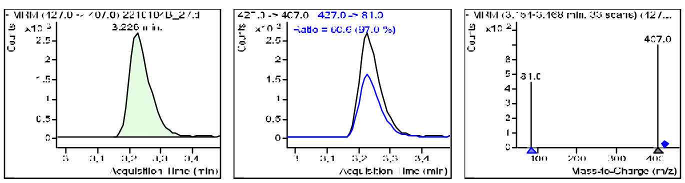

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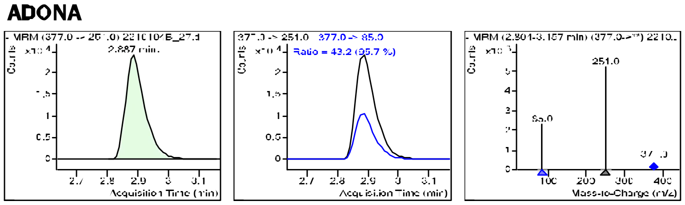

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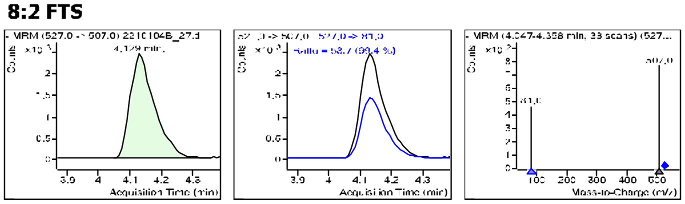

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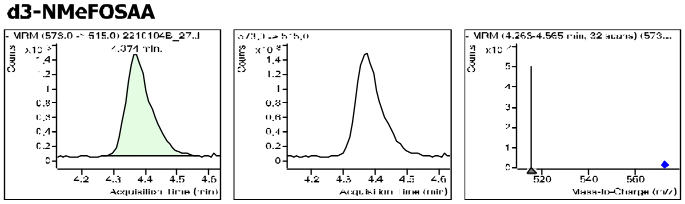

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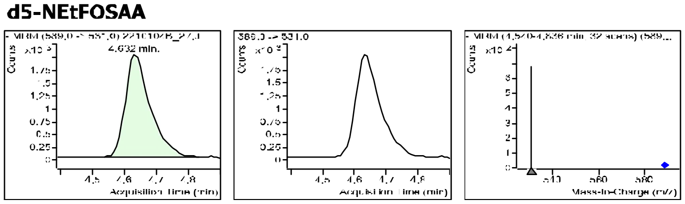

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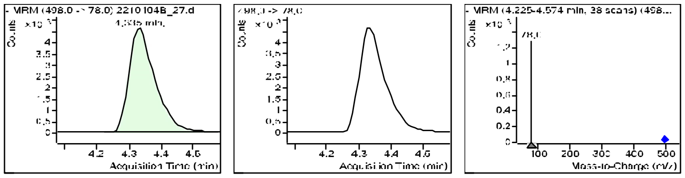
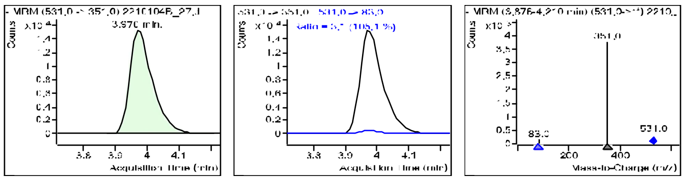


9Cl-PF3ONS



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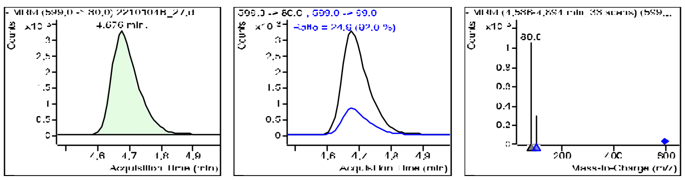

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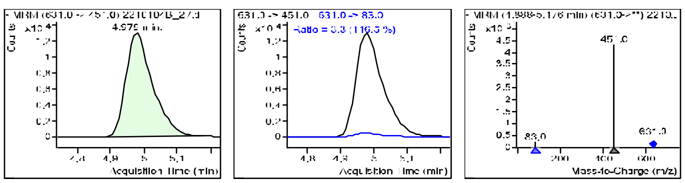

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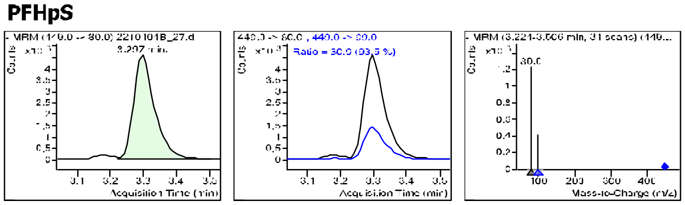

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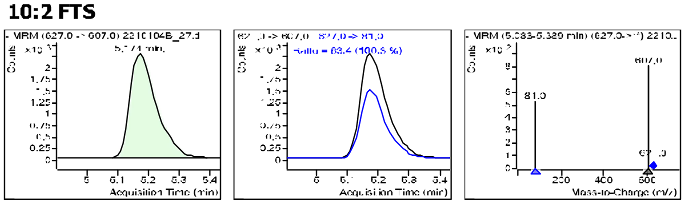

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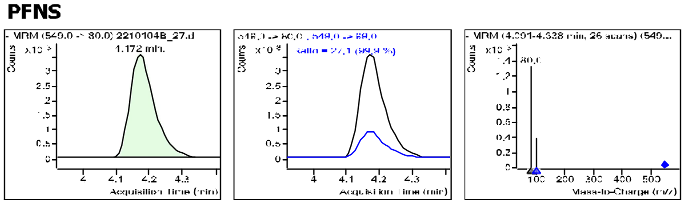

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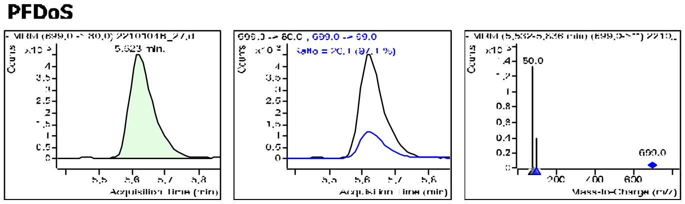
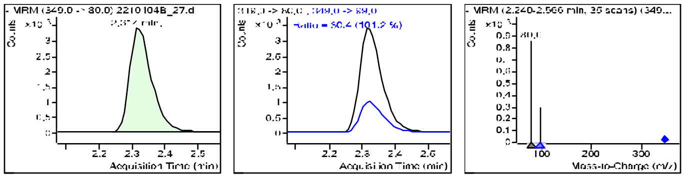
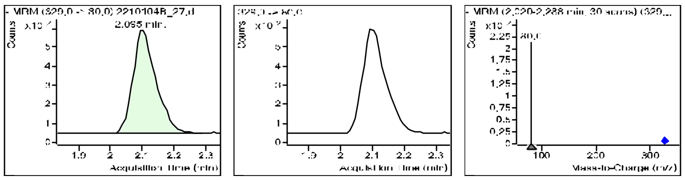


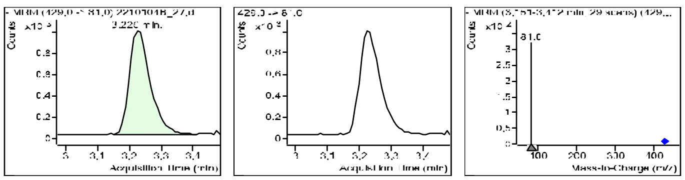
PFPeS



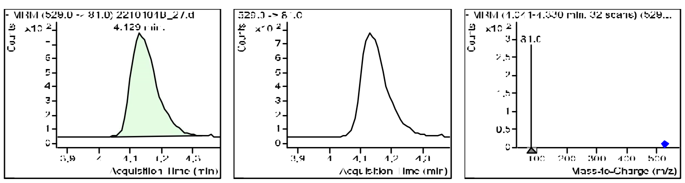
M2 4:2 FTS



M2 6:2 FTS



M2 8:2 FTS



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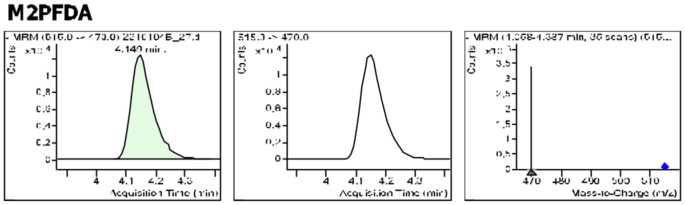

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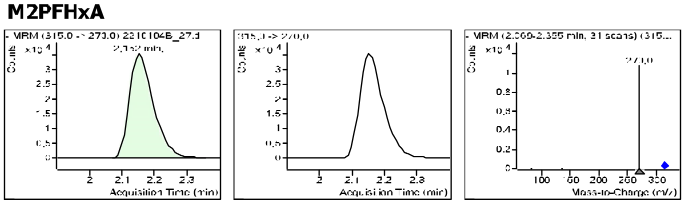

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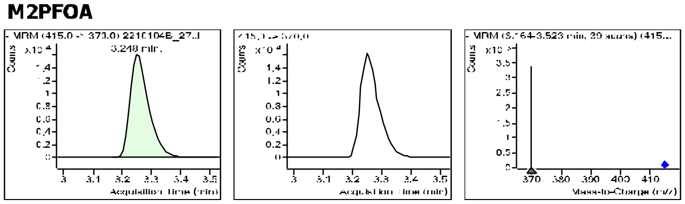

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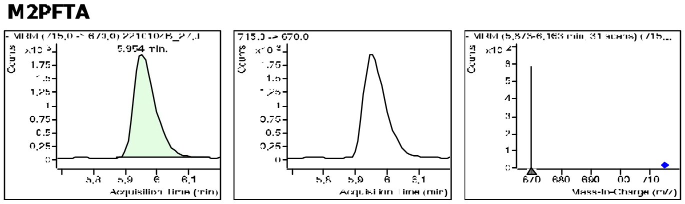

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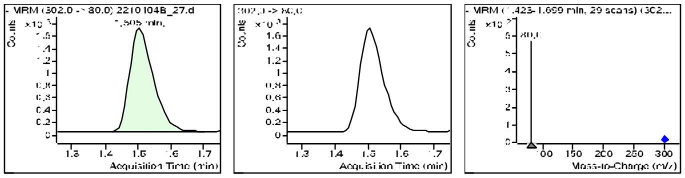

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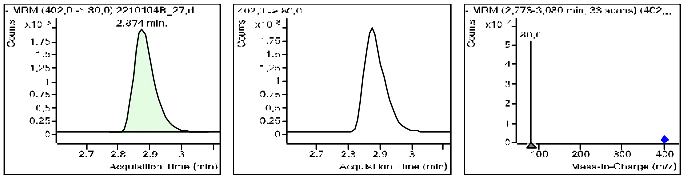

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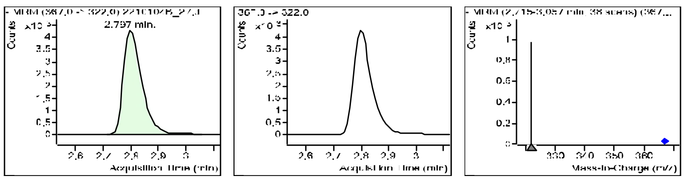

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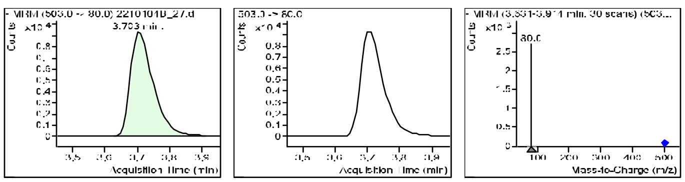

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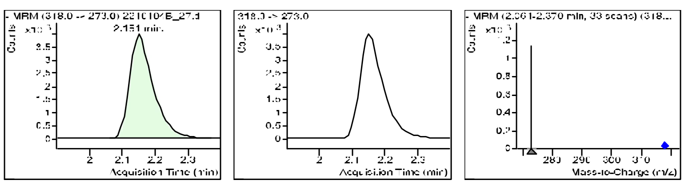

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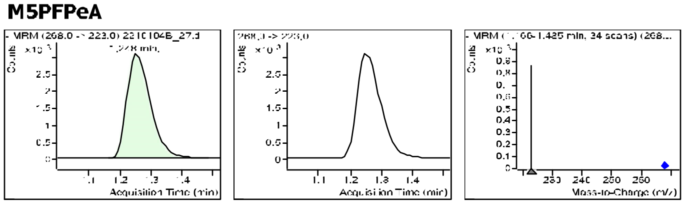

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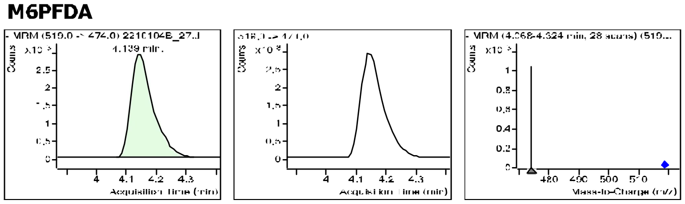

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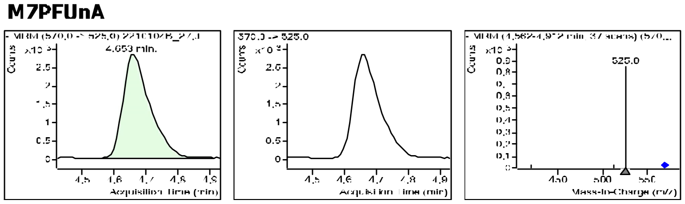

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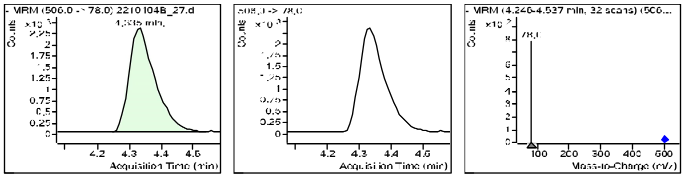

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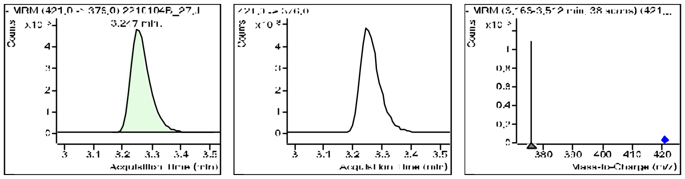

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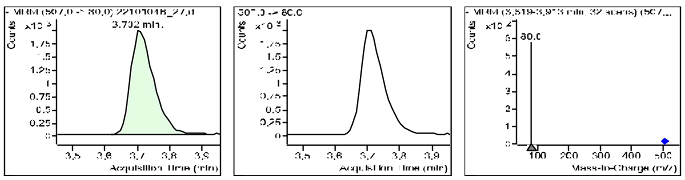

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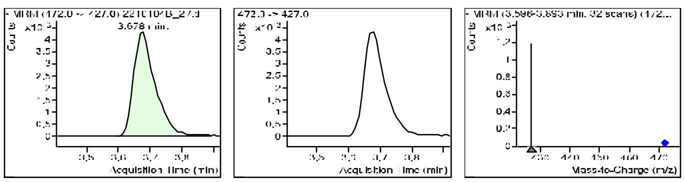

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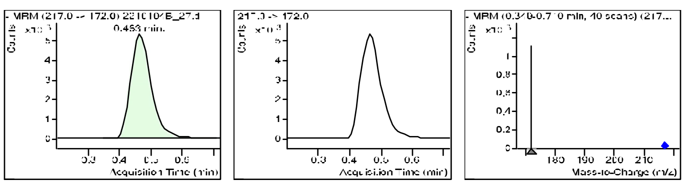

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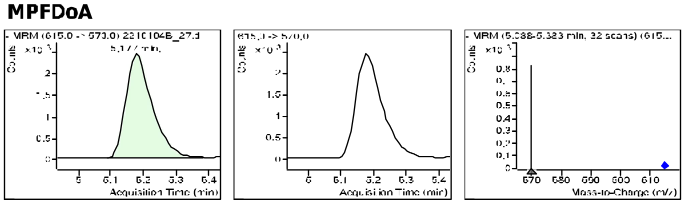

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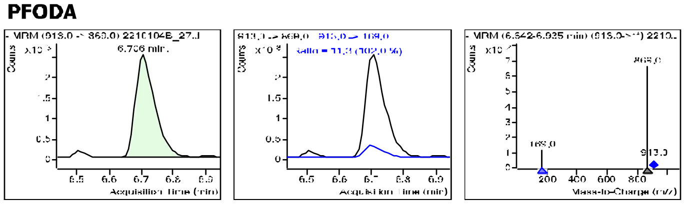

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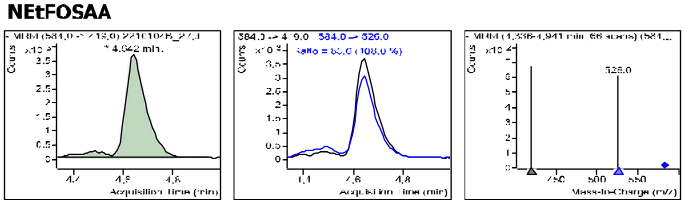

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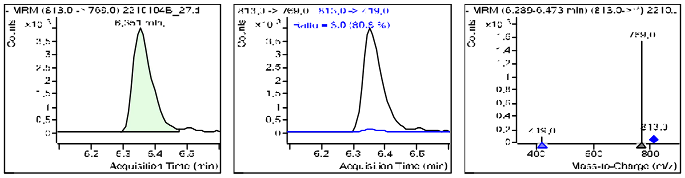

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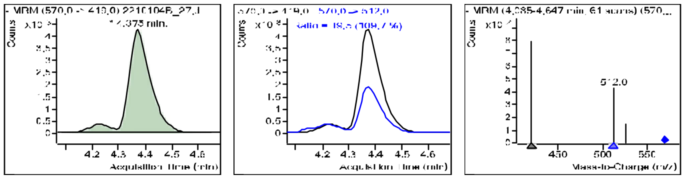

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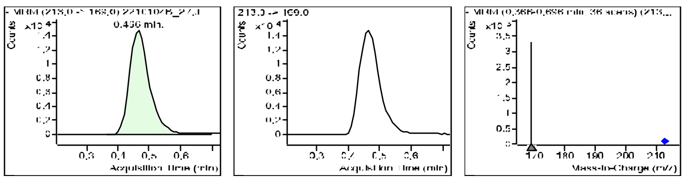

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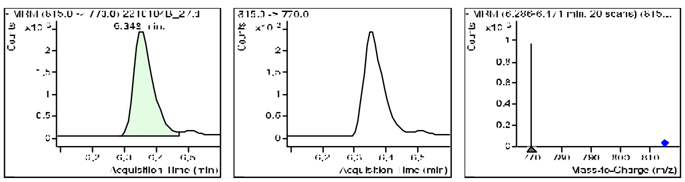

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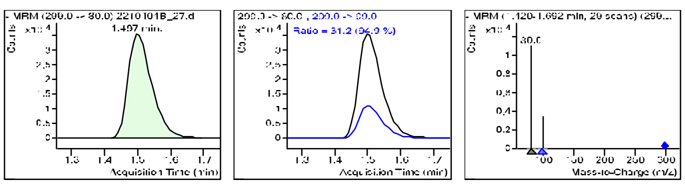

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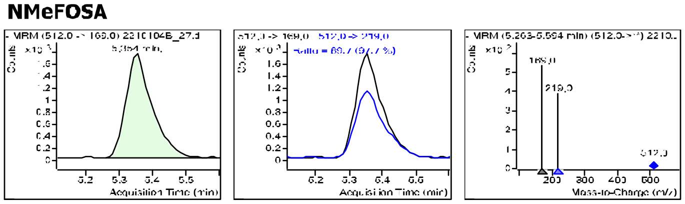

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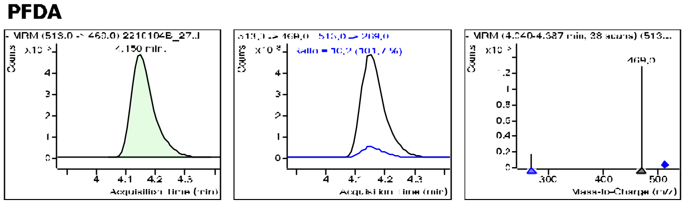

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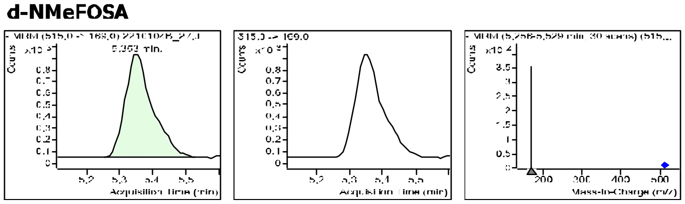

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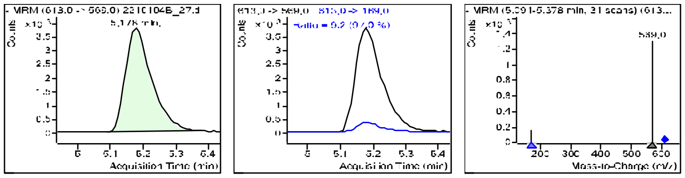

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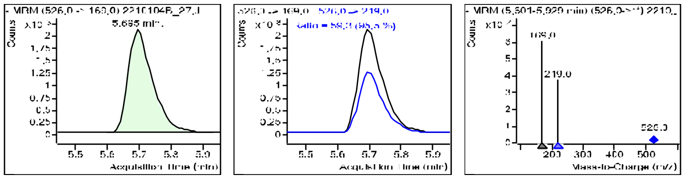

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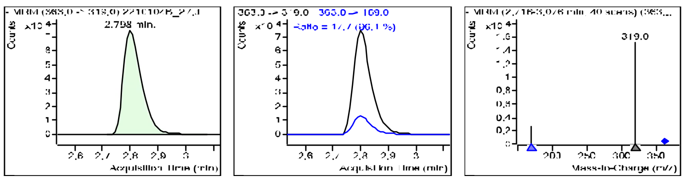

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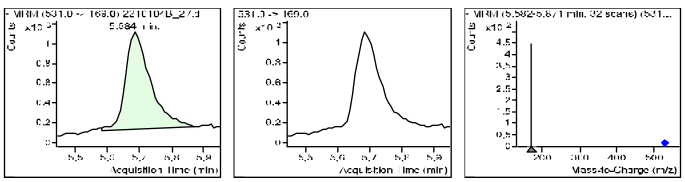

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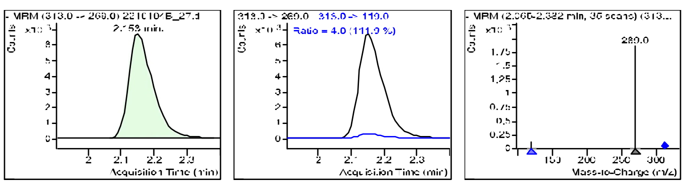

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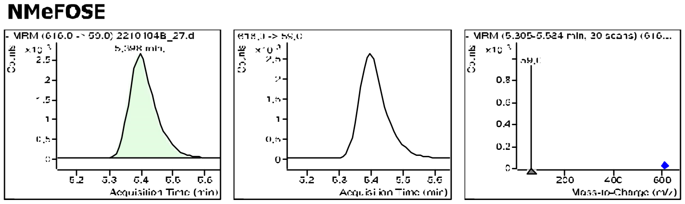

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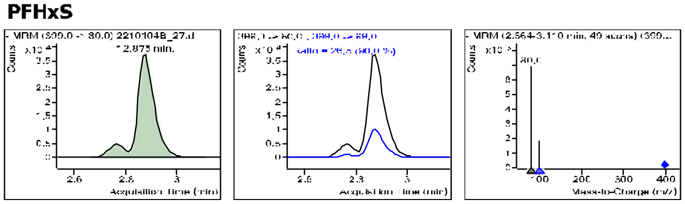

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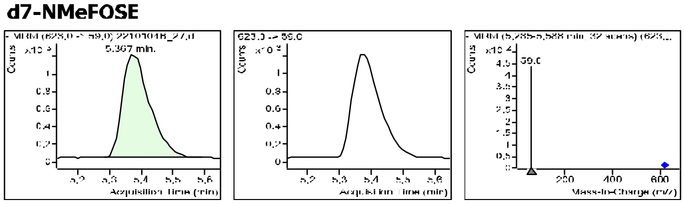

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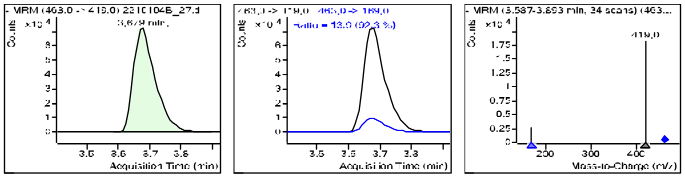

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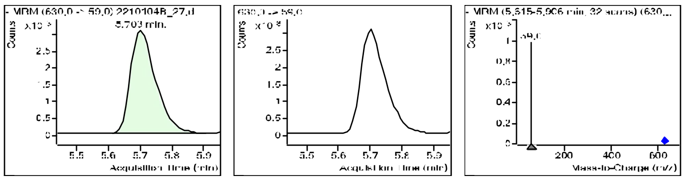

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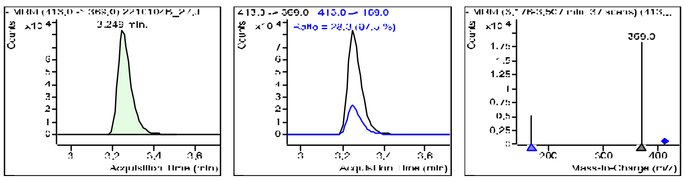

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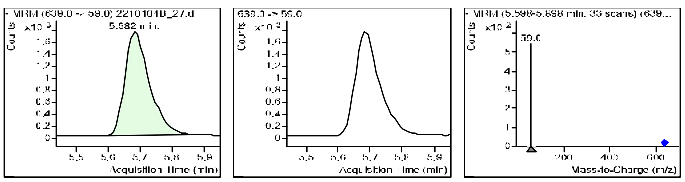

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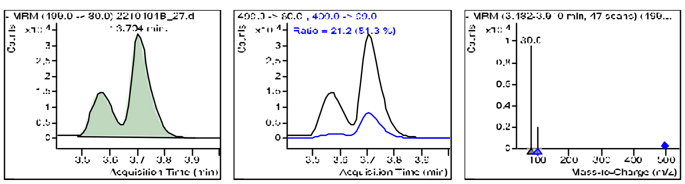

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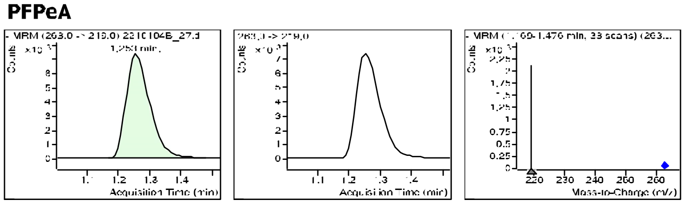

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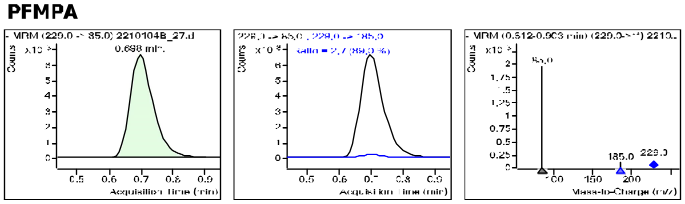

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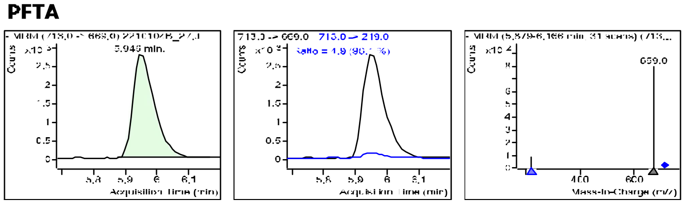

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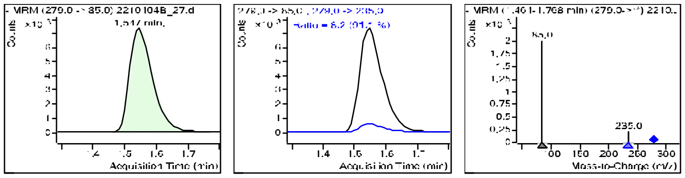

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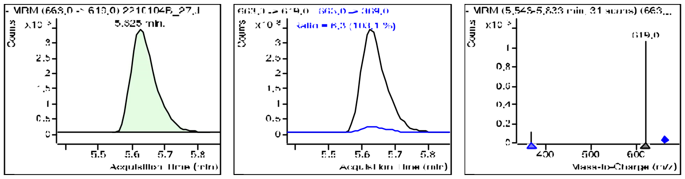

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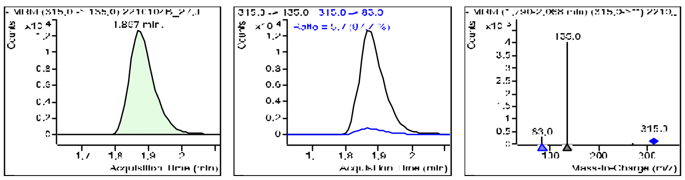

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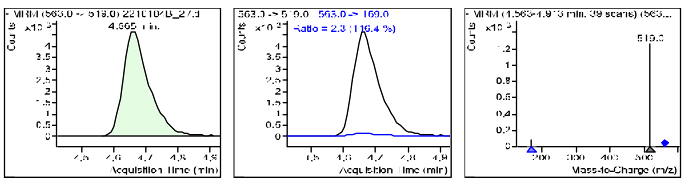

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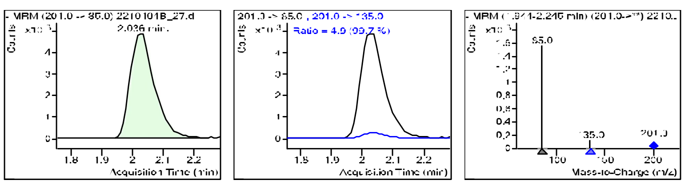

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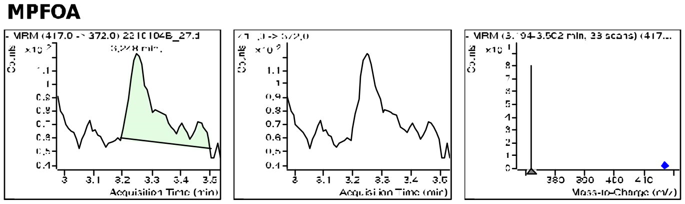

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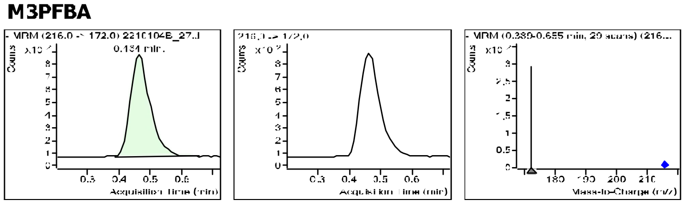


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 2, EXP 12TDUP
Collect Date:	05/27/20 Time: 0200	GCAL Sample ID:	2131566
Matrix:	Solid % Moisture: NA	Instrument ID:	QQQ2
Sample Amt:	.51 g	Lab File ID:	2210104B_29.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	500000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	01/04/21 Time: 2255
Prep Batch:	700444	Analytical Batch:	701166
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ug/kg

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
375-73-5	Perfluorobutanesulfonic acid	62900		588	1960	4900
355-46-4	Perfluorohexanesulfonic acid	59700		686	1960	4900
1763-23-1	Perfluorooctanesulfonic acid	54700		882	1960	4900

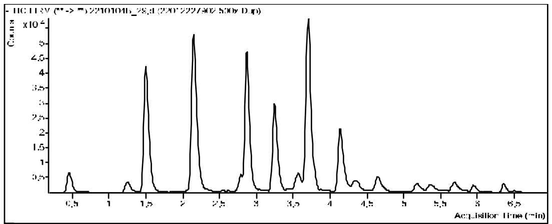
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path	D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update	1/5/2021 14:27

Data File	2210104B_29.d	**Position**	P1-C7	**Samp Name**	22012227902	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ2;700444
Acq Date	1/4/2021 22:55						

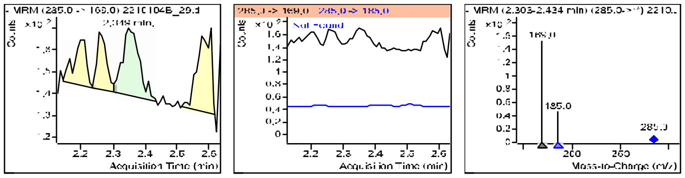
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	88879.576	4.149				127.99	25.5976		2582.72	1.42	
M2PFHxA	242563.651	2.152				124.87	49.9473		7807.91	1.36	
M2PFOA	102273.731	3.248				129.31	25.8629		158.15	1.70	
M4PFOS	62278.708	3.703				123.21	24.6410		2736.54	1.60	
MPFOA	233.445	3.248				0.00	20.8811		13.13	1.60	
M3PFBA	3765.230	0.464				0.00	5.1355		28.88	1.49	
HFPO-DA	114.704	2.349	M3HFPODA	723	2.384	108.11	1.0456		1.14	1.38	
4:2 FTS	8.544	2.104	M2 4:2 FTS	2774	2.095	112.41	0.0098		3.64	1.00	
6:2 FTS	51.262	3.263	M2 6:2 FTS	4760	3.226	105.31	0.0334		0.69	0.86	m
ADONA	80.017	2.887	M8PFOA	23200	3.247	105.70	0.0052		8.68	1.73	
11Cl-PF3OUdS	41.010	5.099	M8PFOS	10482	3.711	101.73	0.0043		1.05	0.60	
PFHpS	2042.033	3.297	M8PFOA	23200	3.247	105.70	0.7811		46.82	1.29	
PFPeS	197.055	2.314	M5PFHxA	20731	2.151	100.05	0.0945		3.95	1.50	
PFODA	440.389	6.504	M2PFHxDA	12062	6.358	108.07	0.3067		21.46	1.50	
NEtFOSAA	27.082	4.679	d5-NEtFOSAA	11856	4.632	109.44	0.0081		1.71	0.84	
PFHxDA	93.518	6.361	M2PFHxDA	12062	6.358	108.07	0.0122		0.30	0.92	
NMeFOSAA	10.398	4.487	d3-NMeFOSAA	8050	4.374	104.31	0.0031		1.24	1.31	
PFBA	434.417	0.457	MPFBA	25068	0.463	102.26	0.0467		5.12	1.27	
PFBS	149428.341	1.497	M3PFBS	9140	1.505	99.87	64.1735		323.53	1.50	
NMeFOSA	7.995	5.456	d-NMeFOSA	5681	5.353	94.47	0.0068		0.82	1.00	
PFDA	21.564	4.187	M6PFDA	15421	4.149	99.04	0.0060		0.79	0.78	
PFDoA	54.522	5.159	MPFDoA	14091	5.177	104.19	0.0202		3.06	1.48	
NEtFOSA	19.792	5.750	d-NEtFOSA	6164	5.694	98.39	0.0128		1.90	1.33	
PFHpA	186.644	2.798	M4PFHpA	21000	2.797	102.44	0.0373		6.67	1.58	
PFHxA	389.277	2.171	M5PFHxA	20731	2.151	100.05	0.0823		2.56	1.18	
NMeFOSE	11.288	5.368	d7-NMeFOSE	7200	5.379	98.49	0.0053		1.10	1.15	
PFHxS	156326.885	2.875	M3PFHxS	9457	2.874	99.04	60.8883		INF	1.35	m
PFNA	225.992	3.679	M9PFNA	21636	3.678	104.66	0.0472		6.78	1.22	
PFOA	395.319	3.259	M8PFOA	23200	3.247	105.70	0.0784		2.17	1.02	
PFOS	186281.217	3.704	M8PFOS	10482	3.711	101.73	55.7921		INF	1.37	m
PFPeA	176.531	1.253	M5PFPeA	17326	1.248	102.06	0.0319		1.53	1.15	m
PFTA	32.776	5.936	M2PFTA	10096	5.954	106.75	0.0188		0.95	3.42	
PFTrDA	7.444	5.671	MPFDoA	14091	5.177	104.19	0.0035		0.98	0.66	
PFEESA	180.726	1.867	M3PFHxS	9457	2.874	99.04	0.0219		2.95	1.32	
PFUnA	59.096	4.757	M7PFUnA	17599	4.662	105.41	0.0160		1.68	1.05	
NFDHA	17.681	2.009	M4PFHpA	21000	2.797	102.44	0.0043		2.20	0.92	

HFPO-DA



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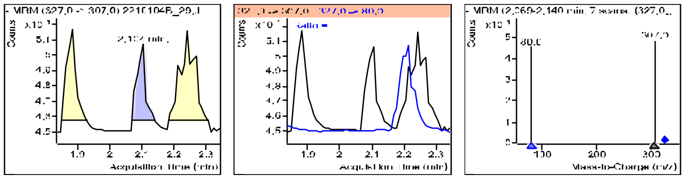

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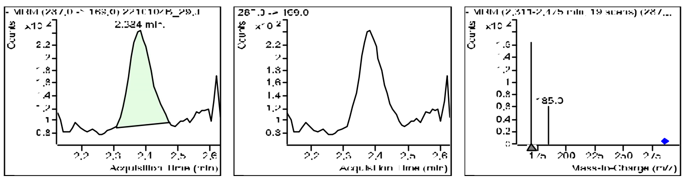

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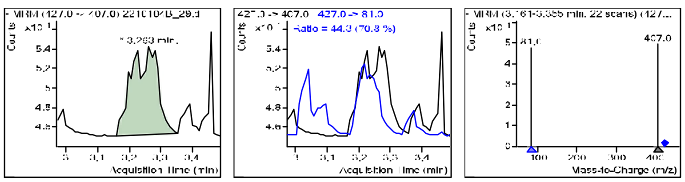
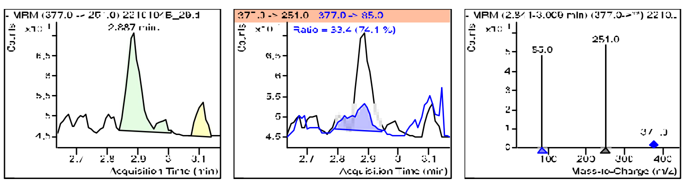
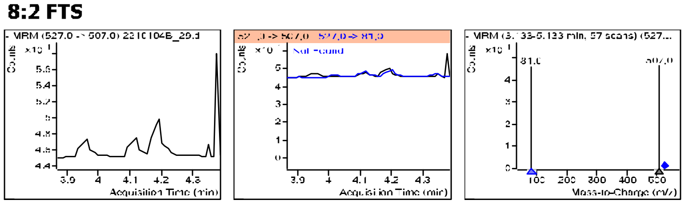


ADONA



8:2 FTS



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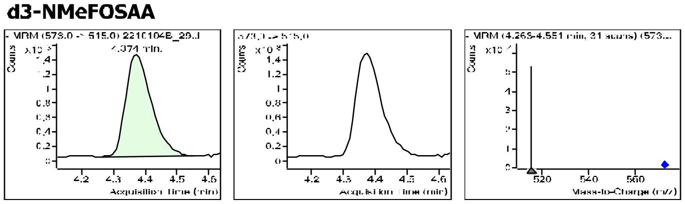

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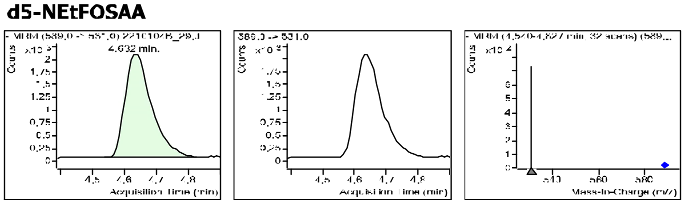
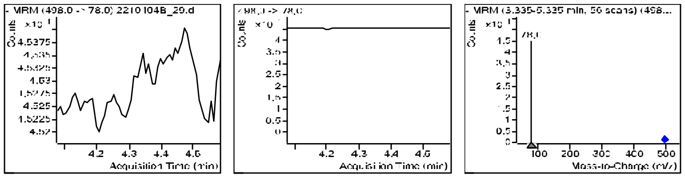


FOSA



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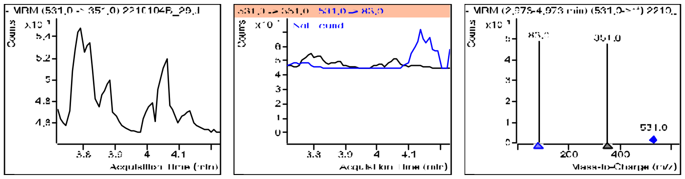
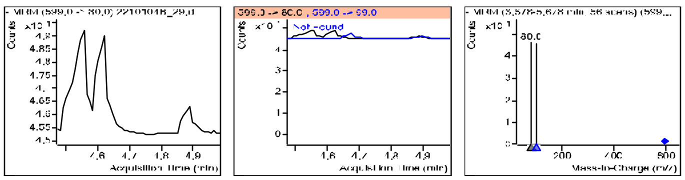


PFDS



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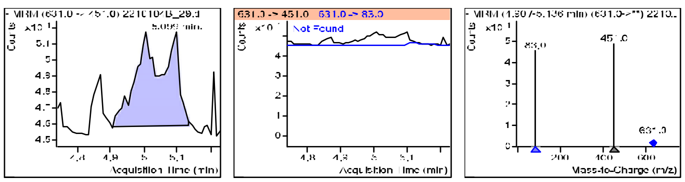

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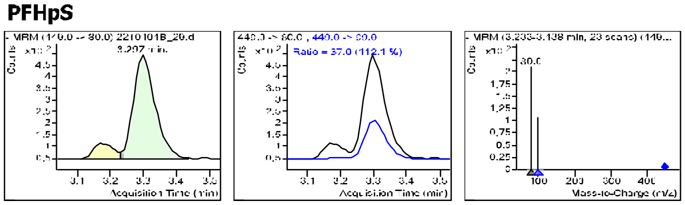

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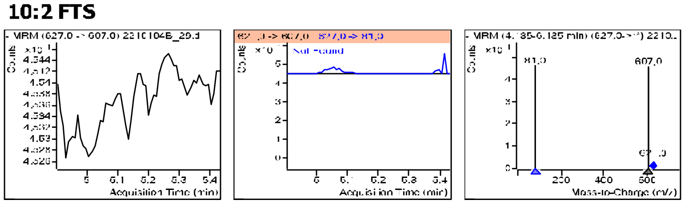

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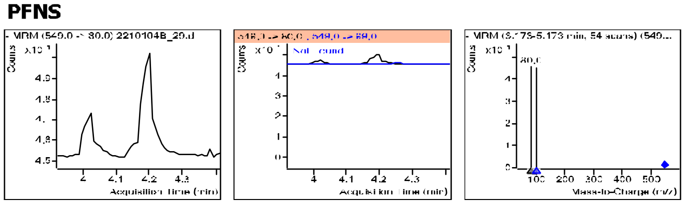

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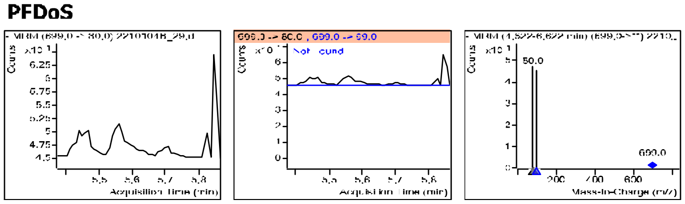

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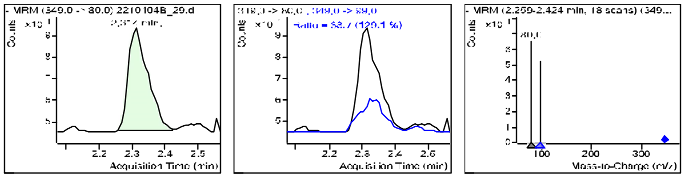

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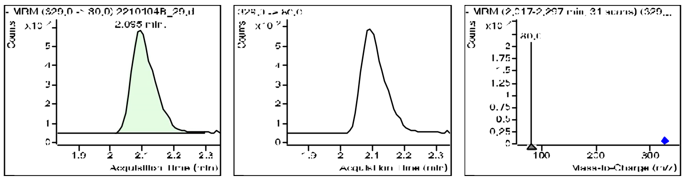

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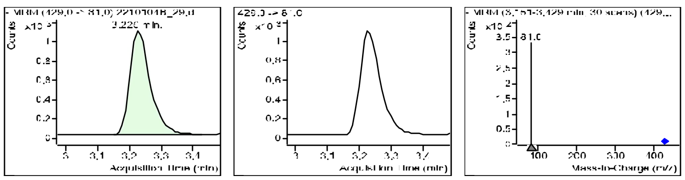

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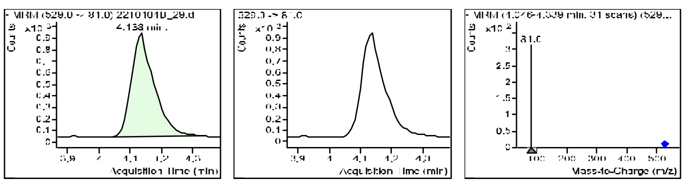

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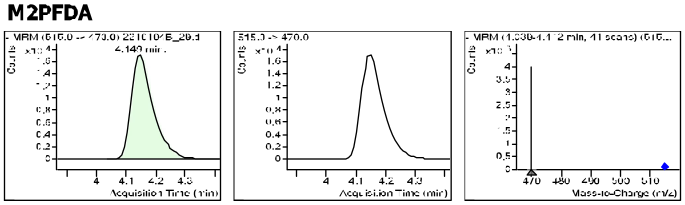

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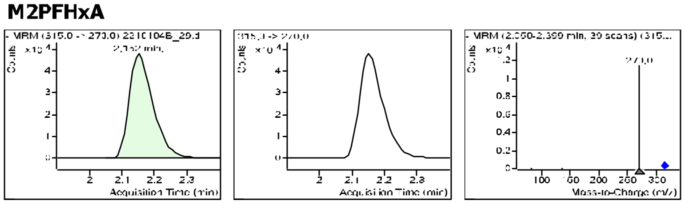

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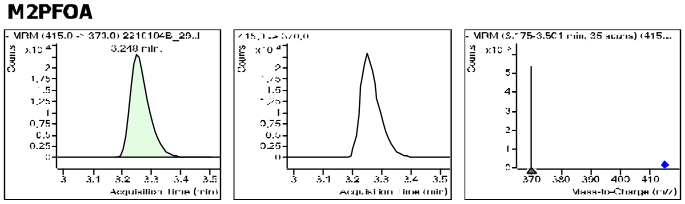

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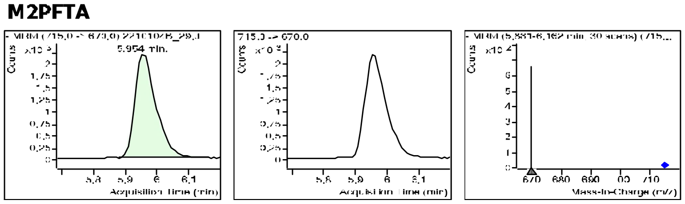

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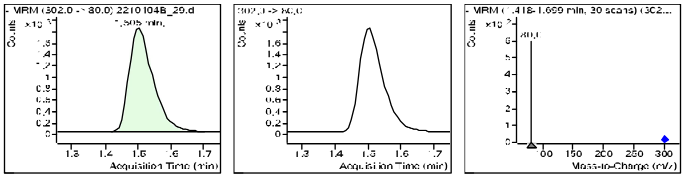

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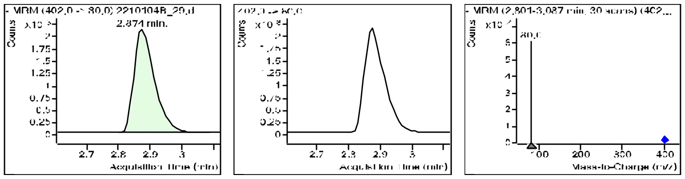

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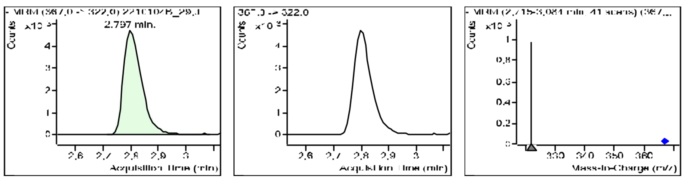

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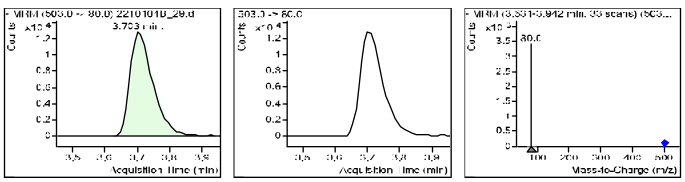

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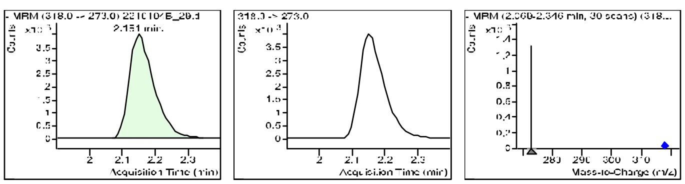

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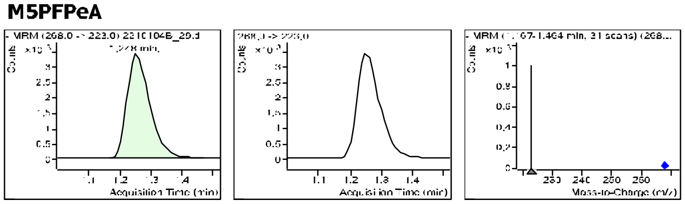

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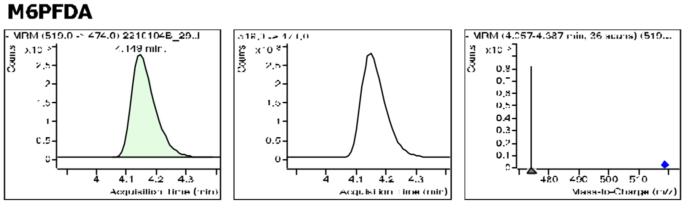

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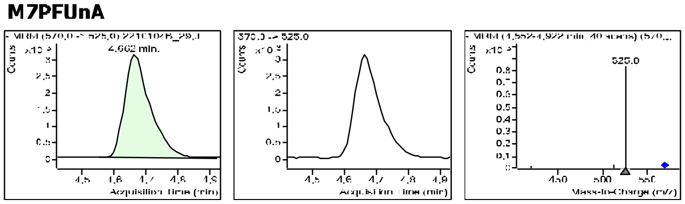

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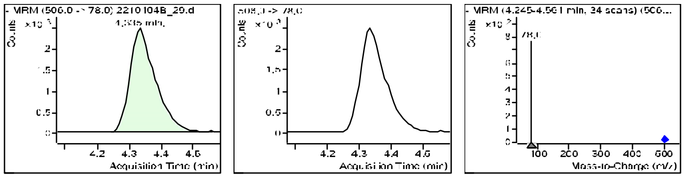

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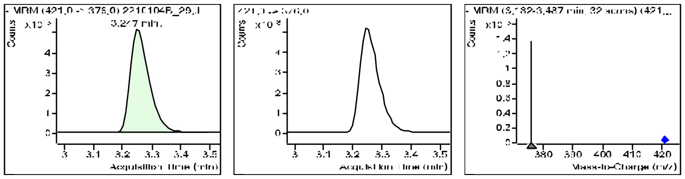

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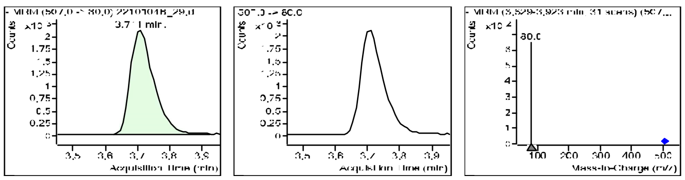

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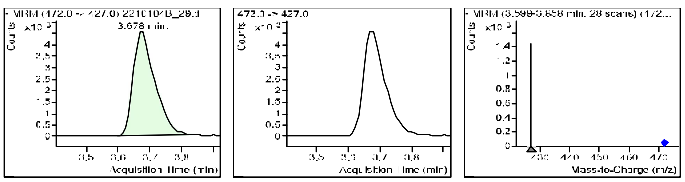

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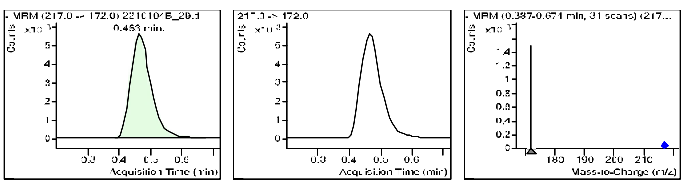

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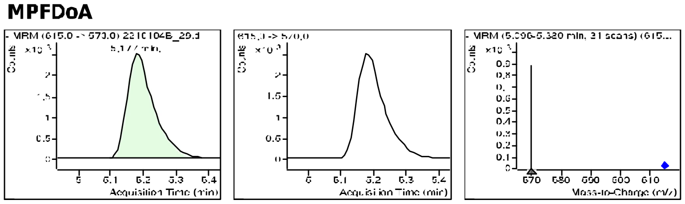

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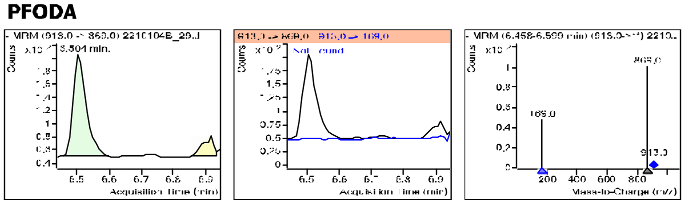

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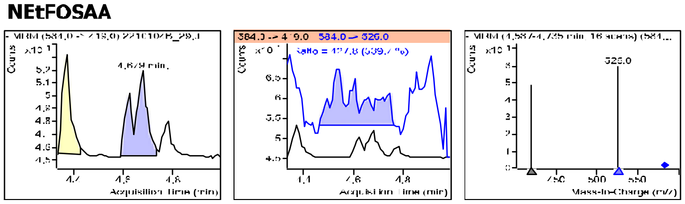

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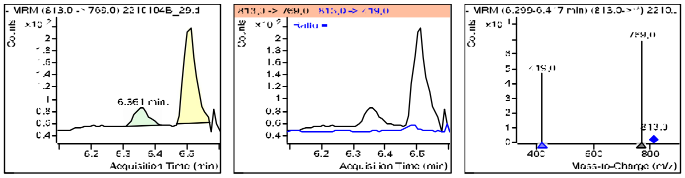

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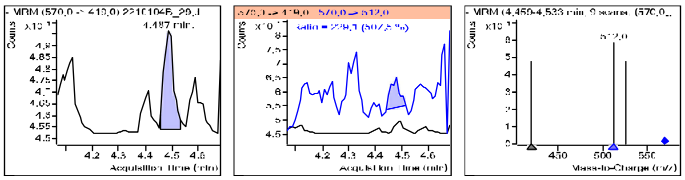

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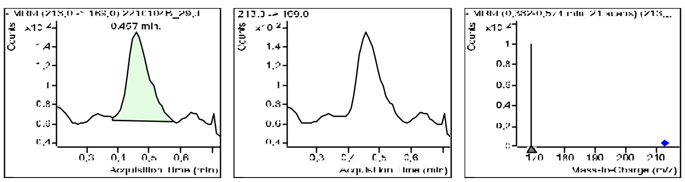

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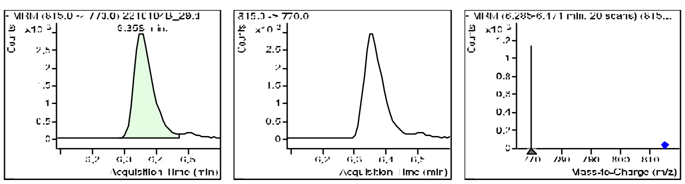

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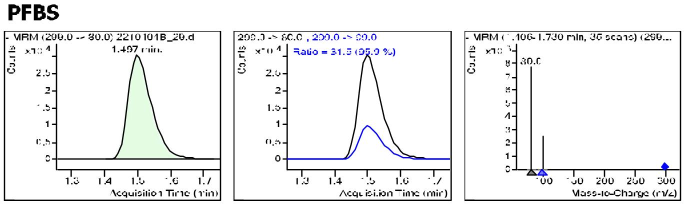

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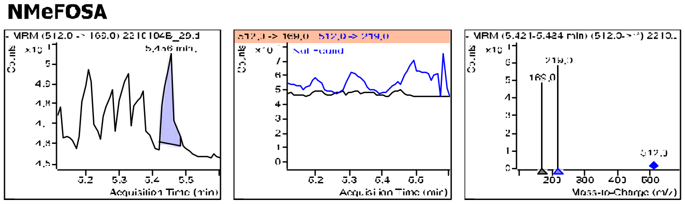

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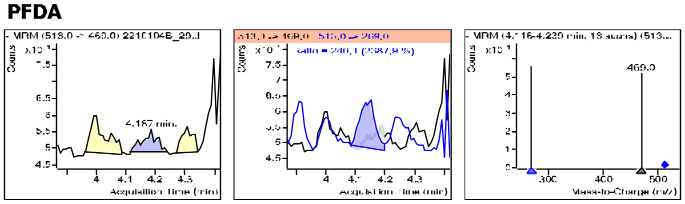

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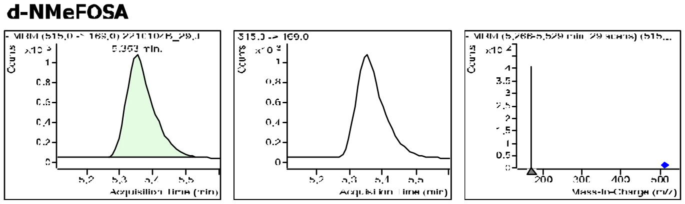

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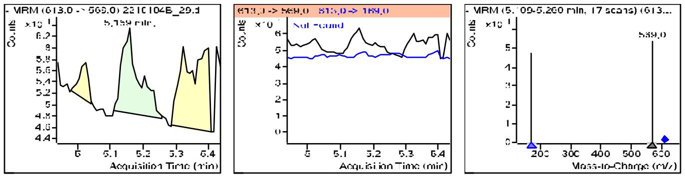

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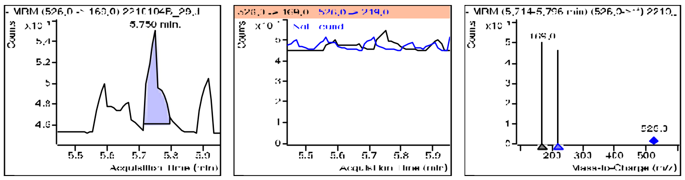

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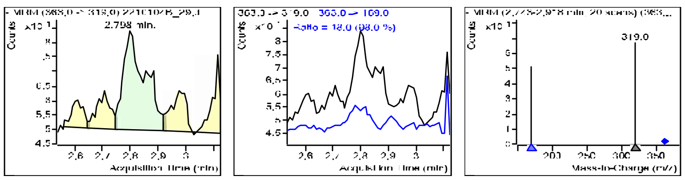

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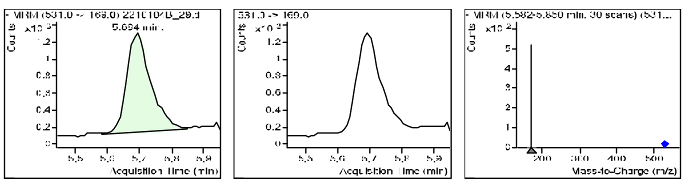

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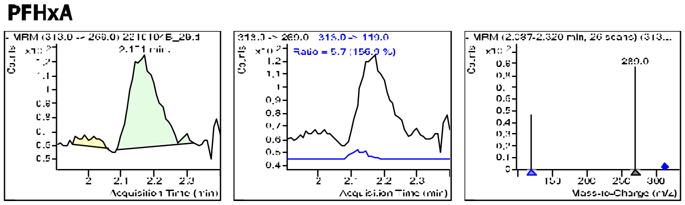

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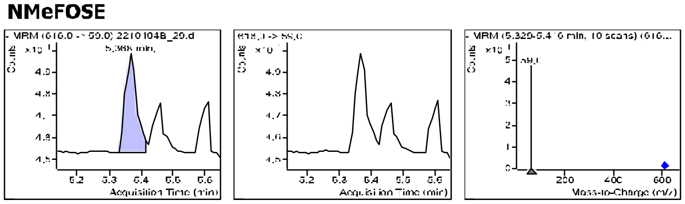

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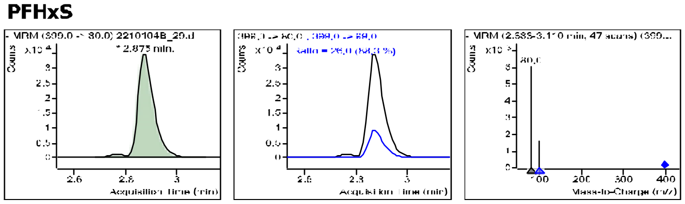

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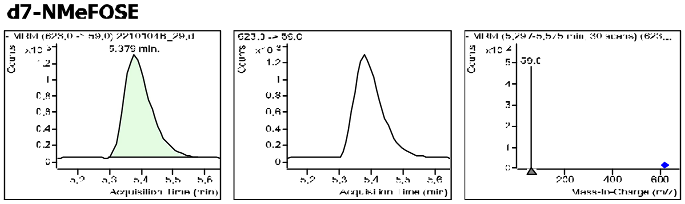

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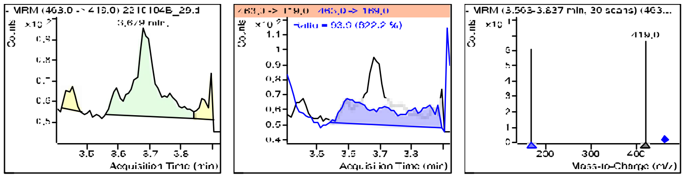

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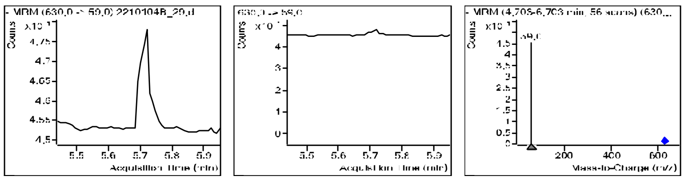

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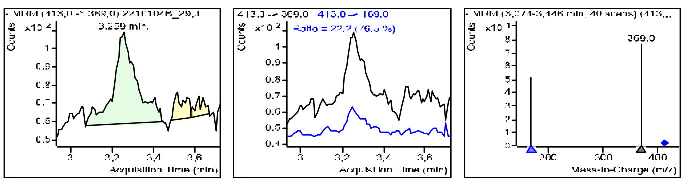

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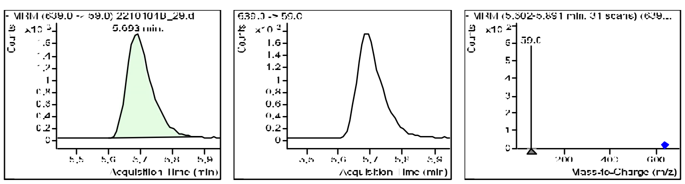

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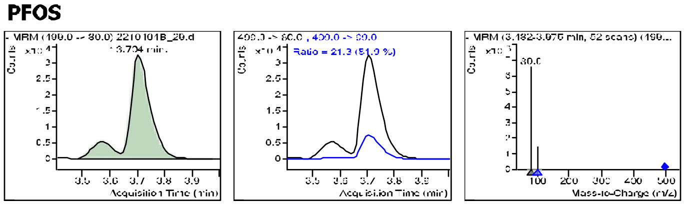

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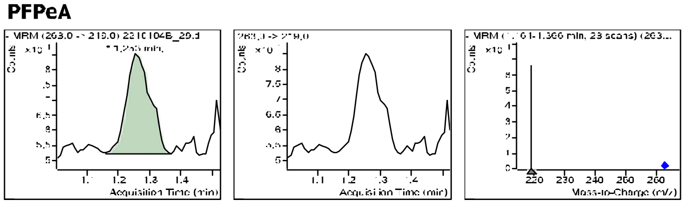

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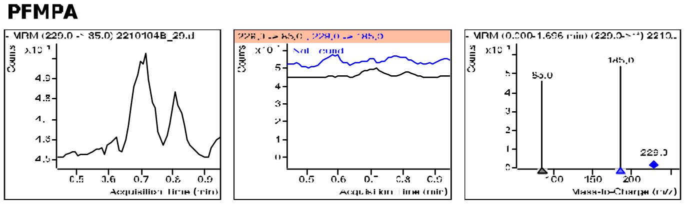

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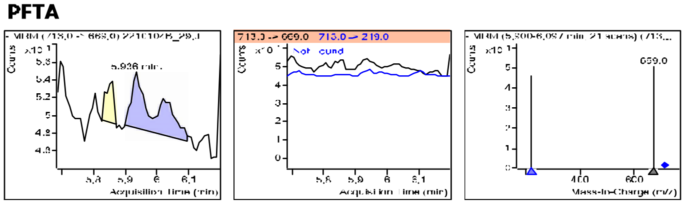

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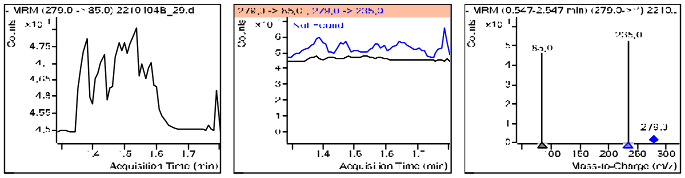

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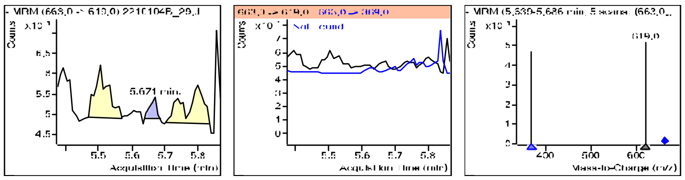

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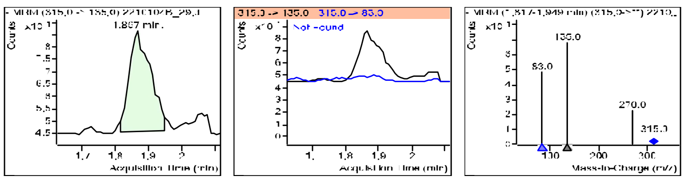

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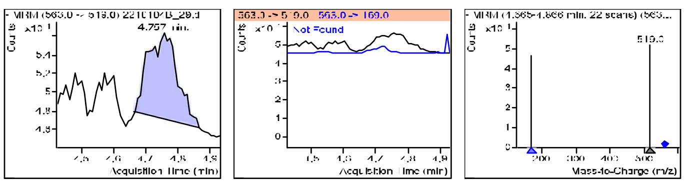

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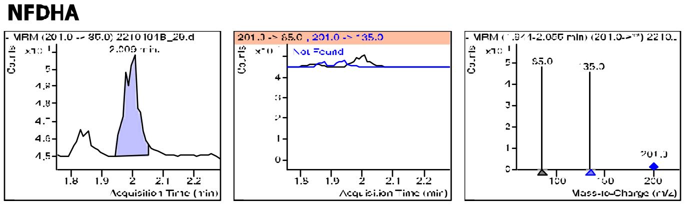

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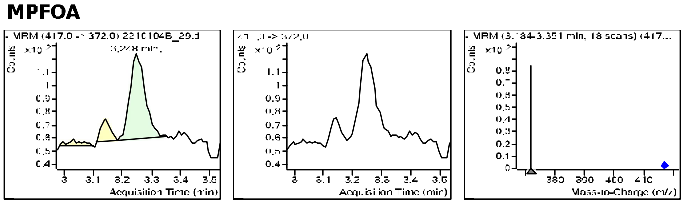

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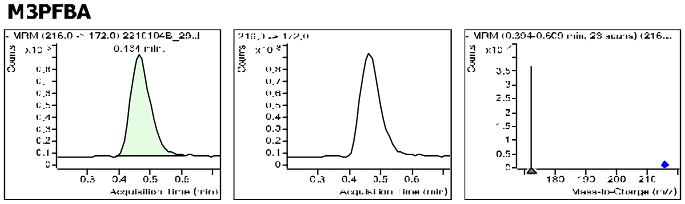


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 2, EXP 12TMS
Collect Date:	05/27/20 Time: 0200	GCAL Sample ID:	2131567
Matrix:	Solid % Moisture: NA	Instrument ID:	QQQ2
Sample Amt:	.51 g	Lab File ID:	2210104B_30.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	500000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	01/04/21 Time: 2308
Prep Batch:	700444	Analytical Batch:	701166
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ug/kg

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
27619-97-2	6:2 Fluorotelomersulfonic acid	8770		833	1960	4900
39108-34-4	8:2 Fluorotelomersulfonic acid	9960		1270	1960	4900
375-22-4	Perfluorobutanoic acid	8420		637	1960	4900
335-76-2	Perfluorodecanoic acid	7900		588	1960	4900
375-85-9	Perfluoroheptanoic acid	7670		637	1960	4900
307-24-4	Perfluorohexanoic acid	8210		735	1960	4900
375-95-1	Perfluorononanoic acid	7920		441	1960	4900
335-67-1	Perfluorooctanoic acid	8070		735	1960	4900
2706-90-3	Perfluoropentanoic acid	7990		735	1960	4900
2058-94-8	Perfluoroundecanoic acid	7590		686	1960	4900

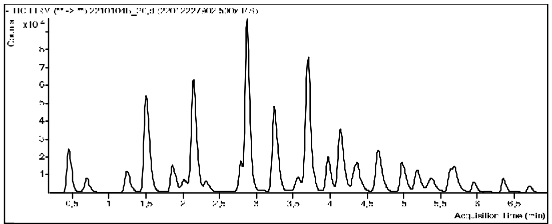
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_30.d	**Position**	P1-C8	**Samp Name**	22012227902	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ2;700444
Acq Date	1/4/2021 23:08						

Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	90302.676	4.149				130.04	26.0075		6900.52	1.42	
M2PFHxA	248842.428	2.152				128.10	51.2402		INF	1.44	
M2PFOA	107275.660	3.248				135.64	27.1278		4818.56	1.42	
M4PFOS	65232.162	3.703				129.05	25.8096		3922.46	1.60	
MPFOA	193.997	3.248				0.00	17.3526		3.61	1.93	
M3PFBA	3708.754	0.464				0.00	5.0585		25.53	1.50	
HFPO-DA	1746.565	2.376	M3HFPODA	636	2.374	95.08	18.1026		16.62	1.50	
4:2 FTS	6344.459	2.095	M2 4:2 FTS	2594	2.095	105.10	7.7493		73.56	1.47	
6:2 FTS	13845.210	3.226	M2 6:2 FTS	4805	3.226	106.30	8.9460		524.46	1.50	
ADONA	126102.029	2.887	M8PFOA	23610	3.247	107.57	8.0052		827.34	1.44	
8:2 FTS	15820.059	4.129	M2 8:2 FTS	4336	4.138	104.57	10.1572		681.23	1.42	
FOSA	30449.764	4.335	M8FOSA	13716	4.335	101.67	8.1195		920.09	1.50	
9Cl-PF3ONS	92942.611	3.979	M8PFOS	10763	3.702	104.46	9.0236		4536.59	1.35	
PFDS	22001.725	4.676	M6PFDA	16409	4.149	105.38	8.2295		311.90	1.51	
11Cl-PF3OUdS	87608.676	4.979	M8PFOS	10763	3.702	104.46	9.0088		5197.83	1.50	
PFHpS	23930.930	3.297	M8PFOA	23610	3.247	107.57	8.9941		1106.21	1.42	
10:2 FTS	15826.957	5.183	M2 8:2 FTS	4336	4.138	104.57	10.1297		1270.19	1.56	
PFNS	22081.046	4.172	M9PFNA	22153	3.669	107.17	7.8969		819.71	1.42	
PFDoS	28379.761	5.632	M8PFOS	10763	3.702	104.46	8.7311		2143.08	1.37	
PFPeS	19043.875	2.323	M5PFHxA	21269	2.151	102.65	8.9043		2804.31	1.29	
PFODA	12940.707	6.706	M2PFHxDA	11654	6.348	104.41	9.3298		47.16	1.33	
NEtFOSAA	32069.681	4.642	d5-NEtFOSAA	11620	4.641	107.27	9.7590		2797.15	1.57	
PFHxDA	20367.364	6.351	M2PFHxDA	11654	6.348	104.41	9.5166		900.55	1.63	
NMeFOSAA	36894.962	4.375	d3-NMeFOSAA	8563	4.365	110.95	10.4818		97.62	1.50	
PFBA	78319.753	0.466	MPFBA	24562	0.463	100.19	8.5920		INF	1.31	
PFBS	181880.822	1.497	M3PFBS	9179	1.505	100.29	77.7176		13001.51	1.50	
NMeFOSA	11537.315	5.364	d-NMeFOSA	5898	5.353	98.08	9.4448		204.57	1.38	
PFDA	30695.929	4.141	M6PFDA	16409	4.149	105.38	8.0556		970.71	1.66	
PFDoA	27213.888	5.187	MPFDoA	14041	5.186	103.82	10.1242		896.74	1.42	
NEtFOSA	12724.631	5.695	d-NEtFOSA	6025	5.694	96.16	8.3958		790.75	1.50	
PFHpA	40575.592	2.798	M4PFHpA	21806	2.797	106.37	7.8192		817.32	1.42	
PFHxA	40625.758	2.153	M5PFHxA	21269	2.151	102.65	8.3714		1496.92	1.39	
NMeFOSE	16161.094	5.398	d7-NMeFOSE	7222	5.379	98.80	7.6212		95.27	1.54	
PFHxS	193398.375	2.866	M3PFHxS	9313	2.874	97.54	76.4872		INF	1.01	m
PFNA	39625.746	3.670	M9PFNA	22153	3.669	107.17	8.0817		55.46	1.52	
NEtFOSE	18247.723	5.703	d9-NEtFOSE	9585	5.693	97.20	9.2867		71.51	1.47	
PFOA	42232.070	3.249	M8PFOA	23610	3.247	107.57	8.2281		241.50	1.42	
PFOS	236811.450	3.704	M8PFOS	10763	3.702	104.46	69.0727		INF	1.37	m
PFPeA	44395.181	1.253	M5PFPeA	17060	1.248	100.49	8.1479		173.64	1.38	
PFMPA	38003.686	0.698	M5PFPeA	17060	1.248	100.49	7.9717		687.54	1.36	
PFTA	16856.851	5.957	M2PFTA	10009	5.954	105.82	9.7712		1038.73	1.39	
PFMBA	43694.735	1.647	M5PFHxA	21269	2.151	102.65	8.2539		55689.46	1.34	
PFTrDA	21901.445	5.634	MPFDoA	14041	5.186	103.82	10.3066		633.77	1.37	
PFEESA	70651.673	1.867	M3PFHxS	9313	2.874	97.54	8.6788		6140.06	1.51	
PFUnA	29270.323	4.665	M7PFUnA	18007	4.662	107.86	7.7374		872.37	1.50	
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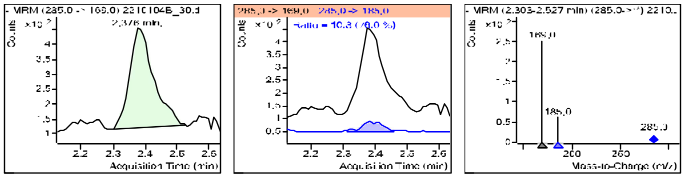
HFPO-DA



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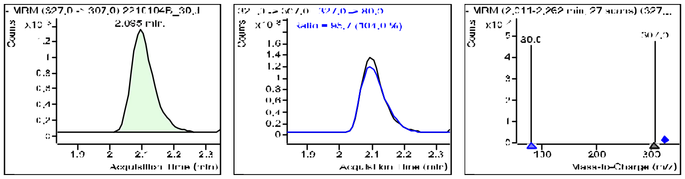

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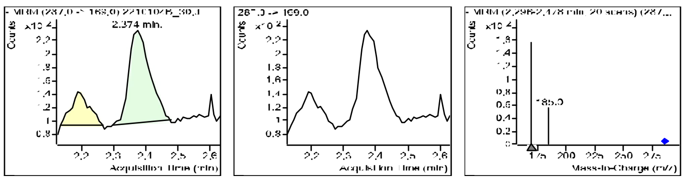

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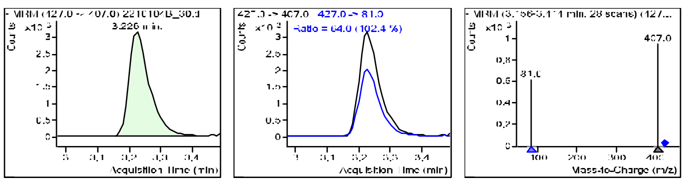

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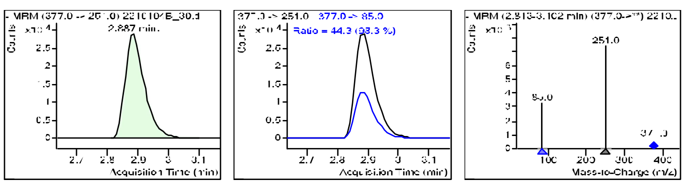

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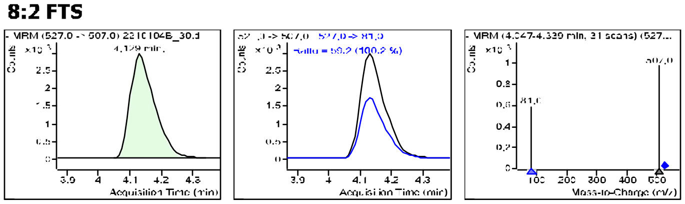

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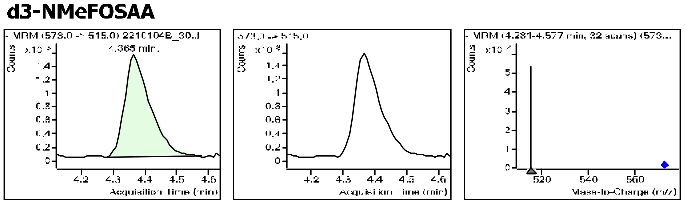

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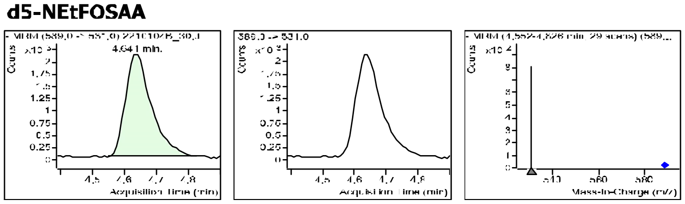

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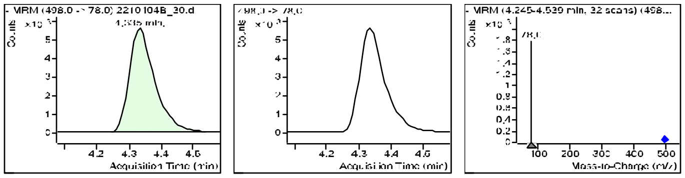

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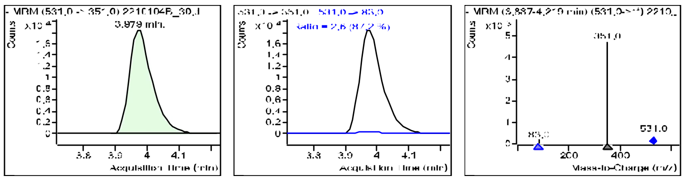

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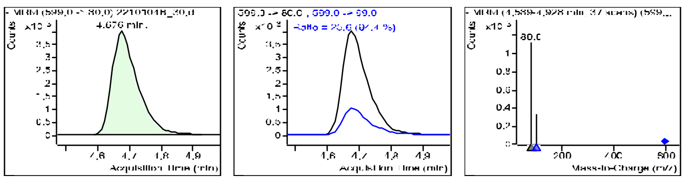

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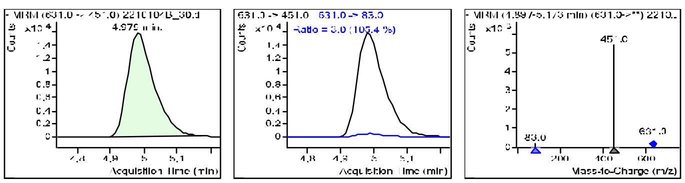

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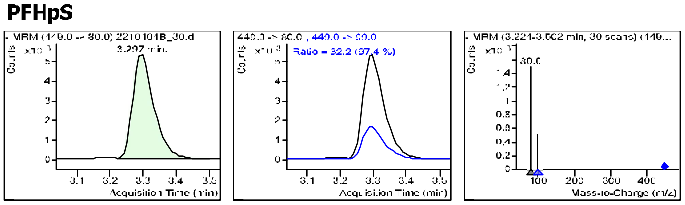

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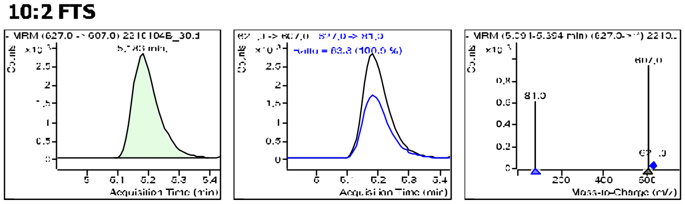

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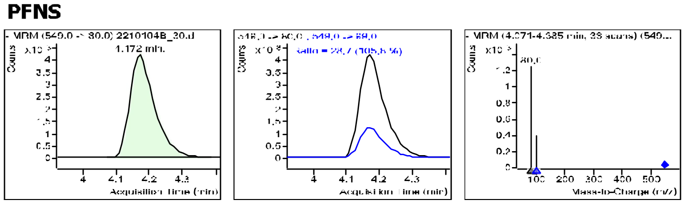

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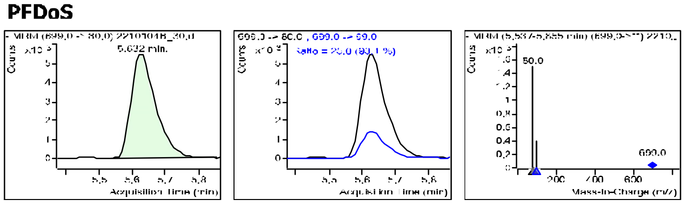

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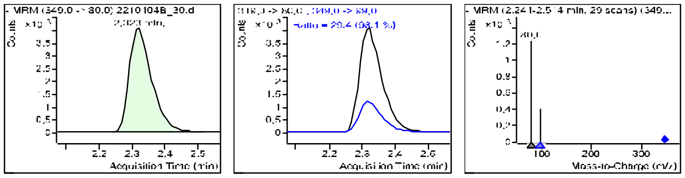

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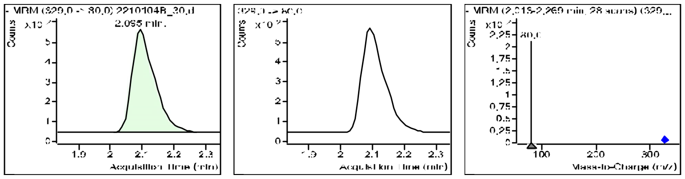

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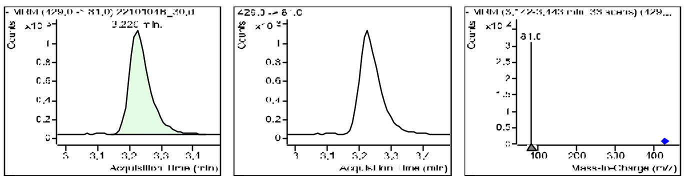

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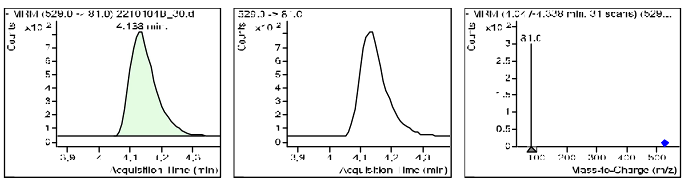

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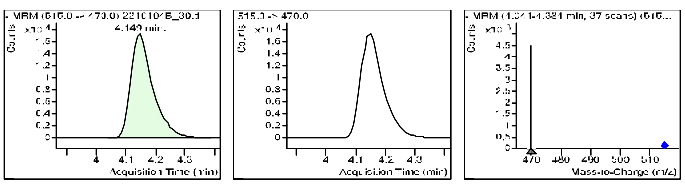

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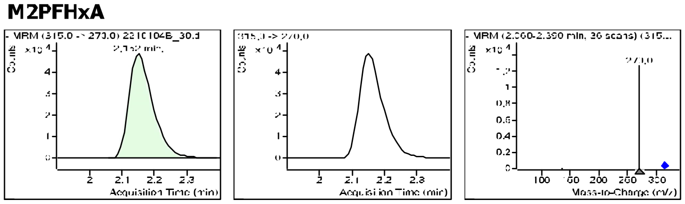

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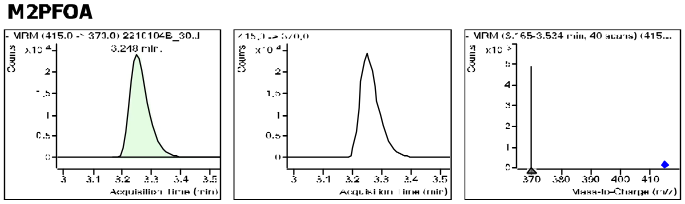

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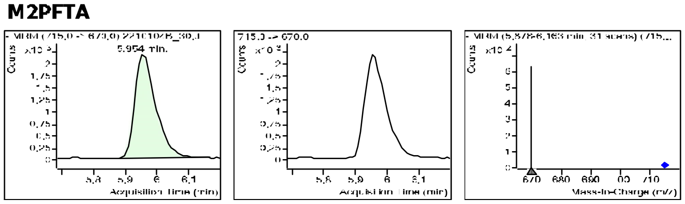

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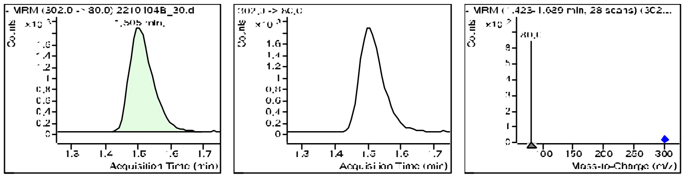

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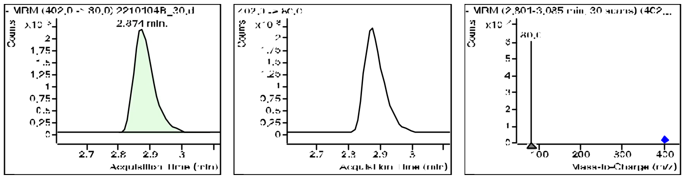

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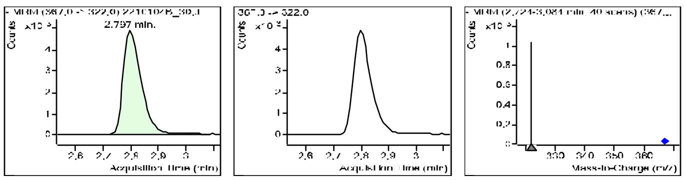

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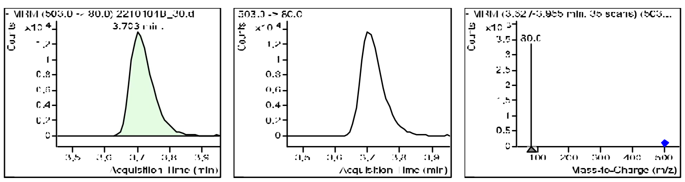

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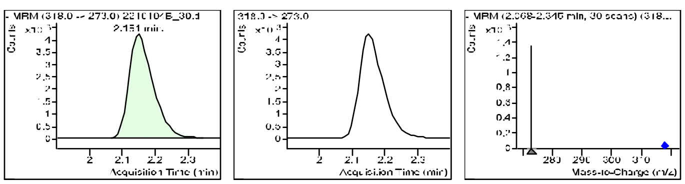

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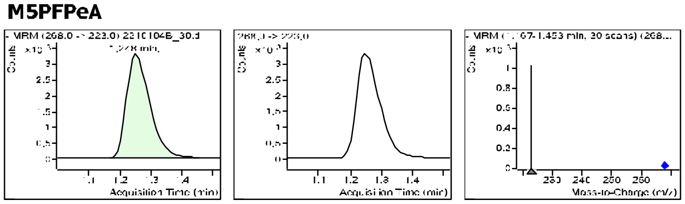

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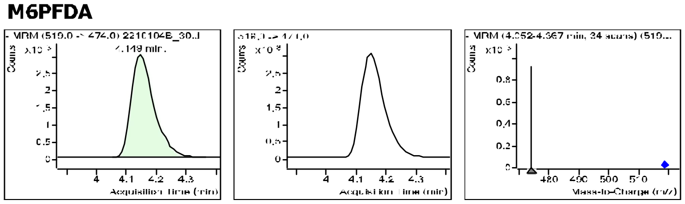

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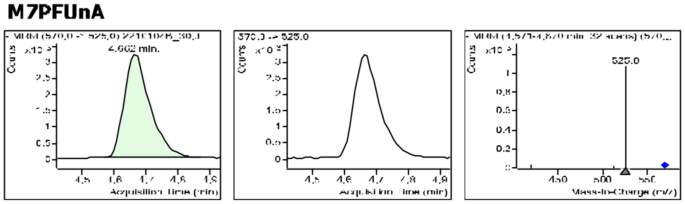

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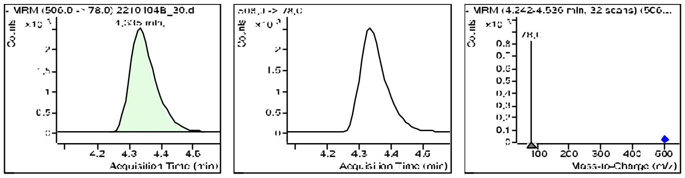

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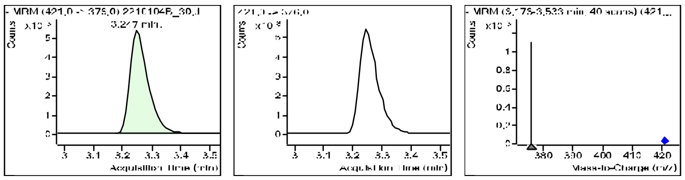

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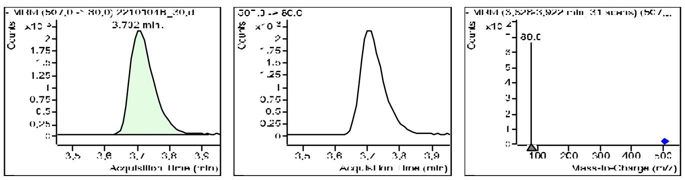

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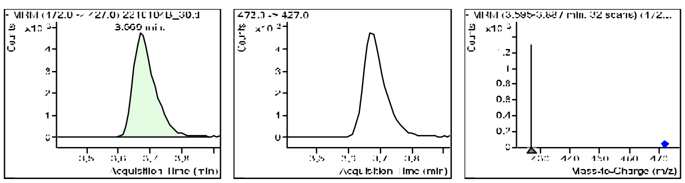

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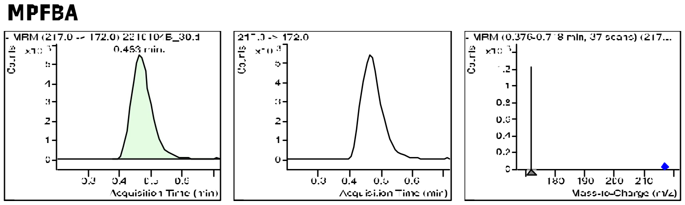

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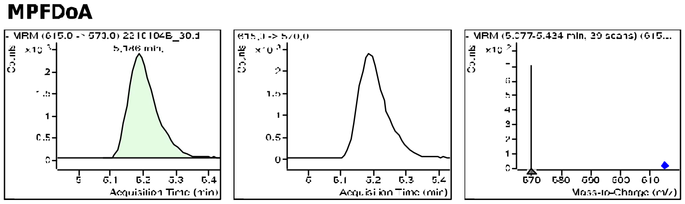

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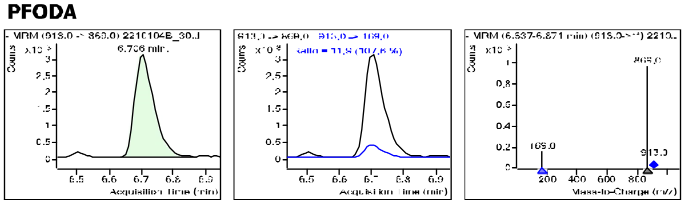

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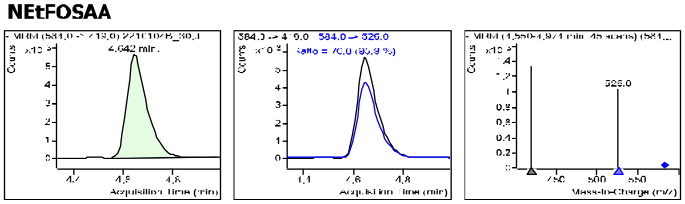

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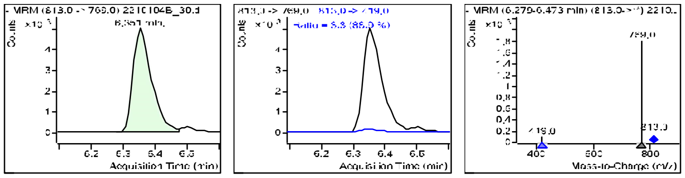

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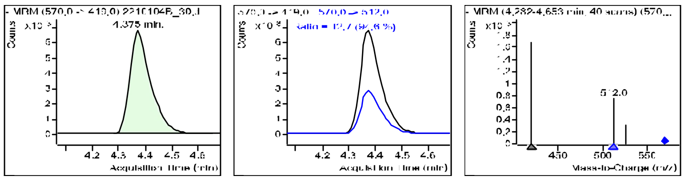

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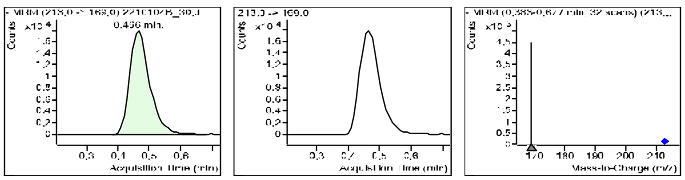

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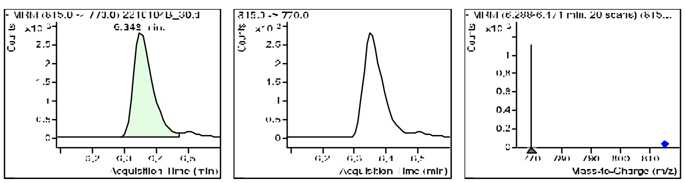

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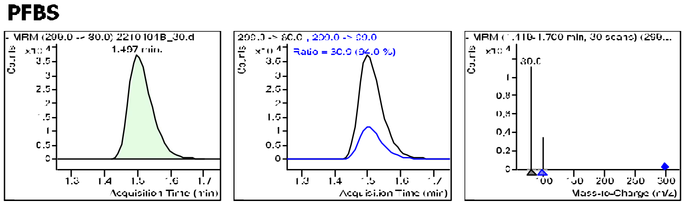

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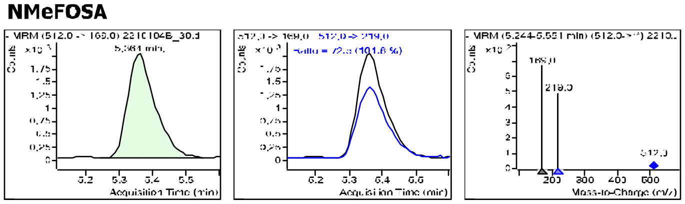

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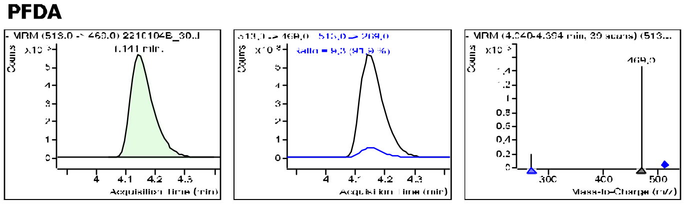

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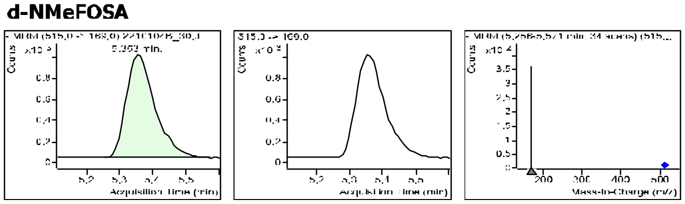

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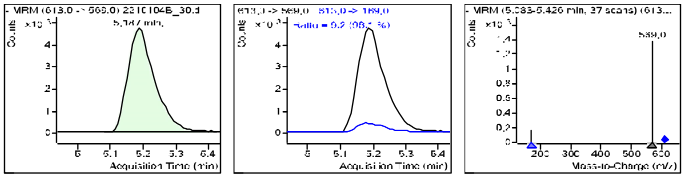

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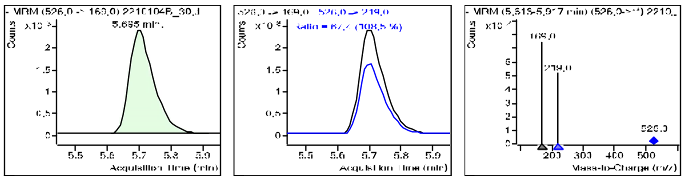

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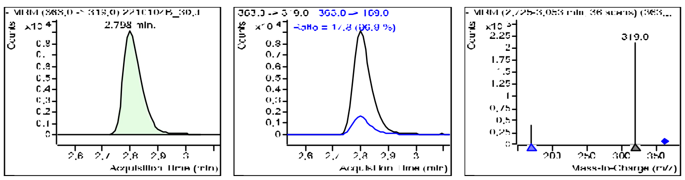

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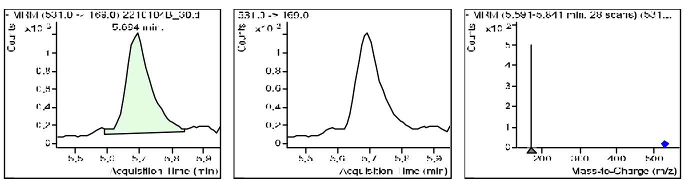

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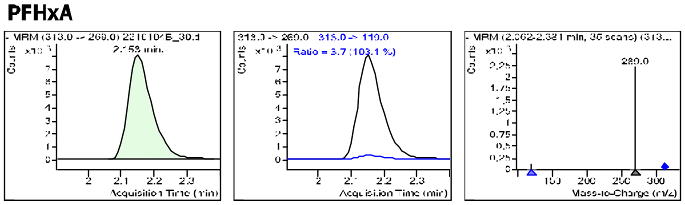

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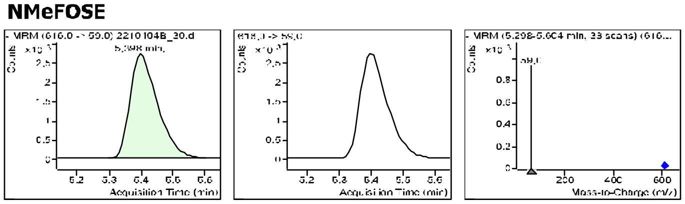

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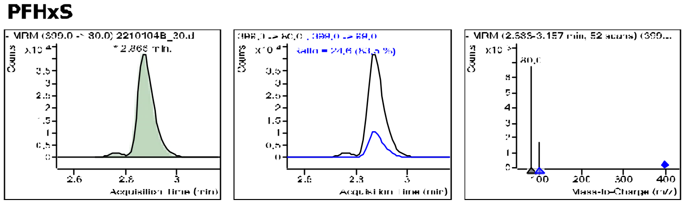

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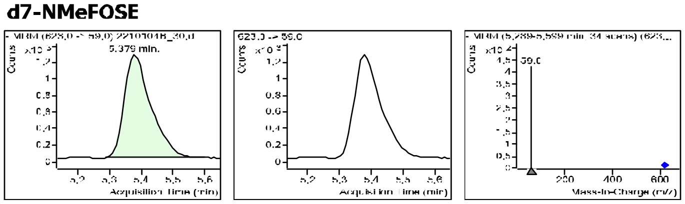

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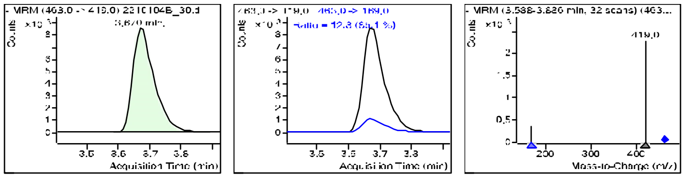

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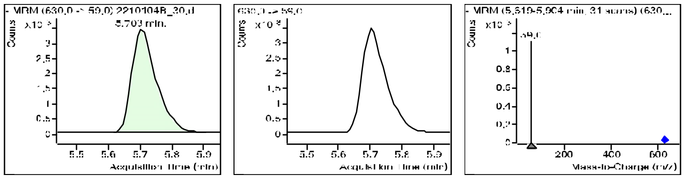

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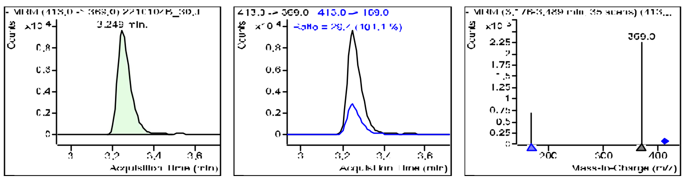

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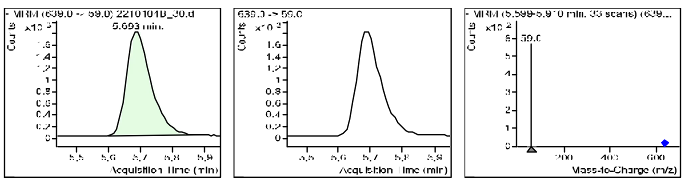

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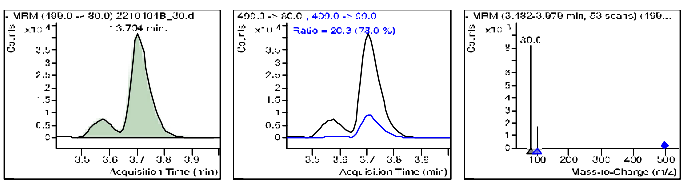

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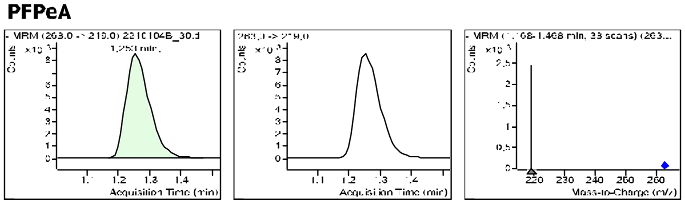

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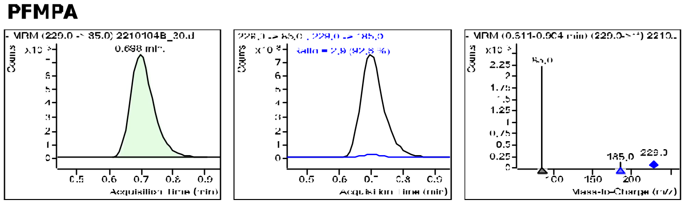

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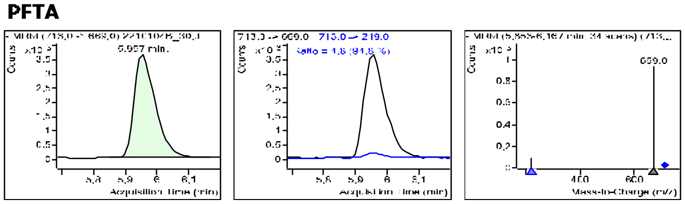
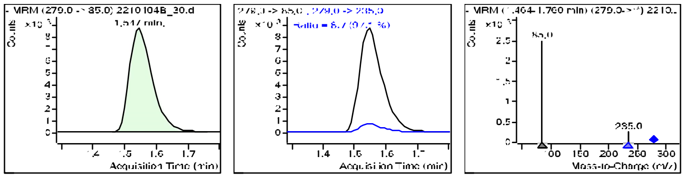


Quantitative Analysis Sample Report

PFMBA



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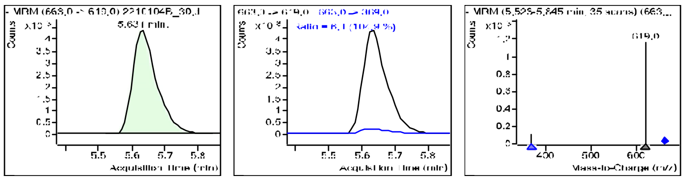

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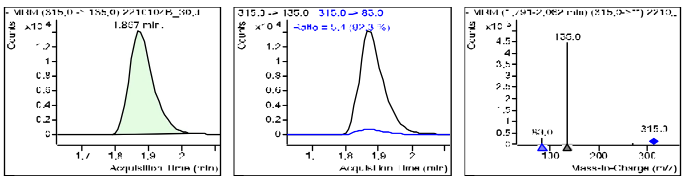

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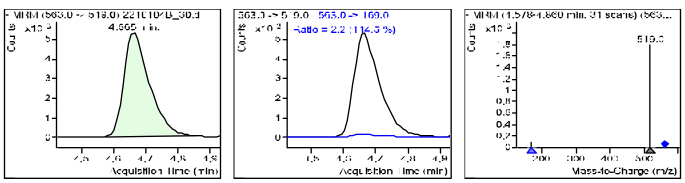

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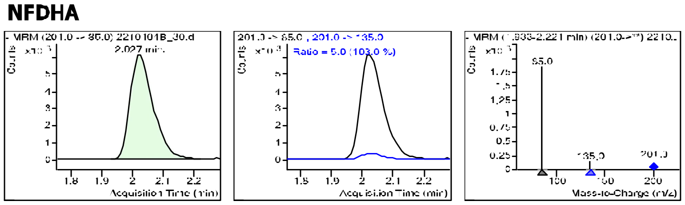

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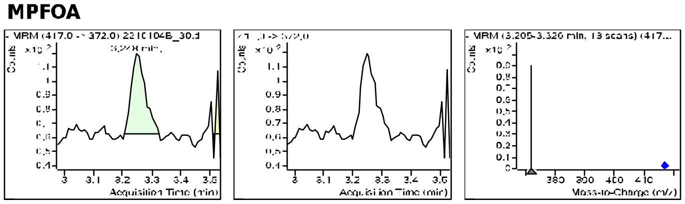

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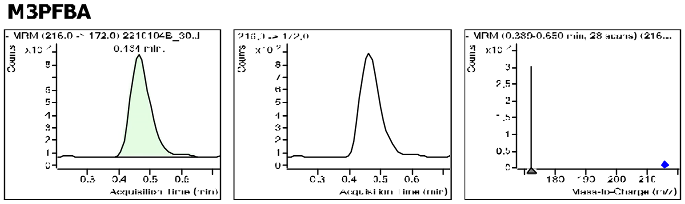


1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 3, EXP 13CDUP
Collect Date:	06/04/20 Time: 1100	GCAL Sample ID:	2131568
Matrix:	Solid % Moisture: NA	Instrument ID:	QQQ2
Sample Amt:	.73 g	Lab File ID:	2210104B_33.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	5000000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	01/04/21 Time: 2347
Prep Batch:	700444	Analytical Batch:	701166
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ug/kg

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
375-73-5	Perfluorobutanesulfonic acid	690000		4110	13700	34200
375-85-9	Perfluoroheptanoic acid	634000		4450	13700	34200
355-46-4	Perfluorohexanesulfonic acid	644000		4790	13700	34200
375-95-1	Perfluorononanoic acid	684000		3080	13700	34200
1763-23-1	Perfluorooctanesulfonic acid	644000		6160	13700	34200
335-67-1	Perfluorooctanoic acid	645000		5140	13700	34200

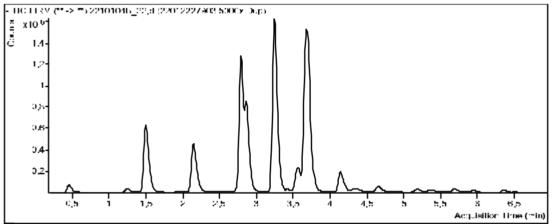
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_33.d	**Position**	P1-D2	**Samp Name**	22012227903	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ2;700444
Acq Date	1/4/2021 23:47						

Sample Chromatogram

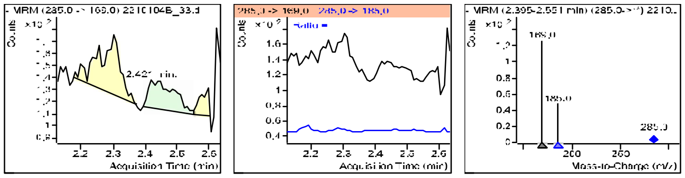


Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	73475.920	4.149				105.81	21.1613		2316.30	1.49	
M2PFHxA	202367.210	2.152				104.18	41.6703		6638.56	1.36	
M2PFOA	82541.810	3.248				104.37	20.8731		2962.01	1.70	
M4PFOS	50962.534	3.703				100.82	20.1637		3055.72	1.60	
MPFOA	537.492	3.248				0.00	48.0775		19.08	0.83	
M3PFBA	3722.274	0.464				0.00	5.0769		21.93	1.46	
HFPO-DA	132.599	2.421	M3HFPODA	755	2.375	112.78	1.1586		2.95	4.02	
4:2 FTS	16.269	2.086	M2 4:2 FTS	2651	2.095	107.43	0.0194		0.53	1.18	m
6:2 FTS	38.635	3.236	M2 6:2 FTS	4688	3.226	103.72	0.0256		2.31	1.36	
ADONA	33.720	2.905	M8PFOA	23620	3.247	107.61	0.0021		0.97	0.84	m
8:2 FTS	25.753	4.157	M2 8:2 FTS	4364	4.129	105.23	0.0164		1.85	1.37	
9Cl-PF3ONS	75.210	4.043	M8PFOS	10898	3.711	105.76	0.0072		8.03	0.88	
PFDS	17.203	4.713	M6PFDA	17123	4.149	109.97	0.0062		1.10	0.76	
11Cl-PF3OUdS	23.171	4.869	M8PFOS	10898	3.711	105.76	0.0024		1.64	0.68	
PFHpS	2961.479	3.288	M8PFOA	23620	3.247	107.61	1.1126		67.27	1.50	
10:2 FTS	30.695	5.255	M2 8:2 FTS	4364	4.129	105.23	0.0195		1.01	1.41	
PFPeS	286.493	2.305	M5PFHxA	21755	2.151	104.99	0.1310		11.64	1.90	
PFODA	450.997	6.504	M2PFHxDA	10919	6.348	97.83	0.3470		18.02	1.83	
NEtFOSAA	25.866	4.633	d5-NEtFOSAA	11946	4.641	110.27	0.0077		0.69	1.92	m
PFHxDA	108.042	6.351	M2PFHxDA	10919	6.348	97.83	0.0539		2.90	1.50	
NMeFOSAA	12.458	4.468	d3-NMeFOSAA	7881	4.374	102.11	0.0038		0.95	1.52	
PFBA	383.157	0.466	MPFBA	25523	0.463	104.11	0.0405		5.32	1.56	
PFBS	232315.989	1.497	M3PFBS	9043	1.505	98.80	100.7672		4366.52	1.50	
PFDA	98.383	4.131	M6PFDA	17123	4.149	109.97	0.0247		8.53	1.49	
PFDoA	40.004	5.260	MPFDoA	13920	5.186	102.92	0.0150		2.80	0.64	
NEtFOSA	28.800	5.583	d-NEtFOSA	6298	5.694	100.52	0.0182		1.39	0.86	
PFHpA	445475.482	2.798	M4PFHpA	20210	2.797	98.58	92.6261		12808.92	1.42	
PFHxA	373.140	2.171	M5PFHxA	21755	2.151	104.99	0.0752		6.09	1.18	
PFHxS	253899.307	2.875	M3PFHxS	9942	2.874	104.12	94.0658		15811.80	0.80	m
PFNA	457674.462	3.679	M9PFNA	20701	3.678	100.14	99.8916		3496.06	1.37	
PFOA	483230.719	3.249	M8PFOA	23620	3.247	107.61	94.1063		2852.28	1.50	
PFOS	326374.687	3.704	M8PFOS	10898	3.711	105.76	94.0198		INF	0.78	m
PFPeA	242.860	1.244	M5PFPeA	17340	1.248	102.14	0.0439		9.76	1.61	
PFMPA	17.363	0.698	M5PFPeA	17340	1.248	102.14	0.0036		2.18	1.40	
PFMBA	16.449	1.547	M5PFHxA	21755	2.151	104.99	0.0030		0.59	1.06	
PFTrDA	14.013	5.625	MPFDoA	13920	5.186	102.92	0.0067		0.97	1.00	
PFEESA	282.323	1.876	M3PFHxS	9942	2.874	104.12	0.0325		5.84	1.12	
PFUnA	257.727	4.665	M7PFUnA	18458	4.662	110.55	0.0665		3.55	1.00	

Quantitative Analysis Sample Report

HFPO-DA



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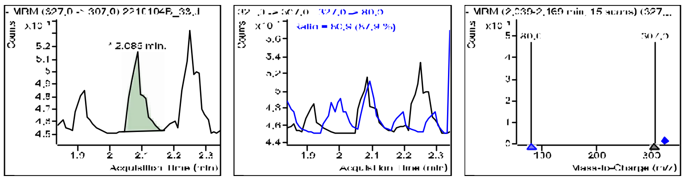

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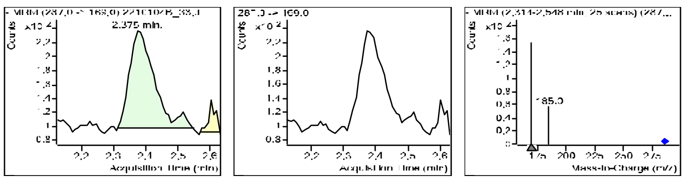

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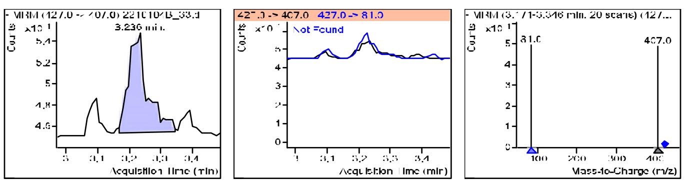

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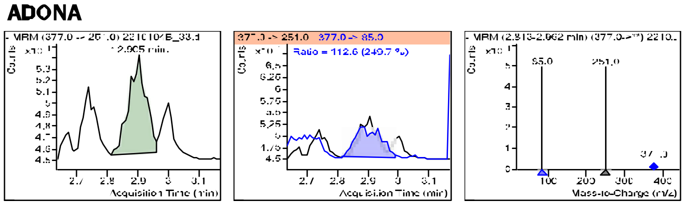

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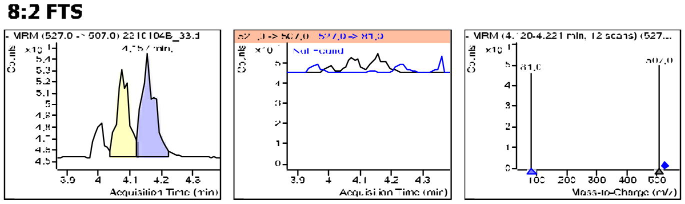

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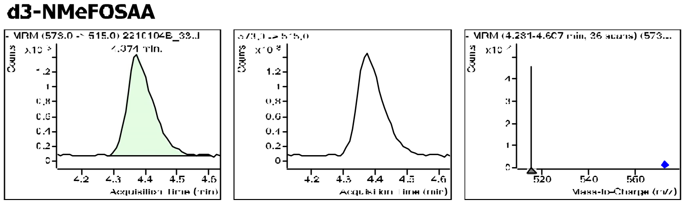

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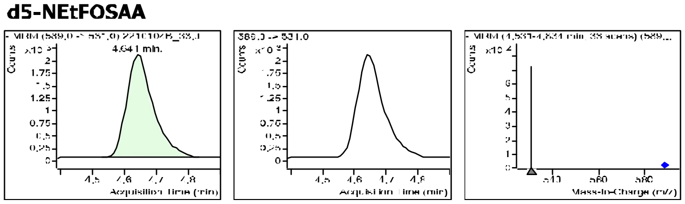

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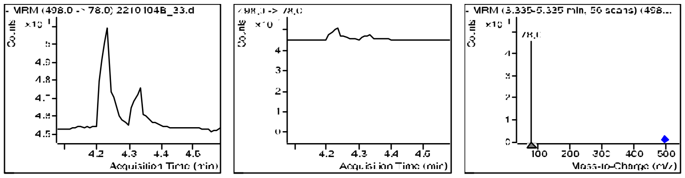

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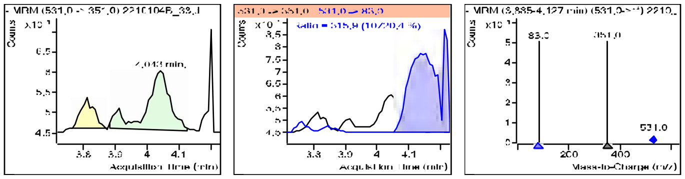

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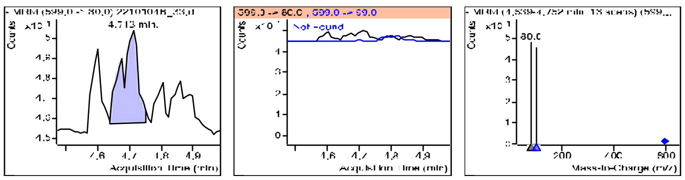

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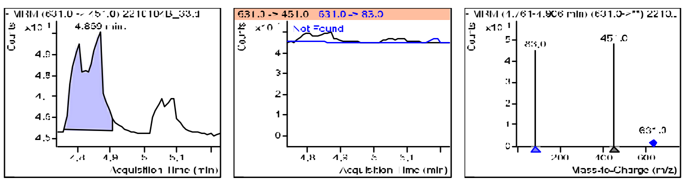

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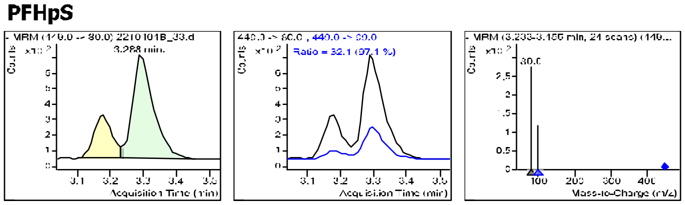

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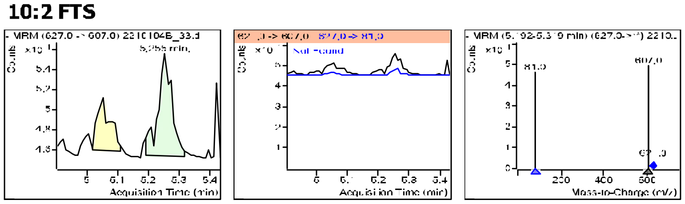

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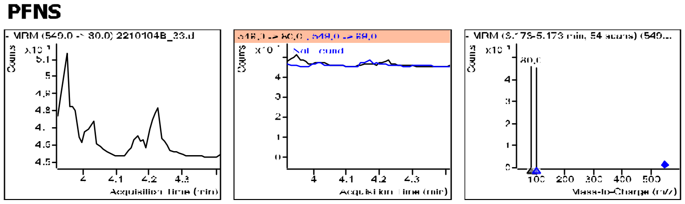

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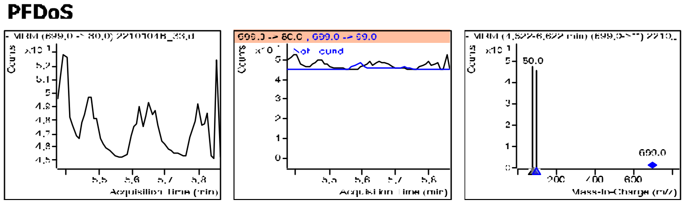

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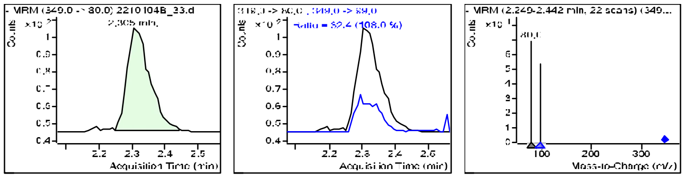

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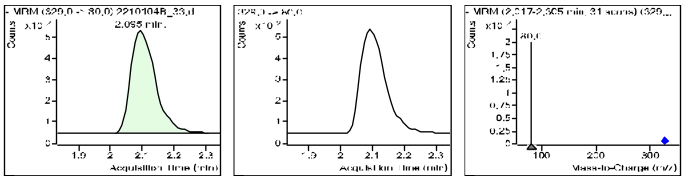

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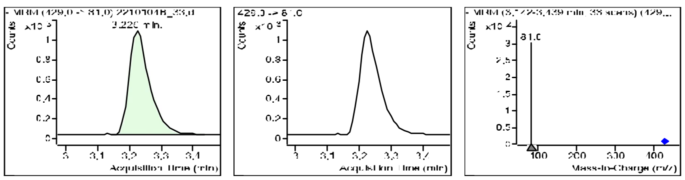

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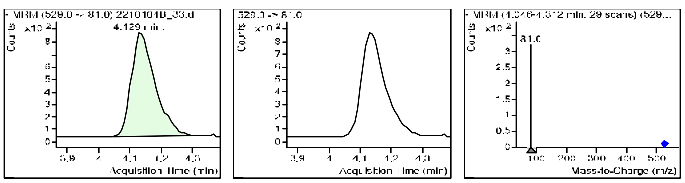

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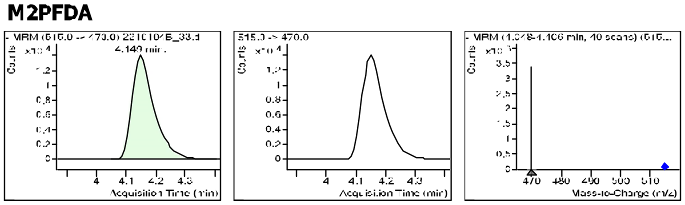

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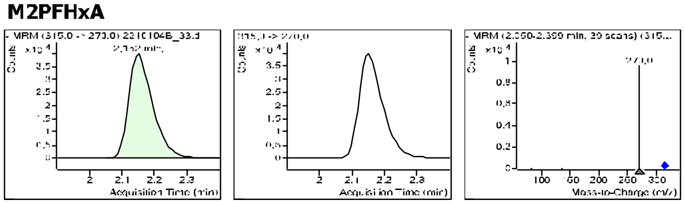

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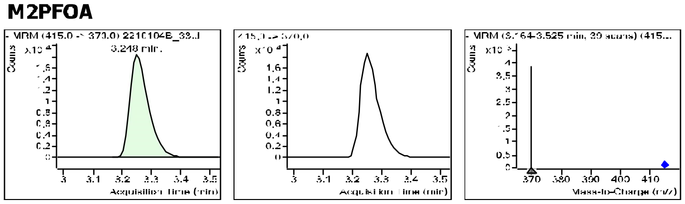

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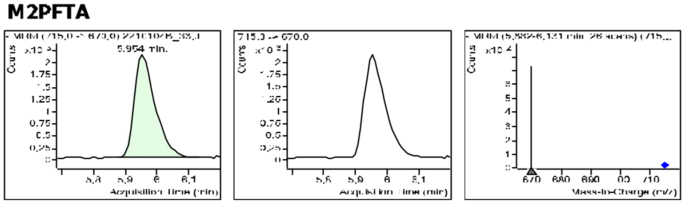

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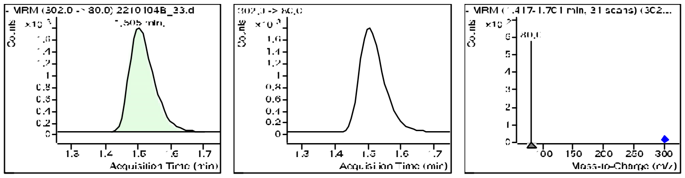

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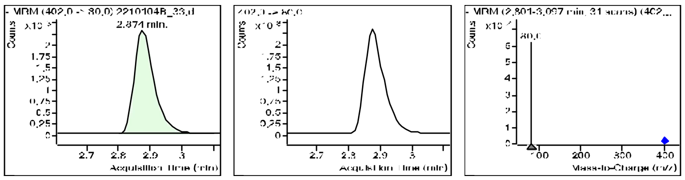

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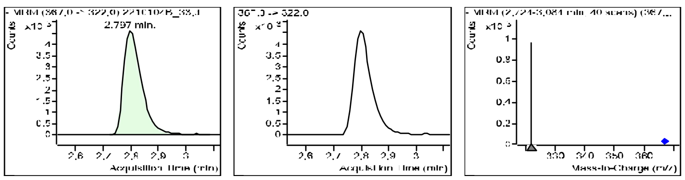

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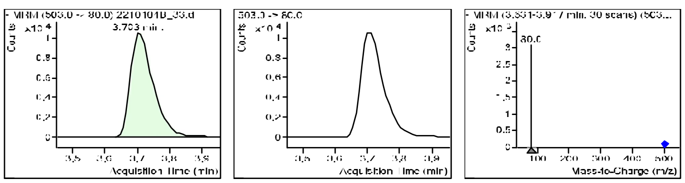

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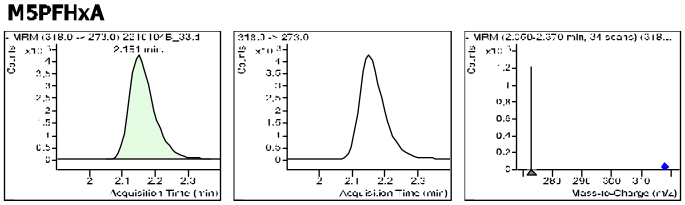

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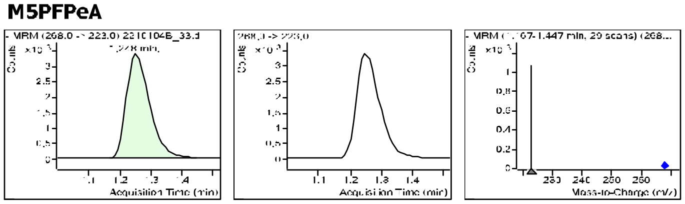

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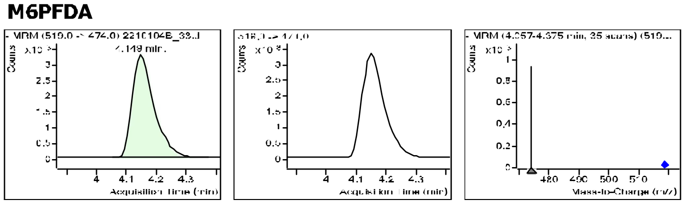

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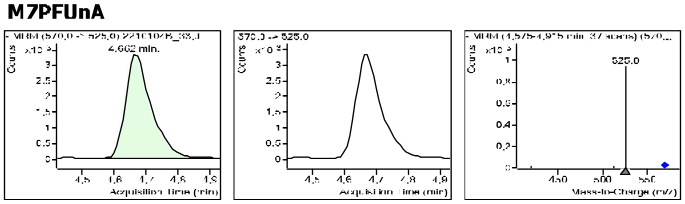

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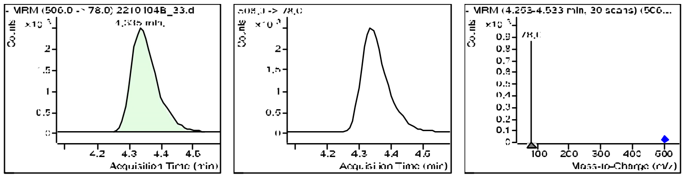

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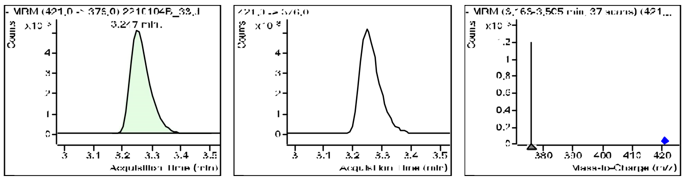

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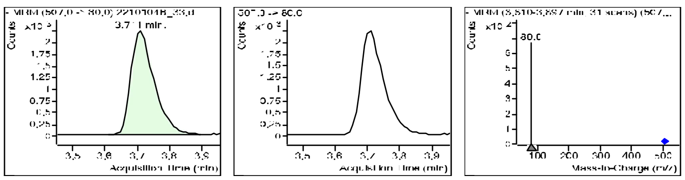

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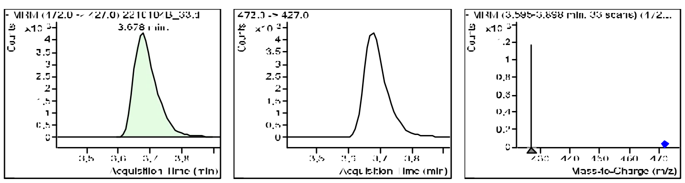

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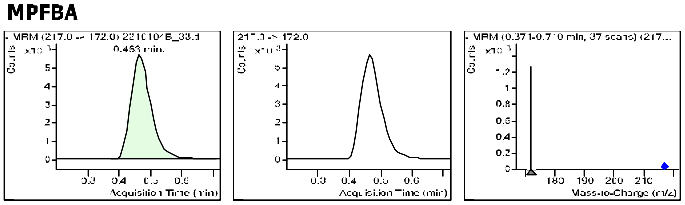

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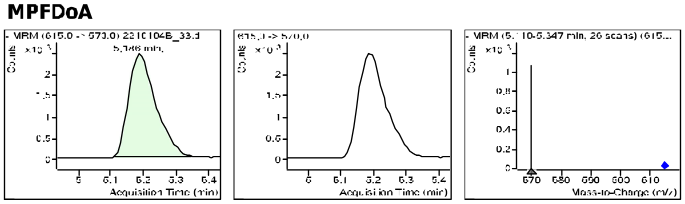

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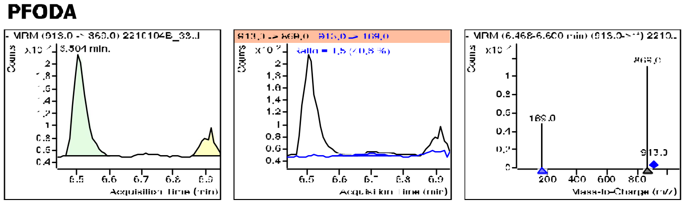

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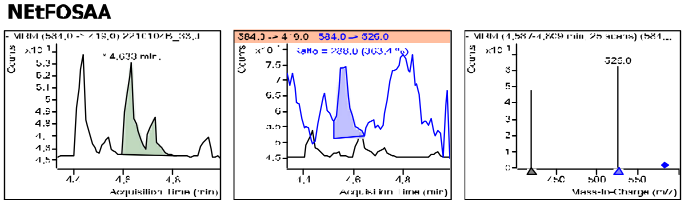

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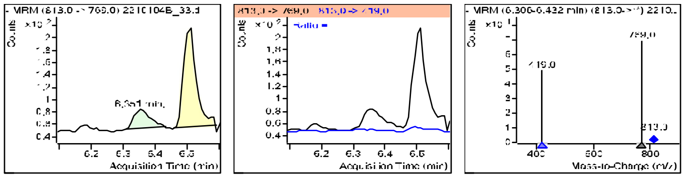

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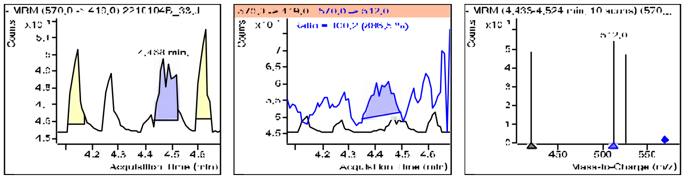

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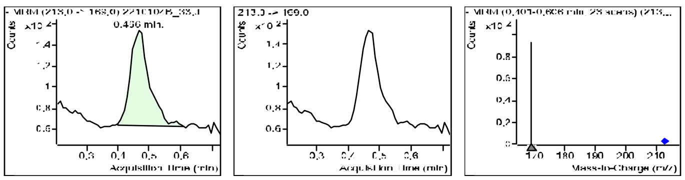

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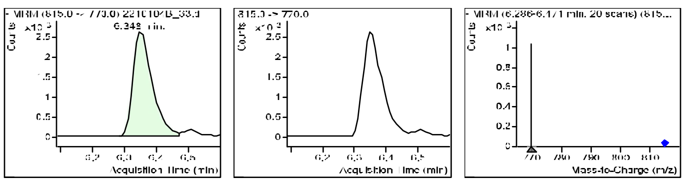

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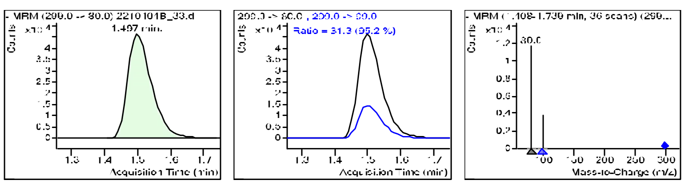

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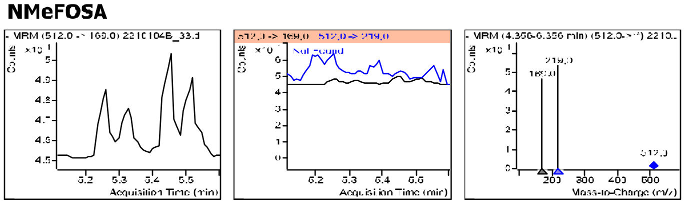

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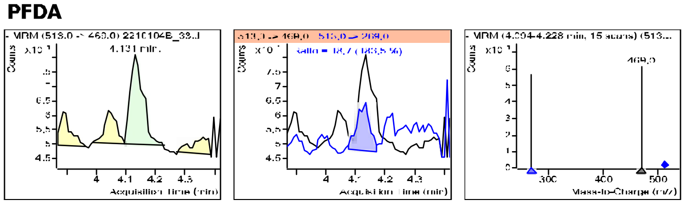

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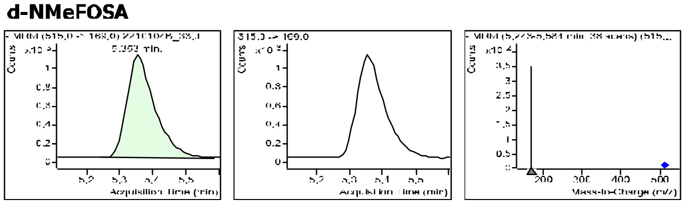

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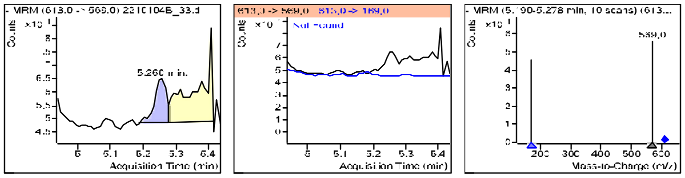

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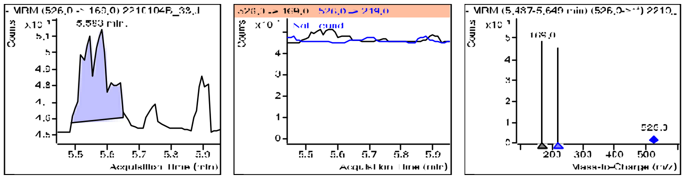

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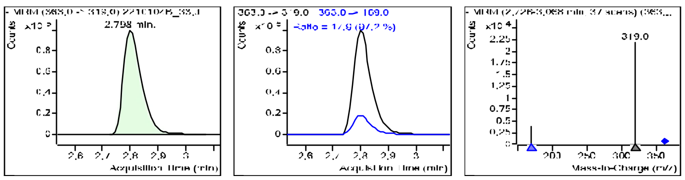

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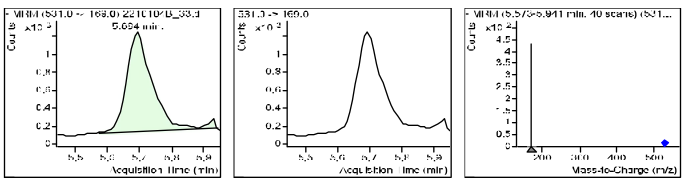

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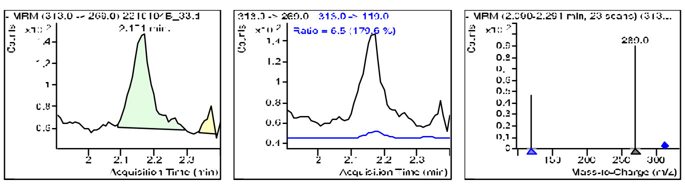

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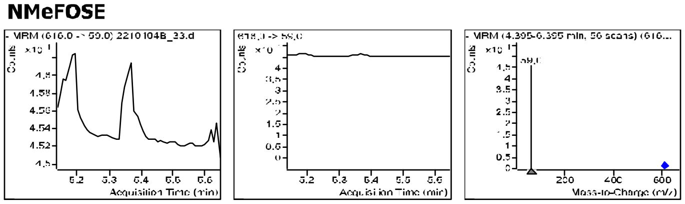

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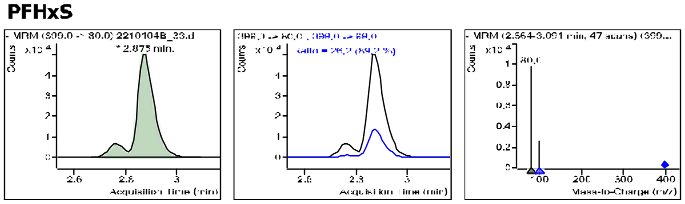

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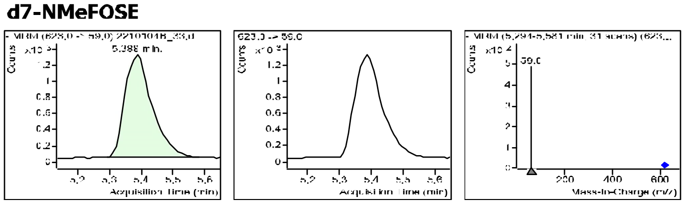

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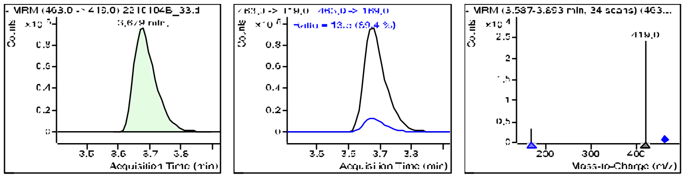

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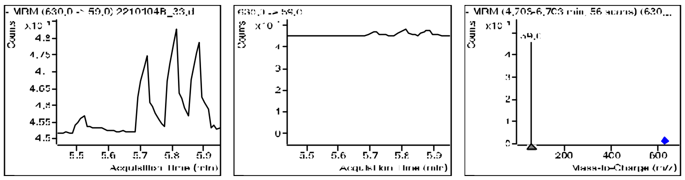

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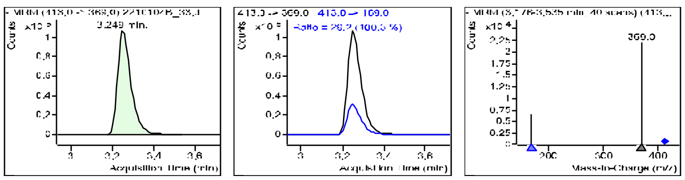

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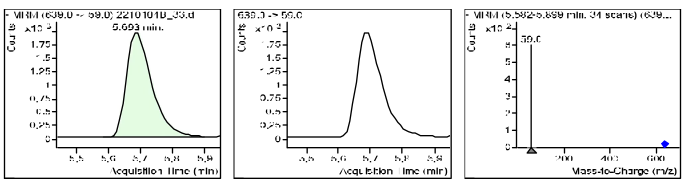

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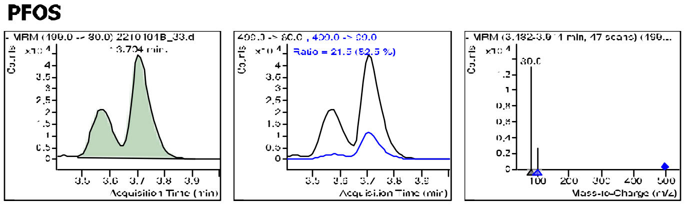

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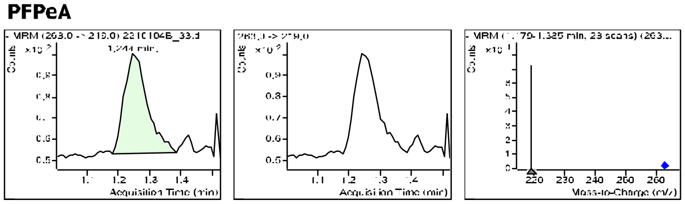

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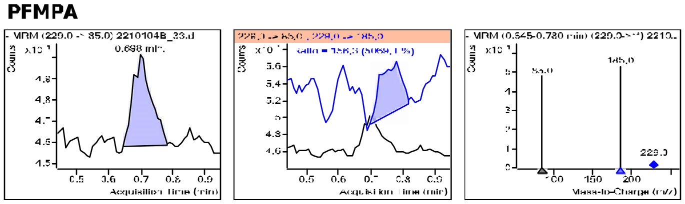

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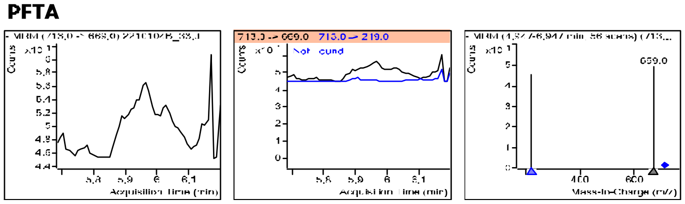

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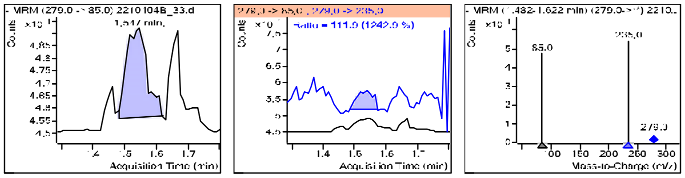

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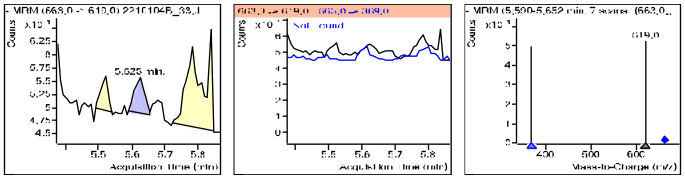

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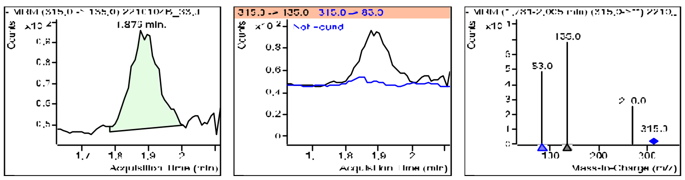

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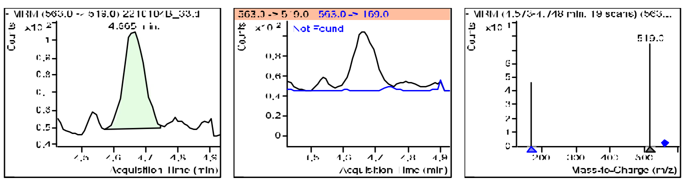

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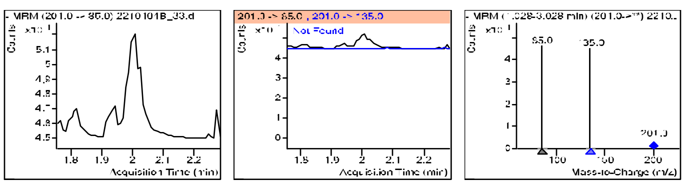

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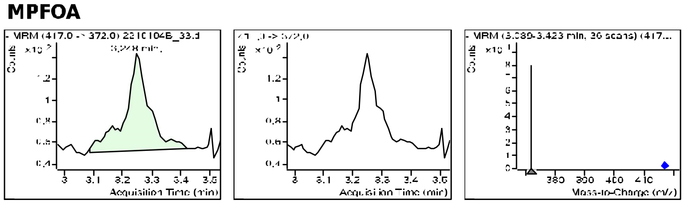

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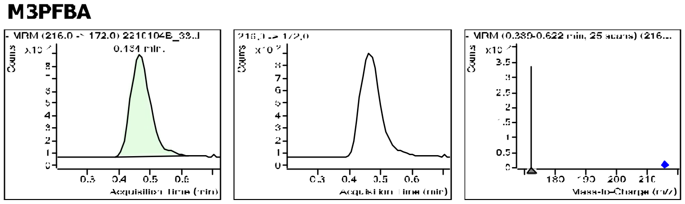


1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	220122279	Client Sample ID:	SMP 3, EXP 13CMS
Collect Date:	06/04/20 Time: 1100	GCAL Sample ID:	2131569
Matrix:	Solid % Moisture: NA	Instrument ID:	QQQ2
Sample Amt:	.73 g	Lab File ID:	2210104B_34.d
Injection Vol.:	1.0 (µL)	GC Column:	ACC-C18-30M ID 2.1 (mm)
Prep Final Vol.:	5000000 (µL)	Dilution Factor:	1 Analyst: MRA
Prep Date:		Analysis Date:	01/05/21 Time: 0000
Prep Batch:	700444	Analytical Batch:	701166
Prep Method:	PFAS ID QSM B15 Prep	Analytical Method:	PFAS Isotope Dilution QSM B15

CONCENTRATION UNITS: ug/kg

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
27619-97-2	6:2 Fluorotelomersulfonic acid	55800		5820	13700	34200
39108-34-4	8:2 Fluorotelomersulfonic acid	57900		8900	13700	34200
375-22-4	Perfluorobutanoic acid	52000		4450	13700	34200
335-76-2	Perfluorodecanoic acid	52100		4110	13700	34200
307-24-4	Perfluorohexanoic acid	51900		5140	13700	34200
2706-90-3	Perfluoropentanoic acid	53400		5140	13700	34200
2058-94-8	Perfluoroundecanoic acid	54100		4790	13700	34200

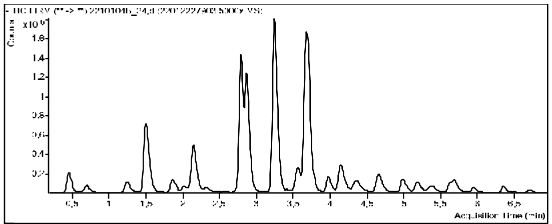
FORM I SV-1

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_34.d	**Position**	P1-D3	**Samp Name**	22012227903	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ2;700444
Acq Date	1/5/2021 0:00						

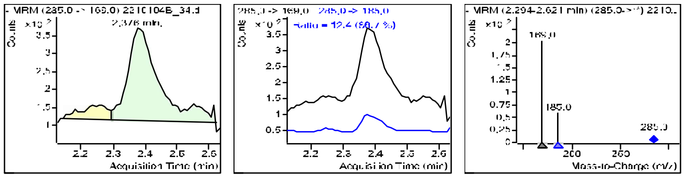
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	67606.189	4.149				97.35	19.4708		7708.15	1.66	
M2PFHxA	188337.398	2.152				96.95	38.7814		6745.61	1.36	
M2PFOA	76766.903	3.248				97.06	19.4128		3618.45	1.50	
M4PFOS	48023.557	3.712				95.00	19.0009		2125.51	1.37	
MPFOA	283.203	3.248				0.00	25.3319		8.93	1.76	
M3PFBA	3569.218	0.464				0.00	4.8682		12.99	1.59	
HFPO-DA	1795.438	2.376	M3HFPODA	750	2.393	112.08	15.7869		8.23	1.89	
4:2 FTS	5998.391	2.095	M2 4:2 FTS	2650	2.095	107.38	7.1707		303.67	1.41	
6:2 FTS	11506.707	3.226	M2 6:2 FTS	4386	3.225	97.02	8.1458		768.92	1.42	
ADONA	107690.991	2.887	M8PFOA	21506	3.247	97.98	7.5052		5000.13	1.44	
8:2 FTS	13217.054	4.138	M2 8:2 FTS	4352	4.138	104.96	8.4545		57.99	1.42	
FOSA	25903.583	4.335	M8FOSA	12275	4.344	90.99	7.7179		62.50	1.50	
9Cl-PF3ONS	75590.650	3.979	M8PFOS	9993	3.711	96.99	7.9041		4735.71	1.42	
PFDS	18619.863	4.685	M6PFDA	14996	4.158	96.31	7.6206		934.33	1.39	
11Cl-PF3OUdS	72569.267	4.989	M8PFOS	9993	3.711	96.99	8.0370		219.27	1.37	
PFHpS	21812.695	3.297	M8PFOA	21506	3.247	97.98	9.0126		753.27	1.42	
10:2 FTS	14504.601	5.183	M2 8:2 FTS	4352	4.138	104.96	9.2490		835.89	1.64	
PFNS	18412.733	4.172	M9PFNA	19147	3.678	92.62	7.6188		846.79	1.66	
PFDoS	24842.757	5.623	M8PFOS	9993	3.711	96.99	8.2461		924.75	1.60	
PFPeS	16142.617	2.323	M5PFHxA	19553	2.151	94.37	8.2100		INF	1.29	
PFODA	10617.362	6.706	M2PFHxDA	10541	6.348	94.44	8.4630		469.59	1.42	
NEtFOSAA	22922.970	4.651	d5-NEtFOSAA	11418	4.641	105.40	7.0988		INF	0.90	m
PFHxDA	16621.367	6.351	M2PFHxDA	10541	6.348	94.44	8.5863		733.39	1.63	
NMeFOSAA	25377.716	4.375	d3-NMeFOSAA	7785	4.374	100.87	7.9304		INF	1.26	m
PFBA	65819.628	0.466	MPFBA	23377	0.463	95.36	7.5867		1466.59	1.31	
PFBS	259005.521	1.497	M3PFBS	8287	1.496	90.55	122.5821		10253.19	1.50	
NMeFOSA	10228.945	5.364	d-NMeFOSA	5258	5.353	87.44	9.3930		479.09	1.44	
PFDA	26508.338	4.150	M6PFDA	14996	4.158	96.31	7.6120		713.12	1.49	
PFDoA	22741.623	5.187	MPFDoA	13325	5.186	98.52	8.9153		42.54	1.62	
NEtFOSA	10309.810	5.704	d-NEtFOSA	5459	5.684	87.13	7.5077		322.66	1.43	
PFHpA	495724.114	2.798	M4PFHpA	19086	2.797	93.10	109.1447		868.45	1.42	
PFHxA	33794.224	2.153	M5PFHxA	19553	2.151	94.37	7.5746		572.09	1.39	
NMeFOSE	15065.998	5.407	d7-NMeFOSE	6617	5.388	90.52	7.7550		117.04	1.35	
PFHxS	284479.396	2.875	M3PFHxS	8433	2.874	88.32	124.2494		512.43	1.23	m
PFNA	509564.778	3.679	M9PFNA	19147	3.678	92.62	120.2428		302.01	1.52	
NEtFOSE	15885.376	5.703	d9-NEtFOSE	9383	5.693	95.16	8.2583		27744.90	1.47	
PFOA	541761.411	3.249	M8PFOA	21506	3.247	97.98	115.8771		4026.16	1.50	
PFOS	356522.201	3.704	M8PFOS	9993	3.711	96.99	111.9979		INF	0.79	m
PFPeA	39417.526	1.253	M5PFPeA	15840	1.248	93.30	7.7915		185.36	1.38	
PFMPA	33371.869	0.698	M5PFPeA	15840	1.248	93.30	7.5393		5459.11	1.36	
PFTA	13513.975	5.957	M2PFTA	9370	5.954	99.07	8.3674		1428.18	1.38	
PFMBA	38132.888	1.547	M5PFHxA	19553	2.151	94.37	7.8352		2547.20	1.34	
PFTrDA	17801.409	5.625	MPFDoA	13325	5.186	98.52	8.8276		111.40	1.68	
PFEESA	63445.858	1.867	M3PFHxS	8433	2.874	88.32	8.6070		2901.82	1.51	
PFUnA	26197.230	4.674	M7PFUnA	15784	4.672	94.54	7.9005		866.15	1.38	
NFDHA	27396.278	2.027	M4PFHpA	19086	2.797	93.10	7.2620		158.47	1.36	

HFPO-DA



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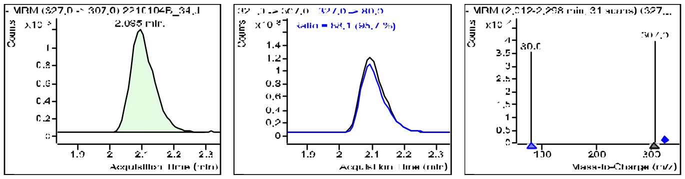

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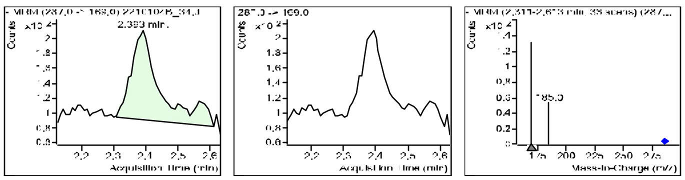
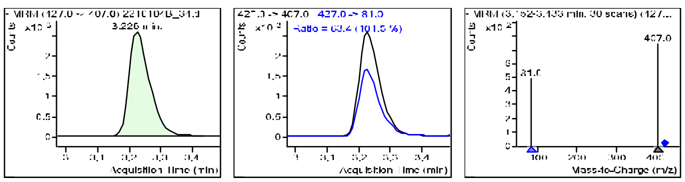
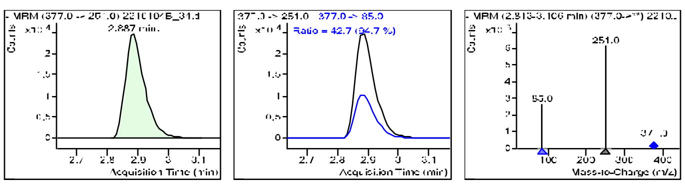


6:2 FTS



ADONA



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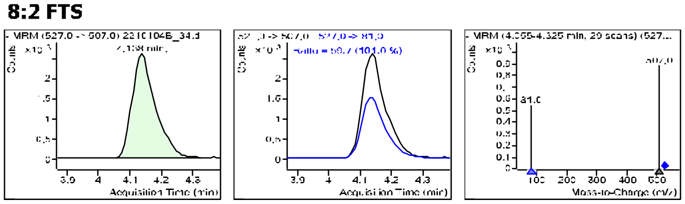

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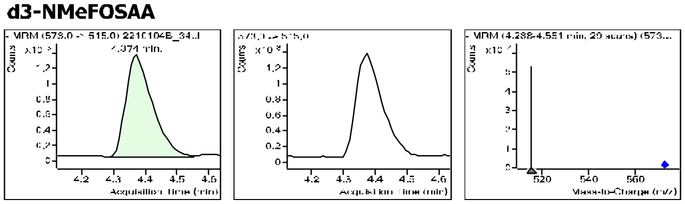

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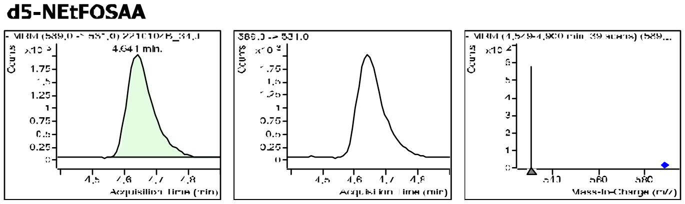
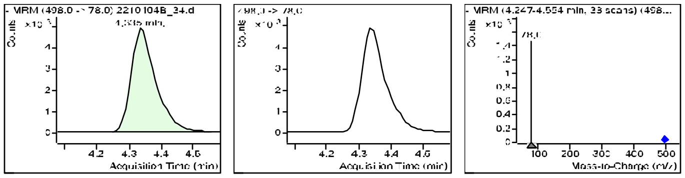


FOSA



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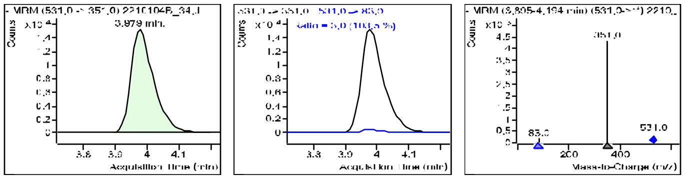

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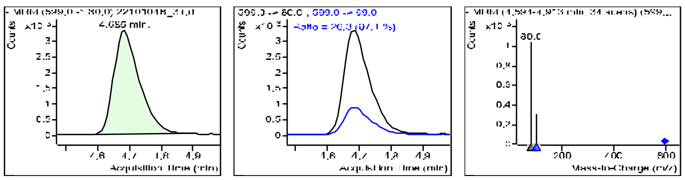

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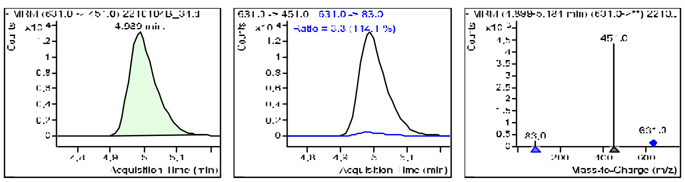

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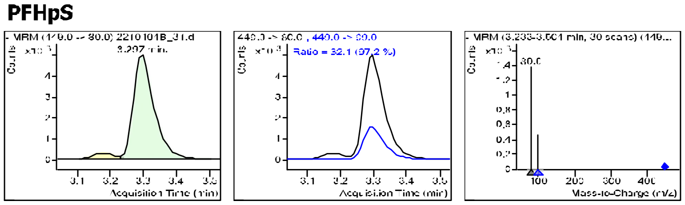
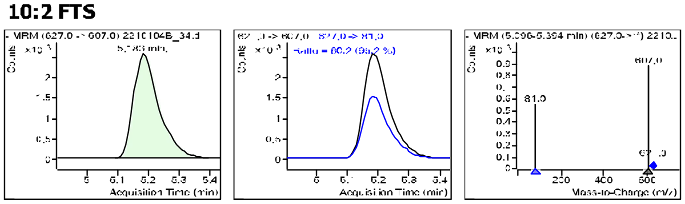
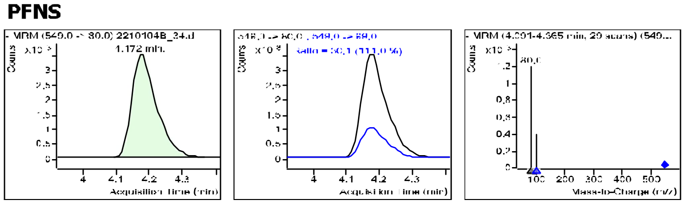


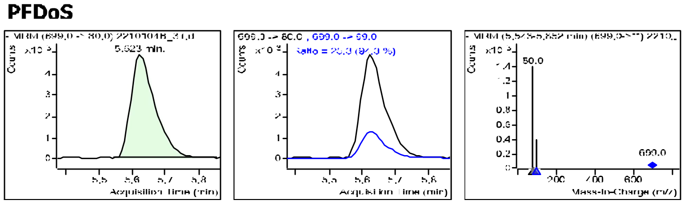
10:2 FTS



PFNS



PFDoS



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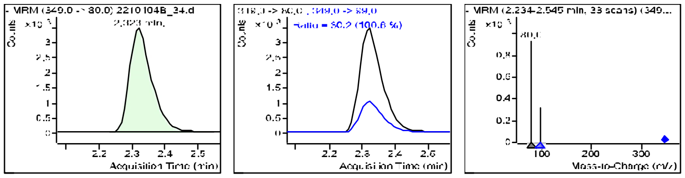
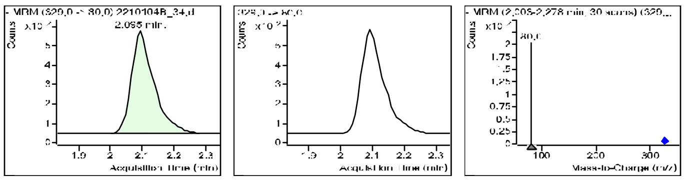
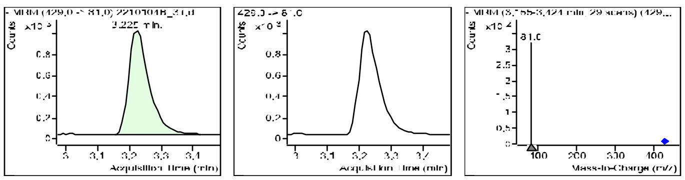


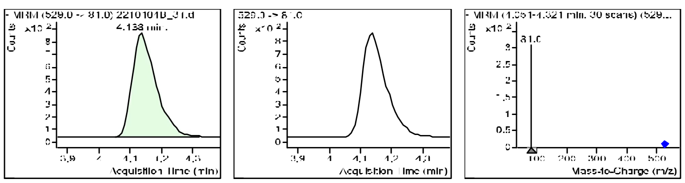
M2 4:2 FTS



M2 6:2 FTS



M2 8:2 FTS



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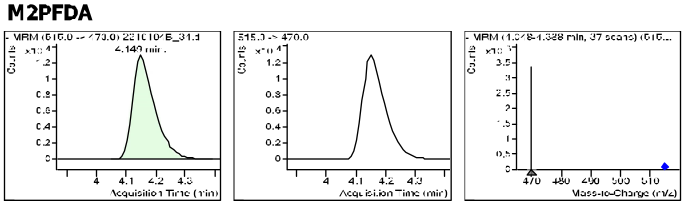

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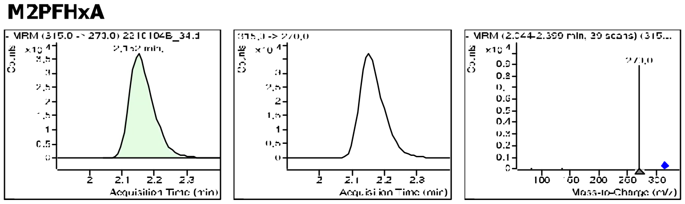

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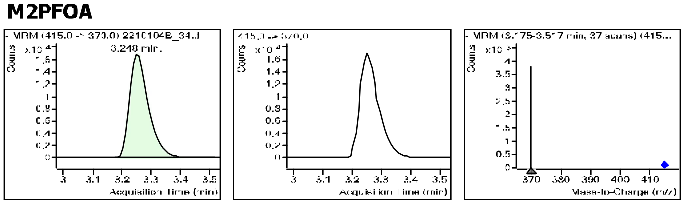

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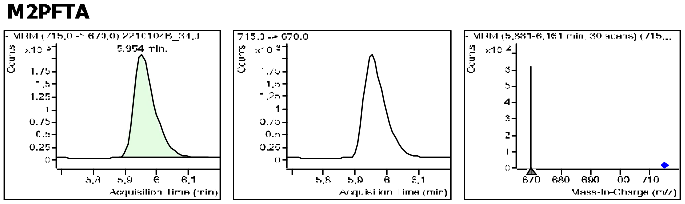

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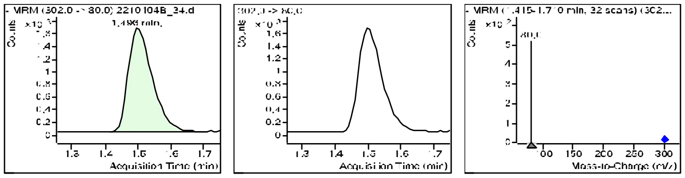

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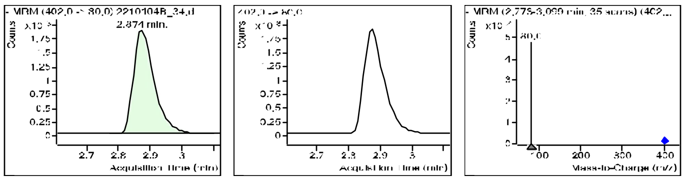
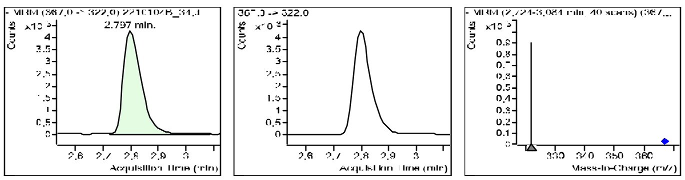
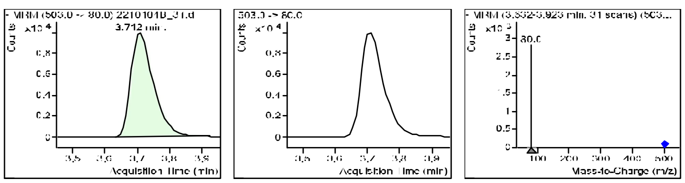


M4PFHpA



M4PFOS



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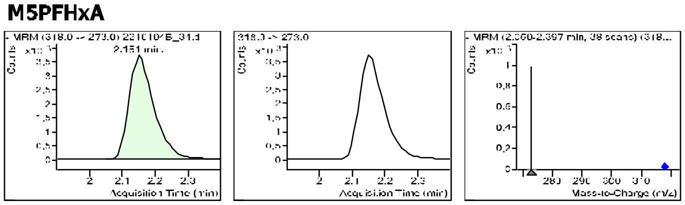

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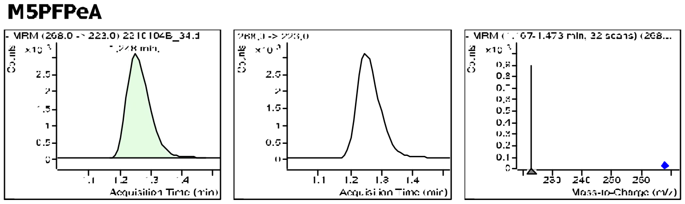

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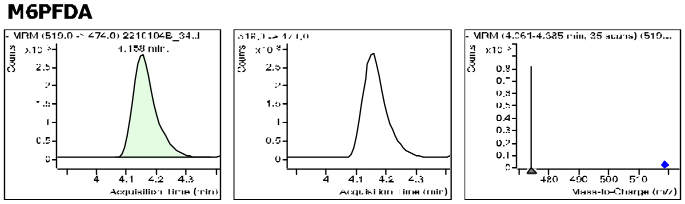
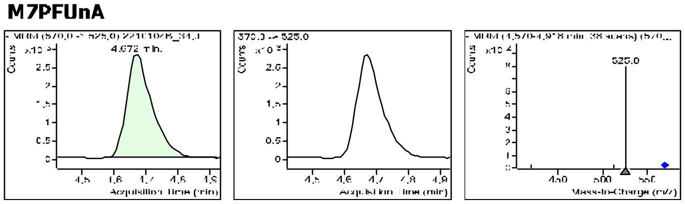
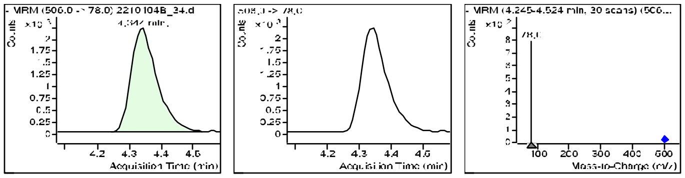


M7PFUnA



M8FOSA



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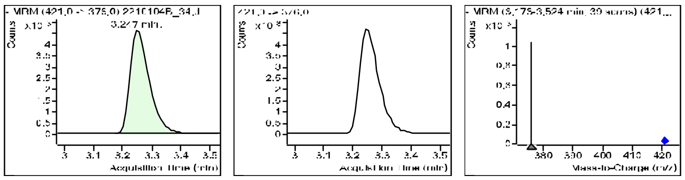

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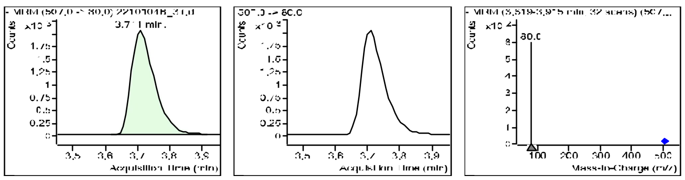

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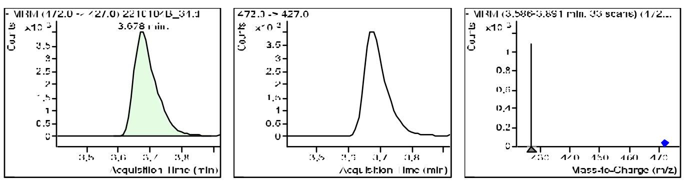

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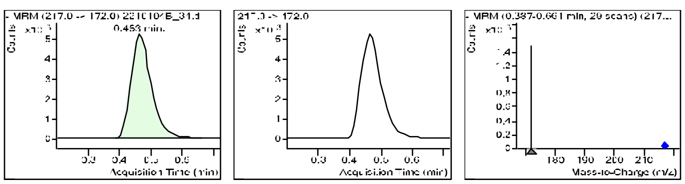

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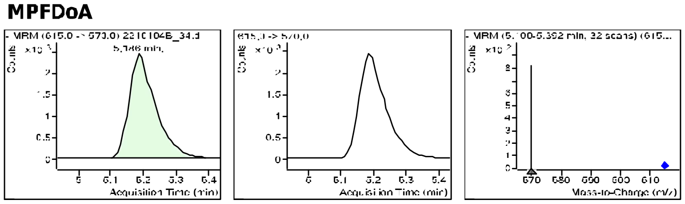
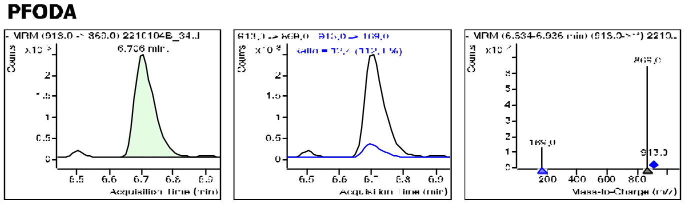


PFODA



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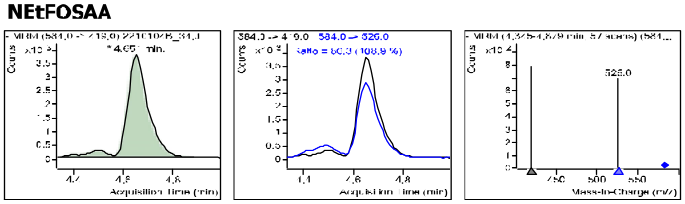
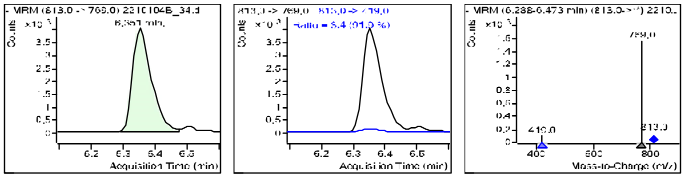


PFHxDA



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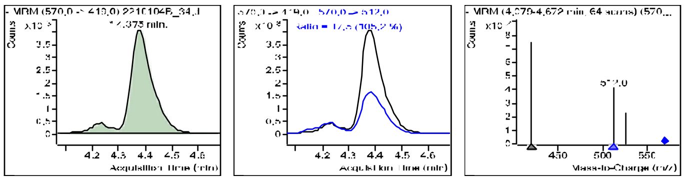

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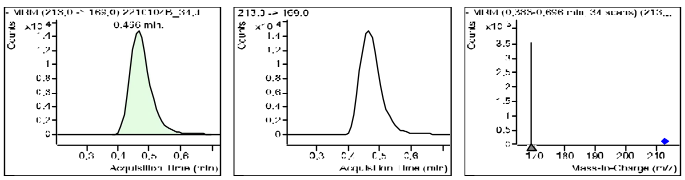

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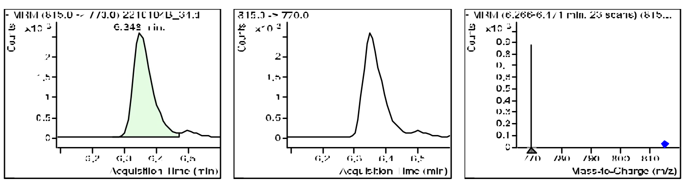
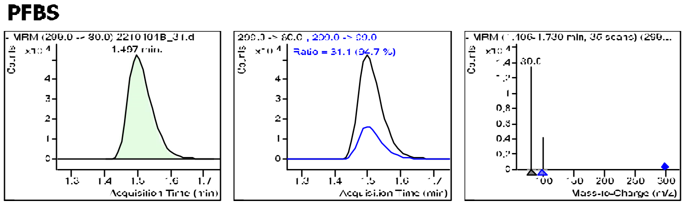


PFBS



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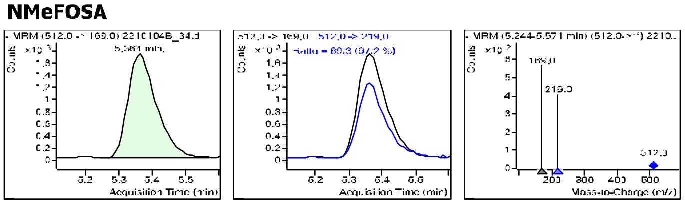

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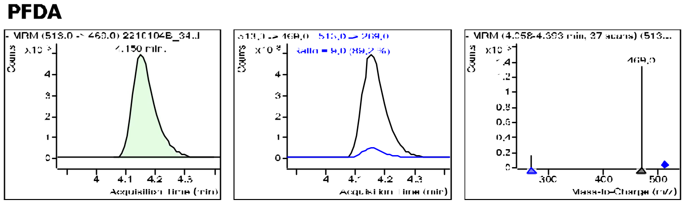

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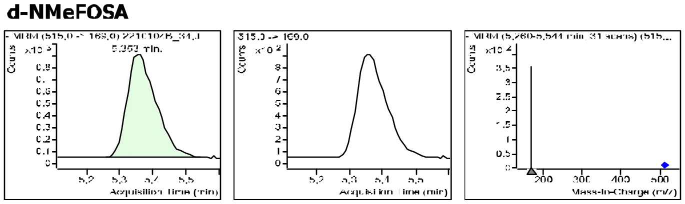
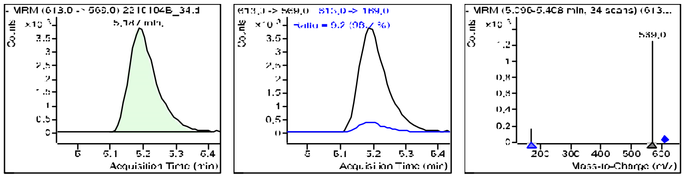


PFDoA



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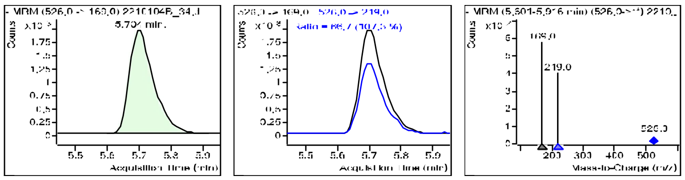
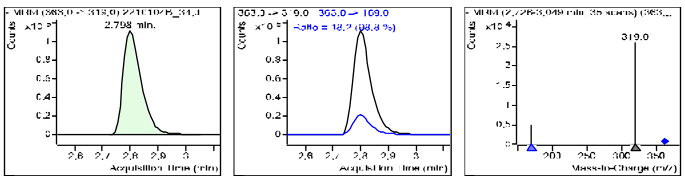


PFHpA



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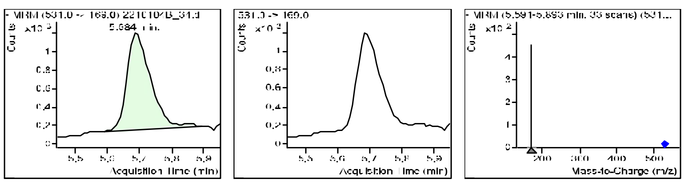

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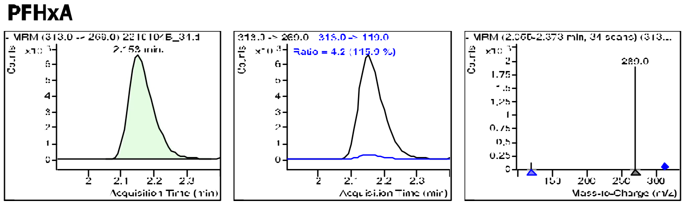
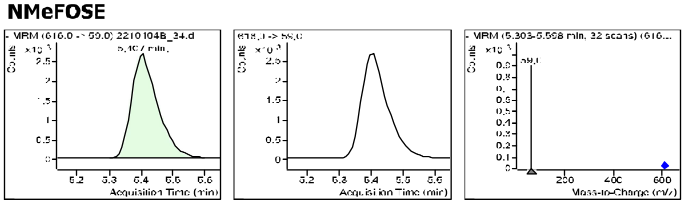
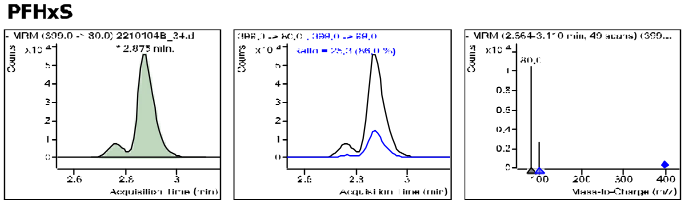


NMeFOSE



PFHxS



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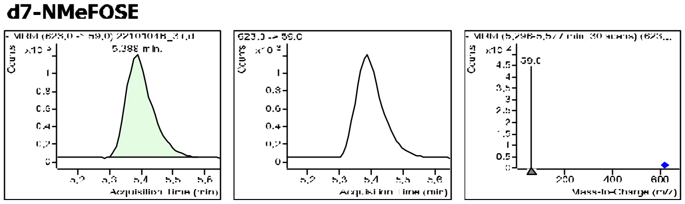

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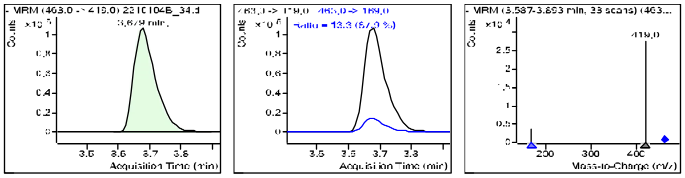

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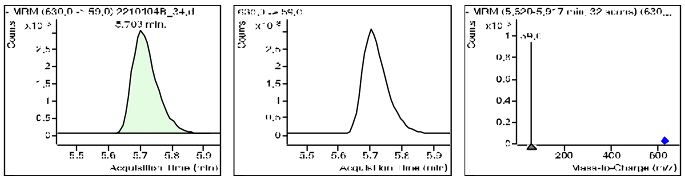

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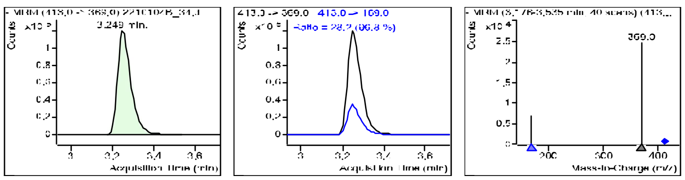

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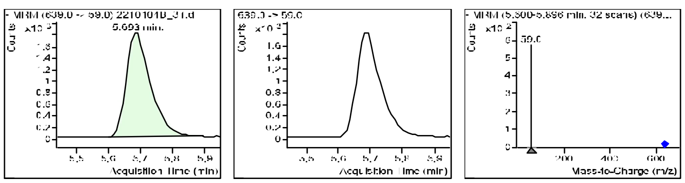
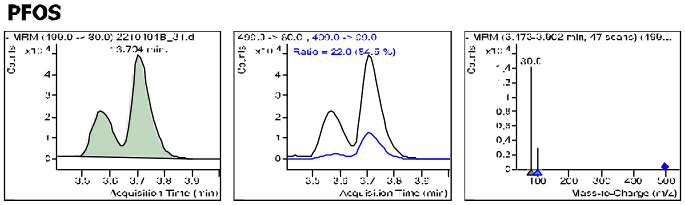


PFOS



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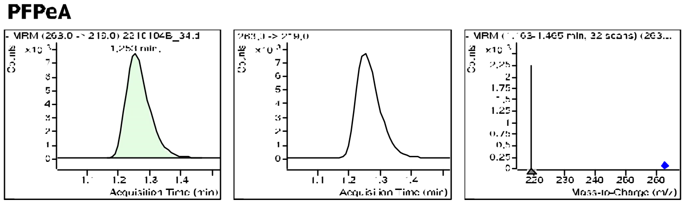

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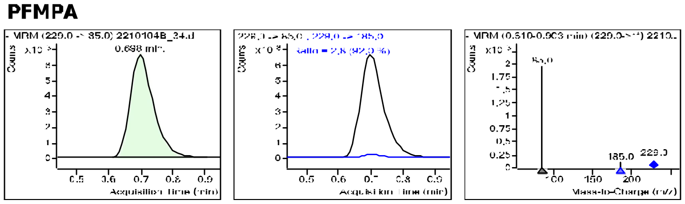

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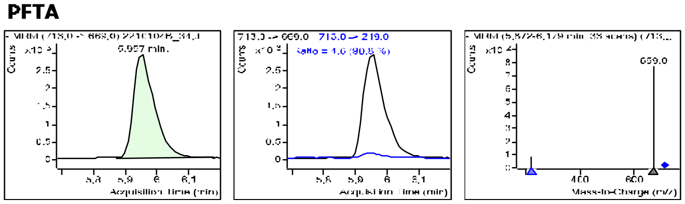

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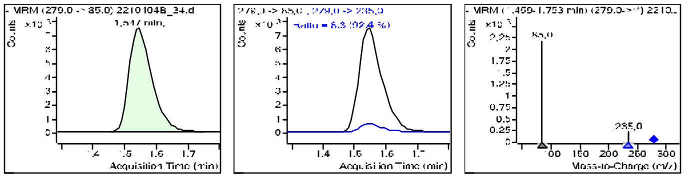

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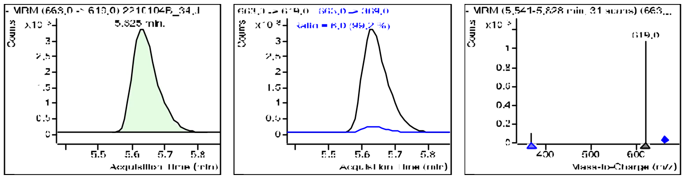

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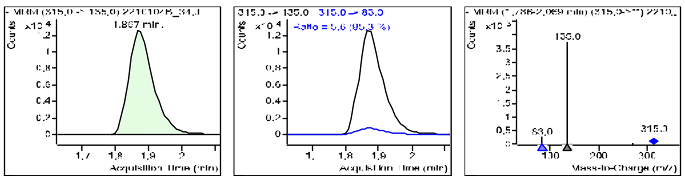
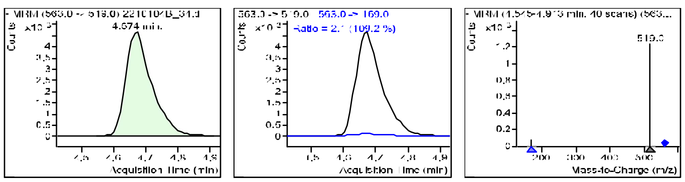
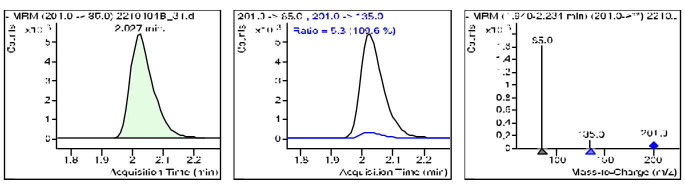


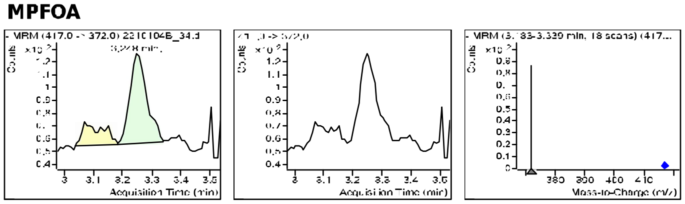
PFUnA



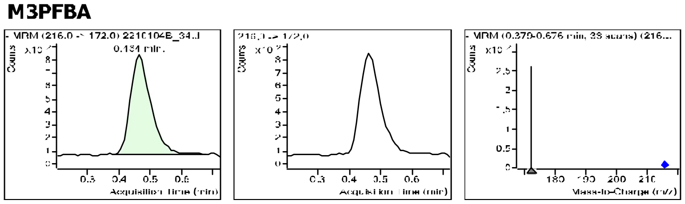
NFDHA



MPFOA



M3PFBA



PFAS Isotope Dilution QSM B15

Form 3C

Spikes

Water

3C

WATER SEMIVOLATILE MS/MSD RECOVERY

Report No:	220122279	Parent Sample ID:	SMP 6, EXP 12, IMP 3A REP A-F
Prep Method:	PFAS ID QSM B15 Prep	Prep Batch:	700361
Analytical Method:	PFAS Isotope Dilution QSM B15	Analytical Batch:	700789

GCAL QC ID: 22012227907

ANALYTE	UNITS	SPIKE ADDED	SAMPLE RESULT	MS RESULT	MS % REC	#	QC LIMITS
6:2 Fluorotelomersulfonic acid	ng/L	76	.778	69	90		70 - 130
8:2 Fluorotelomersulfonic acid	ng/L	76.8	.039	72.3	94		70 - 130
Perfluorobutanesulfonic acid	ng/L	70.8	.231	52.9	74		70 - 130
Perfluorobutanoic acid	ng/L	80	.976	69.1	85		70 - 130
Perfluorodecanoic acid	ng/L	80	.43	66.5	83		70 - 130
Perfluoroheptanoic acid	ng/L	80	.647	66.1	82		70 - 130
Perfluorohexanesulfonic acid	ng/L	73	.206	65.7	90		70 - 130
Perfluorohexanoic acid	ng/L	80	1.02	68.3	84		70 - 130
Perfluorononanoic acid	ng/L	80	.357	65.9	82		70 - 130
Perfluorooctanesulfonic acid	ng/L	74	.183	70.3	95		70 - 130
Perfluorooctanoic acid	ng/L	80	.669	76	94		70 - 130
Perfluoropentanoic acid	ng/L	80	.673	66.7	83		70 - 130
Perfluoroundecanoic acid	ng/L	80	.094	66.4	83		70 - 130

GCAL QC ID: 22012227908

ANALYTE	UNITS	SPIKE ADDED	MSD RESULT	MSD % REC	#	% RPD	#	QC LIMITS REC	QC LIMITS RPD
6:2 Fluorotelomersulfonic acid	ng/L	76	70.5	92		2		70 - 130	0 - 30
8:2 Fluorotelomersulfonic acid	ng/L	76.8	78.4	102		8		70 - 130	0 - 30
Perfluorobutanesulfonic acid	ng/L	70.8	53.4	75		1		70 - 130	0 - 30
Perfluorobutanoic acid	ng/L	80	71.5	88		3		70 - 130	0 - 30
Perfluorodecanoic acid	ng/L	80	69.8	87		5		70 - 130	0 - 30
Perfluoroheptanoic acid	ng/L	80	72.6	90		9		70 - 130	0 - 30
Perfluorohexanesulfonic acid	ng/L	73	69.4	95		6		70 - 130	0 - 30
Perfluorohexanoic acid	ng/L	80	68.9	85		1		70 - 130	0 - 30
Perfluorononanoic acid	ng/L	80	71.4	89		8		70 - 130	0 - 30
Perfluorooctanesulfonic acid	ng/L	74	65.3	88		7		70 - 130	0 - 30
Perfluorooctanoic acid	ng/L	80	77.3	96		2		70 - 130	0 - 30
Perfluoropentanoic acid	ng/L	80	67.7	84		1		70 - 130	0 - 30
Perfluoroundecanoic acid	ng/L	80	72.7	91		9		70 - 130	0 - 30

RPD : 0 out of 13 outside limits

Spike Recovery: 0 out of 26 outside limits

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

FORM III SV-1

3C

WATER SEMIVOLATILE LCS/LCSD RECOVERY

Report No: 220122279

Prep Method: PFAS ID QSM B15 Prep

Prep Batch: 700361

Analytical Method: PFAS Isotope Dilution QSM B15

Analytical Batch: 700789

GCAL QC ID: 2127844

ANALYTE	UNITS	SPIKE ADDED	SAMPLE RESULT	LCS RESULT	LCS % REC	#	QC LIMITS
6:2 Fluorotelomersulfonic acid	ng/L	76	0	77	101		70 - 130
8:2 Fluorotelomersulfonic acid	ng/L	76.8	0	71.7	93		70 - 130
Perfluorobutanesulfonic acid	ng/L	70.8	0	53.4	75		70 - 130
Perfluorobutanoic acid	ng/L	80	0	69.8	87		70 - 130
Perfluorodecanoic acid	ng/L	80	0	68.2	85		70 - 130
Perfluoroheptanoic acid	ng/L	80	0	71	89		70 - 130
Perfluorohexanesulfonic acid	ng/L	73	0	68.9	94		70 - 130
Perfluorohexanoic acid	ng/L	80	0	69.5	87		70 - 130
Perfluorononanoic acid	ng/L	80	0	68.1	85		70 - 130
Perfluorooctanesulfonic acid	ng/L	74	0	78.5	106		70 - 130
Perfluorooctanoic acid	ng/L	80	0	79.9	100		70 - 130
Perfluoropentanoic acid	ng/L	80	0	68.2	85		70 - 130
Perfluoroundecanoic acid	ng/L	80	0	68.8	86		70 - 130

GCAL QC ID: 2127845

ANALYTE	UNITS	SPIKE ADDED	LCSD RESULT	LCSD % REC	#	% RPD	#	QC LIMITS REC	QC LIMITS RPD
6:2 Fluorotelomersulfonic acid	ng/L	76	71.9	95		7		70 - 130	0 - 30
8:2 Fluorotelomersulfonic acid	ng/L	76.8	79.2	103		10		70 - 130	0 - 30
Perfluorobutanesulfonic acid	ng/L	70.8	55.7	79		4		70 - 130	0 - 30
Perfluorobutanoic acid	ng/L	80	70.6	88		1		70 - 130	0 - 30
Perfluorodecanoic acid	ng/L	80	66.6	83		2		70 - 130	0 - 30
Perfluoroheptanoic acid	ng/L	80	74.7	93		5		70 - 130	0 - 30
Perfluorohexanesulfonic acid	ng/L	73	65.9	90		4		70 - 130	0 - 30
Perfluorohexanoic acid	ng/L	80	72.7	91		4		70 - 130	0 - 30
Perfluorononanoic acid	ng/L	80	67.5	84		.9		70 - 130	0 - 30
Perfluorooctanesulfonic acid	ng/L	74	83.1	112		6		70 - 130	0 - 30
Perfluorooctanoic acid	ng/L	80	80.4	100		.5		70 - 130	0 - 30
Perfluoropentanoic acid	ng/L	80	68.7	86		.8		70 - 130	0 - 30
Perfluoroundecanoic acid	ng/L	80	96.7	121		34	*	70 - 130	0 - 30

RPD : 1 out of 13 outside limits

Spike Recovery: 0 out of 26 outside limits

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

FORM III SV-1

PFAS Isotope Dilution QSM B15

Form 3D

Spikes

Soil

3D

SOIL SEMIVOLATILE MS/MSD RECOVERY

Report No:	220122279	Parent Sample ID:	SMP 3, EXP 13C
Prep Method:	PFAS ID QSM B15 Prep	Prep Batch:	700444
Analytical Method:	PFAS Isotope Dilution QSM B15	Analytical Batch:	701166

GCAL QC ID: 2131569

ANALYTE	***UNITS***	***SPIKE ADDED***	***SAMPLE RESULT***	***MS RESULT***	***MS % REC***	***#***	***QC LIMITS***
6:2 Fluorotelomersulfonic acid	ug/kg	65100	358	55800	85		70 - 130
8:2 Fluorotelomersulfonic acid	ug/kg	65800	113	57900	88		70 - 130
Perfluorobutanoic acid	ug/kg	68500	327	52000	75		70 - 130
Perfluorodecanoic acid	ug/kg	68500	525	52100	75		70 - 130
Perfluorohexanoic acid	ug/kg	68500	442	51900	75		70 - 130
Perfluoropentanoic acid	ug/kg	68500	347	53400	77		70 - 130
Perfluoroundecanoic acid	ug/kg	68500	530	54100	78		70 - 130

RPD : 0 out of 0 outside limits

Spike Recovery: 0 out of 7 outside limits

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

FORM III SV-2

3D
SOIL SEMIVOLATILE MS/MSD RECOVERY

Report No:	220122279	Parent Sample ID:	SMP 2, EXP 12T
Prep Method:	PFAS ID QSM B15 Prep	Prep Batch:	700444
Analytical Method:	PFAS Isotope Dilution QSM B15	Analytical Batch:	701166

GCAL QC ID: 2131567

ANALYTE	***UNITS***	***SPIKE ADDED***	***SAMPLE RESULT***	***MS RESULT***	***MS % REC***	***#***	***QC LIMITS***
6:2 Fluorotelomersulfonic acid	ug/kg	9320	42.4	8770	94		70 - 130
8:2 Fluorotelomersulfonic acid	ug/kg	9410	15.6	9960	106		70 - 130
Perfluorobutanoic acid	ug/kg	9800	47.4	8420	85		70 - 130
Perfluorodecanoic acid	ug/kg	9800	49.2	7900	80		70 - 130
Perfluoroheptanoic acid	ug/kg	9800	34.7	7670	78		70 - 130
Perfluorohexanoic acid	ug/kg	9800	91.8	8210	83		70 - 130
Perfluorononanoic acid	ug/kg	9800	53.4	7920	80		70 - 130
Perfluorooctanoic acid	ug/kg	9800	68.1	8070	82		70 - 130
Perfluoropentanoic acid	ug/kg	9800	48.7	7990	81		70 - 130
Perfluoroundecanoic acid	ug/kg	9800	33	7590	77		70 - 130

RPD : 0 out of 0 outside limits

Spike Recovery: 0 out of 10 outside limits

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

FORM III SV-2

3D
SOIL SEMIVOLATILE MS/MSD RECOVERY

Report No:	220122279	Parent Sample ID:	SMP 1, EXP 12C
Prep Method:	PFAS ID QSM B15 Prep	Prep Batch:	700444
Analytical Method:	PFAS Isotope Dilution QSM B15	Analytical Batch:	701166

GCAL QC ID: 2131565

ANALYTE	UNITS	SPIKE ADDED	SAMPLE RESULT	MS RESULT	MS % REC	#	QC LIMITS
6:2 Fluorotelomersulfonic acid	ug/kg	72000	592	63700	88		70 - 130
8:2 Fluorotelomersulfonic acid	ug/kg	72700	0	66700	92		70 - 130
Perfluorobutanoic acid	ug/kg	75800	357	55400	73		70 - 130
Perfluorodecanoic acid	ug/kg	75800	78	55500	73		70 - 130
Perfluorohexanoic acid	ug/kg	75800	620	57300	75		70 - 130
Perfluoropentanoic acid	ug/kg	75800	257	56100	74		70 - 130
Perfluoroundecanoic acid	ug/kg	75800	368	56300	74		70 - 130

RPD : 0 out of 0 outside limits

Spike Recovery: 0 out of 7 outside limits

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

FORM III SV-2

3D

SOIL SEMIVOLATILE LCS/LCSD RECOVERY

Report No:	220122279		
Prep Method:	PFAS ID QSM B15 Prep	Prep Batch:	700444
Analytical Method:	PFAS Isotope Dilution QSM B15	Analytical Batch:	701166

GCAL QC ID: 2128032

ANALYTE	***UNITS***	***SPIKE ADDED***	***SAMPLE RESULT***	***LCS RESULT***	***LCS % REC***	***#***	***QC LIMITS***
6:2 Fluorotelomersulfonic acid	ug/kg	1.9	0	1.7	89		70 - 130
8:2 Fluorotelomersulfonic acid	ug/kg	1.92	0	1.91	100		70 - 130
Perfluorobutanesulfonic acid	ug/kg	1.77	0	1.7	96		70 - 130
Perfluorobutanoic acid	ug/kg	2	0	1.74	87		70 - 130
Perfluorodecanoic acid	ug/kg	2	0	1.67	83		70 - 130
Perfluoroheptanoic acid	ug/kg	2	0	1.86	93		70 - 130
Perfluorohexanesulfonic acid	ug/kg	1.82	0	1.64	90		70 - 130
Perfluorohexanoic acid	ug/kg	2	0	1.71	86		70 - 130
Perfluorononanoic acid	ug/kg	2	0	1.86	93		70 - 130
Perfluorooctanesulfonic acid	ug/kg	1.85	0	1.79	97		70 - 130
Perfluorooctanoic acid	ug/kg	2	0	2	100		70 - 130
Perfluoropentanoic acid	ug/kg	2	0	1.71	86		70 - 130
Perfluoroundecanoic acid	ug/kg	2	0	1.69	85		70 - 130

2128033

			LCSD RESULT	***LCSD % REC***					
6:2 Fluorotelomersulfonic acid	ug/kg	1.9	1.75	92		3		70 - 130	0 - 30
8:2 Fluorotelomersulfonic acid	ug/kg	1.92	2.05	107		7		70 - 130	0 - 30
Perfluorobutanesulfonic acid	ug/kg	1.77	1.8	102		5		70 - 130	0 - 30
Perfluorobutanoic acid	ug/kg	2	1.68	84		3		70 - 130	0 - 30
Perfluorodecanoic acid	ug/kg	2	1.54	77		8		70 - 130	0 - 30
Perfluoroheptanoic acid	ug/kg	2	1.92	96		3		70 - 130	0 - 30
Perfluorohexanesulfonic acid	ug/kg	1.82	1.83	100		11		70 - 130	0 - 30
Perfluorohexanoic acid	ug/kg	2	1.71	86		.02		70 - 130	0 - 30
Perfluorononanoic acid	ug/kg	2	2.06	103		10		70 - 130	0 - 30
Perfluorooctanesulfonic acid	ug/kg	1.85	1.93	104		7		70 - 130	0 - 30
Perfluorooctanoic acid	ug/kg	2	2.22	111		10		70 - 130	0 - 30
Perfluoropentanoic acid	ug/kg	2	1.71	86		.2		70 - 130	0 - 30
Perfluoroundecanoic acid	ug/kg	2	1.68	84		.4		70 - 130	0 - 30

RPD : 0 out of 13 outside limits

Spike Recovery: 0 out of 26 outside limits

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

FORM III SV-2

PFAS Isotope Dilution QSM B15

Form 4B

Method Blanks

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Report No:	220122279		Method Blank ID:	2127843		
Matrix:	Water		Instrument ID:	QQQ1		
Sample Amt:	125	mL	Lab File ID:	2201224A_41.d		
Injection Vol.:	1.0	(µL)	GC Column:	ACC-C18-30M	ID	2.1 (mm)
Prep Final Vol.:	1000	(µL)	Dilution Factor:	1	Analyst:	MRA
Prep Date:			Analysis Date:	12/24/20	Time:	2211
Prep Batch:	700361		Analytical Batch:	700789		
Prep Method:	PFAS ID QSM B15 Prep		Analytical Method:	PFAS Isotope Dilution QSM B15		

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD

	CLIENT SAMPLE ID	*GCAL SAMPLE ID*	*LAB FILE ID*	*DATE ANALYZED*	*TIME ANALYZED*
1.	LCS2127844	2127844	2201224A_42.d	12/24/20	2225
2.	LCSD2127845	2127845	2201224A_43.d	12/24/20	2239
3.	SMP 5, EXP 12, IMP 1A REP A,B	22012227905	2201224A_44.d	12/24/20	2253
4.	SMP 6, EXP 12, IMP 3A REP A-F	22012227906	2201224A_45.d	12/24/20	2308
5.	SMP 6, EXP 12, IMP 3A REP A-F-	22012227907	2201224A_46.d	12/24/20	2322
6.	SMP 6, EXP 12, IMP 3A REP A-F-	22012227908	2201224A_47.d	12/24/20	2337
7.	SMP 7, EXP 13, IMP 1A REP A,B	22012227909	2201224A_48.d	12/24/20	2351
8.	SMP 8, EXP 13, IMP 3A REP A,B	22012227910	2201224A_49.d	12/25/20	0005
9.	LCS2127844RE	2127844RE	2201230A_53.d	12/31/20	0040
10.	LCSD2127845RE	2127845RE	2201230A_54.d	12/31/20	0053

FORM IV SV

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Report No:	220122279		Method Blank ID:	2128031	
Matrix:	Solid		Instrument ID:	QQQ2	
Sample Amt:	5 g		Lab File ID:	2210104B_22.d	
Injection Vol.:	1.0	(µL)	GC Column:	ACC-C18-30M	ID 2.1 (mm)
Prep Final Vol.:	1000	(µL)	Dilution Factor:	1	Analyst: MRA
Prep Date:			Analysis Date:	01/04/21	Time: 2123
Prep Batch:	700444		Analytical Batch:	701166	
Prep Method:	PFAS ID QSM B15 Prep		Analytical Method:	PFAS Isotope Dilution QSM B15	

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD

	CLIENT SAMPLE ID	GCAL SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1.	LCS2128032	2128032	2210104B_23.d	01/04/21	2136
2.	LCSD2128033	2128033	2210104B_24.d	01/04/21	2149
3.	SMP 1, EXP 12C	22012227901	2210104B_25.d	01/04/21	2203
4.	SMP 1, EXP 12CDUP	2131564	2210104B_26.d	01/04/21	2216
5.	SMP 1, EXP 12CMS	2131565	2210104B_27.d	01/04/21	2229
6.	SMP 2, EXP 12T	22012227902	2210104B_28.d	01/04/21	2242
7.	SMP 2, EXP 12TDUP	2131566	2210104B_29.d	01/04/21	2255
8.	SMP 2, EXP 12TMS	2131567	2210104B_30.d	01/04/21	2308
9.	SMP 3, EXP 13C	22012227903	2210104B_32.d	01/04/21	2334
10.	SMP 3, EXP 13CDUP	2131568	2210104B_33.d	01/04/21	2347
11.	SMP 3, EXP 13CMS	2131569	2210104B_34.d	01/05/21	0000
12.	SMP 4, EXP 13T	22012227904	2210104B_35.d	01/05/21	0013

FORM IV SV

PFAS Isotope Dilution QSM B15

Form 4I

Instrument Blanks

4I

ORGANICS INSTRUMENT BLANK

Report No:	220122279	Instrument ID:	QQQ1
Analysis Date:	12/24/2020 12:50	Lab File ID:	2201224A_12.d
Analytical Method:	EPA 537.1	Analytical Batch:	700987

ANALYTE	*UNITS*	*RESULT*	*Q*	*DL*	*LOD*	*LOQ*	*#*
6:2 Fluorotelomersulfonic acid	ng/L	4.00	U	1.79	4.00	10.0	
8:2 Fluorotelomersulfonic acid	ng/L	4.00	U	1.63	4.00	10.0	
Perfluorobutanesulfonic acid	ng/L	4.00	U	1.47	4.00	10.0	
Perfluorobutanoic acid	ng/L	4.00	U	2.13	4.00	10.0	
Perfluorodecanoic acid	ng/L	4.00	U	1.65	4.00	10.0	
Perfluoroheptanoic acid	ng/L	4.00	U	1.85	4.00	10.0	
Perfluorohexanesulfonic acid	ng/L	4.00	U	1.64	4.00	10.0	
Perfluorohexanoic acid	ng/L	4.00	U	1.94	4.00	10.0	
Perfluorononanoic acid	ng/L	4.00	U	1.68	4.00	10.0	
Perfluorooctanesulfonic acid	ng/L	4.00	U	1.70	4.00	10.0	
Perfluorooctanoic acid	ng/L	4.00	U	1.80	4.00	10.0	
Perfluoropentanoic acid	ng/L	4.00	U	2.35	4.00	10.0	
Perfluoroundecanoic acid	ng/L	4.00	U	1.86	4.00	10.0	

* - Result greater than 1/2 LOQ

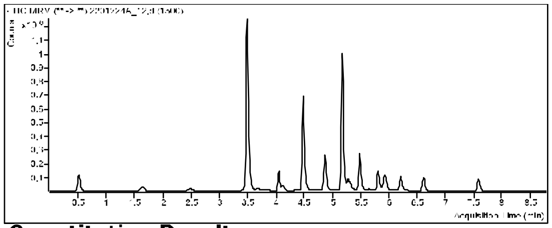
FORM 4I - ORG

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_12.d	**Position**	Vial 8	**Samp Name**	1500	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ1
Acq Date	12/24/2020 12:50						

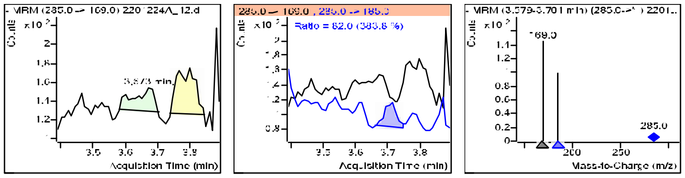
Sample Chromatogram



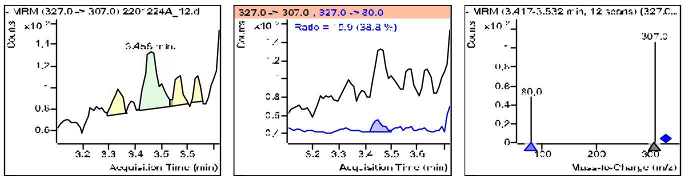
Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	228965.204	5.176				133.81	26.7620		5818.73	1.53	
M2PFHxA	339131.308	3.491				127.21	50.8857		22061.53	1.46	
M2PFOA	158665.573	4.489				125.58	25.1159		23624.80	1.35	
M4PFOS	48838.205	4.873				100.35	20.0693		6828.32	1.66	
M3PFBA	6474.812	0.513				0.00	5.0387		325.32	1.21	
MPFOA	550.790	4.489				0.00	27.0336		21.68	1.36	
HFPO-DA	102.133	3.673	M3HFPODA	3368	3.683	114.84	0.2382		0.49	0.11	
4:2 FTS	195.852	3.458	M2 4:2 FTS	12990	3.458	117.30	0.0385		2.52	2.22	
6:2 FTS	211.462	4.477	M2 6:2 FTS	23608	4.466	107.59	0.0259		3.64	3.25	
ADONA	440.862	4.128	M8PFOA	22031	4.488	105.03	0.0227		9.26	1.56	
8:2 FTS	158.906	5.164	M2 8:2 FTS	10948	5.175	106.30	0.0219		24.52	1.54	
FOSA	41.774	5.293	M8FOSA	20719	5.281	94.17	0.0043		21.76	0.90	
9Cl-PF3ONS	334.097	5.048	M8PFOS	4451	4.872	94.46	0.0077		29.10	4.73	
PFDS	54.186	5.473	M6PFDA	36822	5.176	119.13	0.0279		15.68	2.69	
11Cl-PF3OUdS	196.377	5.669	M8PFOS	4451	4.872	94.46	0.0199		101.10	2.04	
PFHpS	73.288	4.529	M8PFOA	22031	4.488	105.03	0.0219		2.81	0.49	
10:2 FTS	122.506	5.816	M2 8:2 FTS	10948	5.175	106.30	0.0356		10.83	2.56	
PFNS	63.801	5.184	M9PFNA	30951	4.853	116.23	0.0373		12.72	1.47	
PFDoS	43.359	6.179	M8PFOS	4451	4.872	94.46	0.0197		4.30	2.10	
PFPeS	26.700	3.551	M5PFHxA	29774	3.490	110.84	0.0083		1.23	2.23	
PFODA	448.256	8.206	M2PFHxDA	32491	7.585	96.03	0.1232		17.55	2.32	
NEtFOSAA	138.020	5.474	d5-NEtFOSAA	12342	5.474	98.28	0.0399		90.09	0.94	
PFHxDA	610.628	7.589	M2PFHxDA	32491	7.585	96.03	0.1928		4.25	1.15	
NMeFOSAA	92.507	5.318	d3-NMeFOSAA	10546	5.307	110.67	0.0271		18.67	1.88	
PFBA	142.764	0.515	MPFBA	38222	0.511	108.17	0.0145		1.48	3.53	
PFBS	20.987	2.434	M3PFBS	13296	2.473	112.72	0.0051		0.86	2.17	
NMeFOSA	8.151	5.917	d-NMeFOSA	17441	5.906	103.74	0.0050		1.67	1.03	
PFDA	524.198	5.176	M6PFDA	36822	5.176	119.13	0.0472		3.70	1.51	
PFDoA	291.070	5.818	MPFDoA	41288	5.807	109.65	0.0341		5.79	2.44	
NEtFOSA	22.996	6.247	d-NEtFOSA	11395	6.205	96.02	0.0146		5.36	1.39	
PFHpA	301.273	4.057	M4PFHpA	38716	4.056	109.71	0.0381		8.99	0.30	
PFHxA	604.153	3.483	M5PFHxA	29774	3.490	110.84	0.0769		9.38	2.34	
NMeFOSE	12.079	6.162	d7-NMeFOSE	26243	5.932	112.79	0.0044		1.82	1.04	
PFHxS	82.924	4.126	M3PFHxS	9360	4.126	93.73	0.0198		5.99	2.27	m
PFNA	507.378	4.843	M9PFNA	30951	4.853	116.23	0.0526		6.51	1.13	
NEtFOSE	9.201	6.098	d9-NEtFOSE	23279	6.212	111.98	0.0036		1.85	1.02	
PFOA	395.724	4.490	M8PFOA	22031	4.488	105.03	0.0637		8.08	0.83	
PFOS	6.557	4.873	M8PFOS	4451	4.872	94.46	0.0016		2.55	1.58	
PFPeA	357.775	1.637	M5PFPeA	18007	1.635	107.09	0.0845		2.07	0.72	m
PFMPA	231.224	0.776	M5PFPeA	18007	1.635	107.09	0.0564		2.19	0.73	
PFTA	289.894	6.614	M2PFTA	33997	6.613	106.97	0.0481		20.20	1.72	
PFMBA	89.742	2.620	M5PFHxA	29774	3.490	110.84	0.0223		1.95	0.71	
PFTrDA	471.894	6.190	MPFDoA	41288	5.807	109.65	0.0534		INF	1.90	
PFEESA	98.428	3.232	M3PFHxS	9360	4.126	93.73	0.0114		1.02	0.27	
PFUnA	261.021	5.486	M7PFUnA	66402	5.485	126.54	0.0184		2.30	1.04	
NFDHA	103.563	3.382	M4PFHpA	38716	4.056	109.71	0.0272		4.19	1.45	

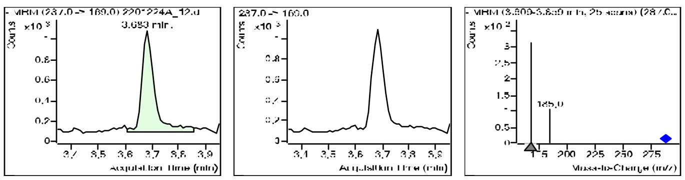
HFPO-DA



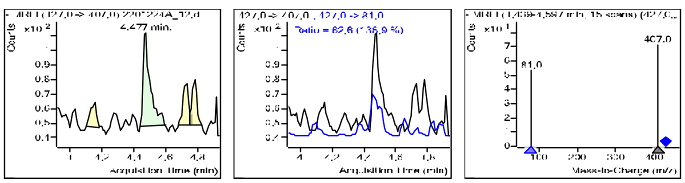
4:2 FTS



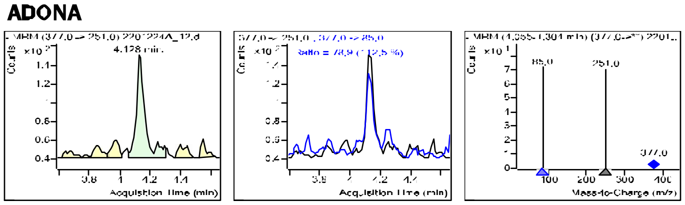
M3HFPODA



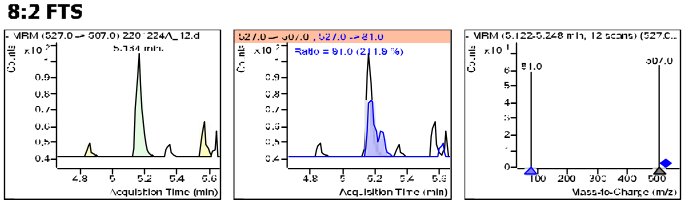
6:2 FTS



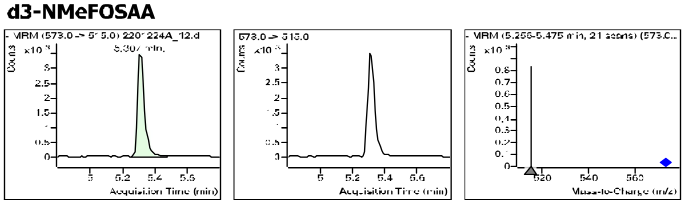
ADONA



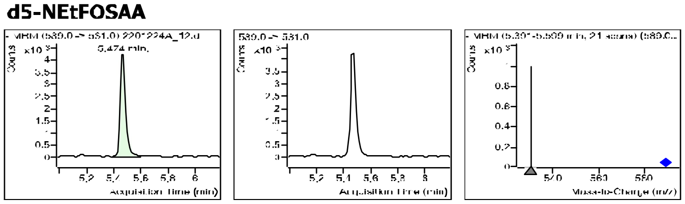
8:2 FTS



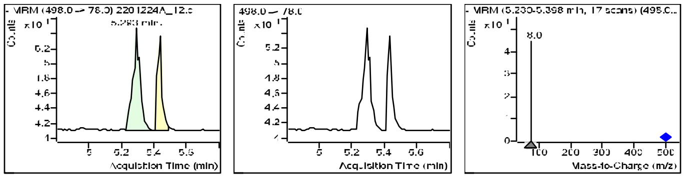
d3-NMeFOSAA



d5-NEtFOSAA



FOSA



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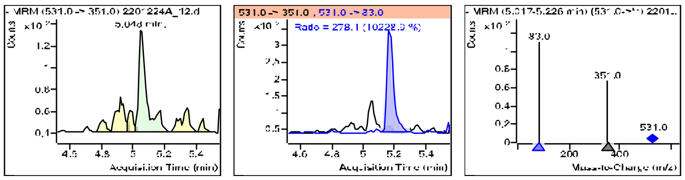

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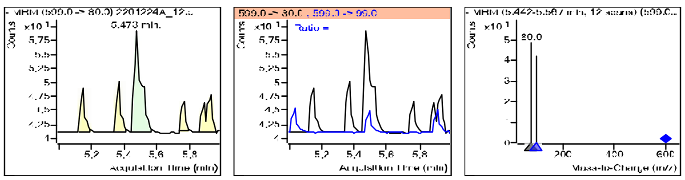

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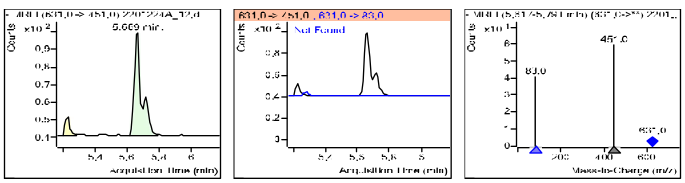

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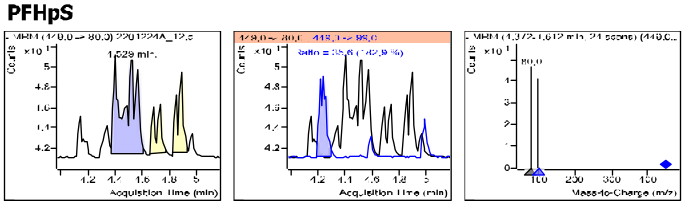

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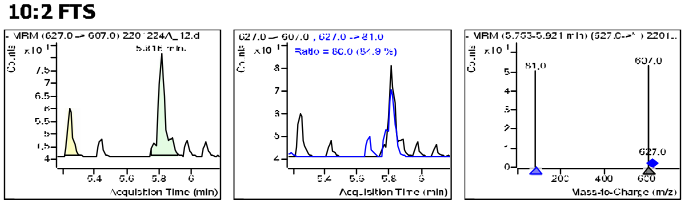

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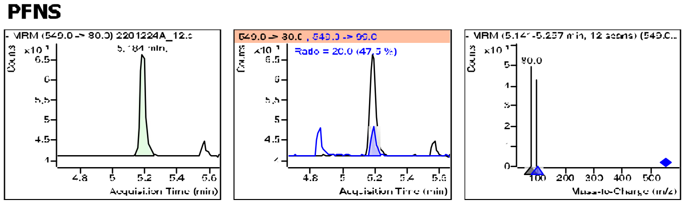

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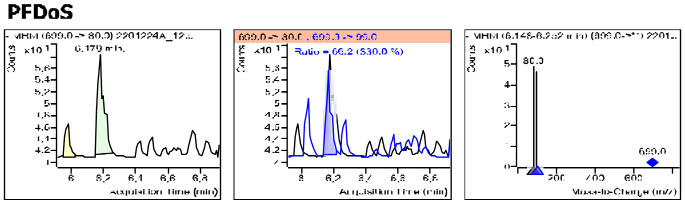

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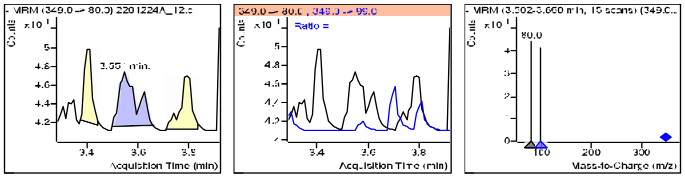

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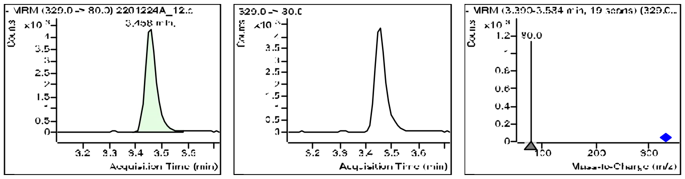

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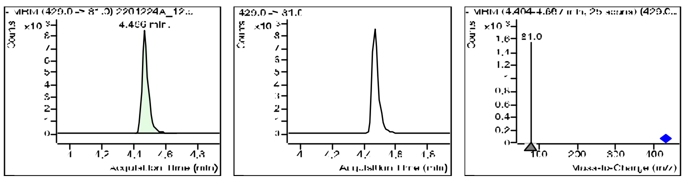

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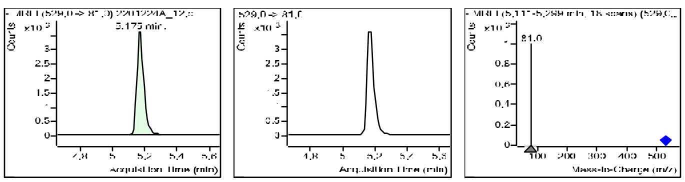

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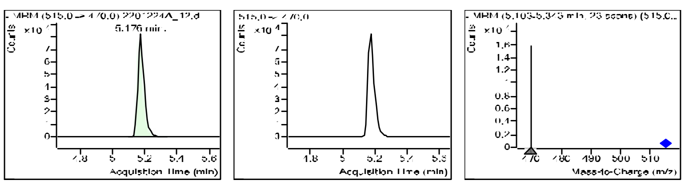

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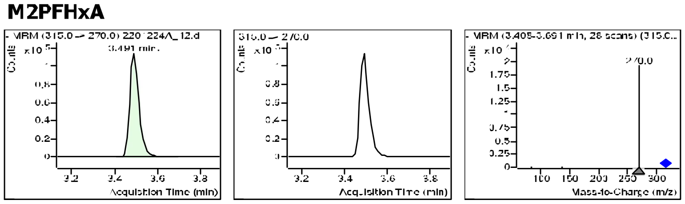

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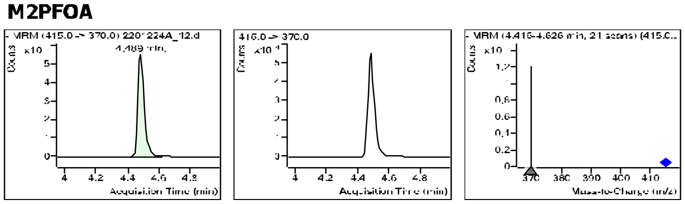

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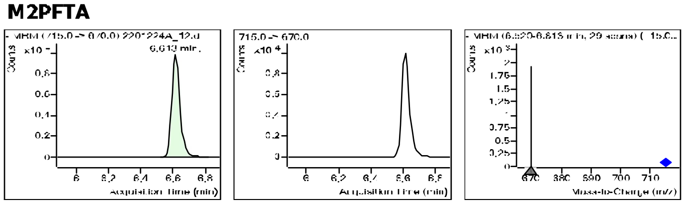

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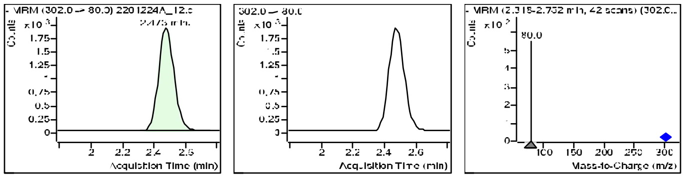

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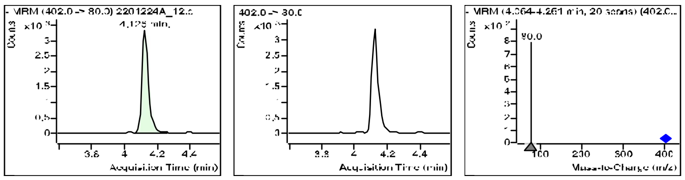

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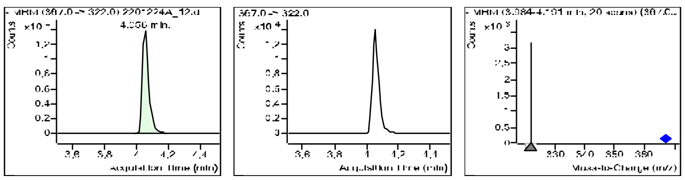

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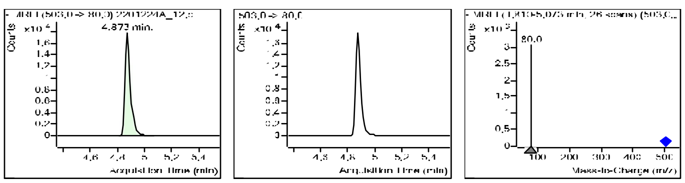

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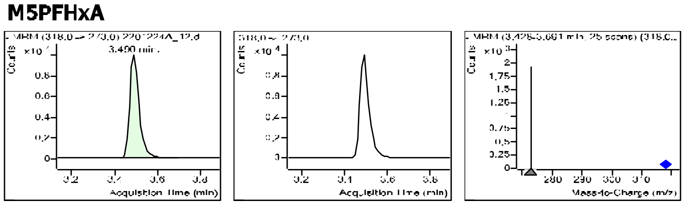

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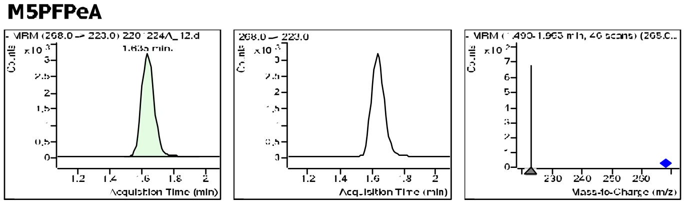

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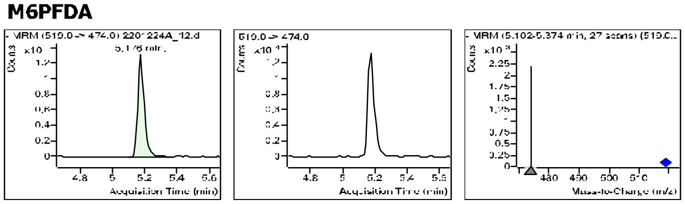

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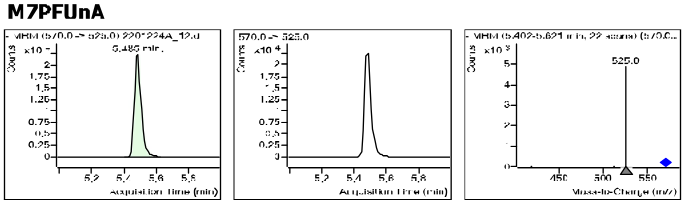

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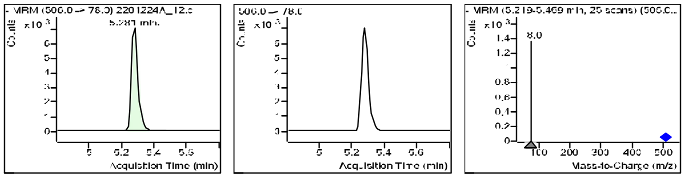

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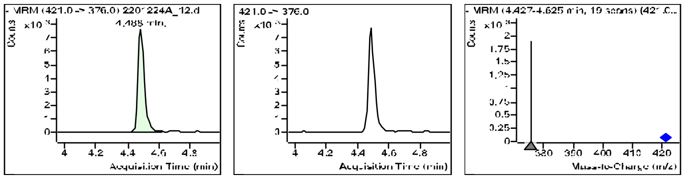

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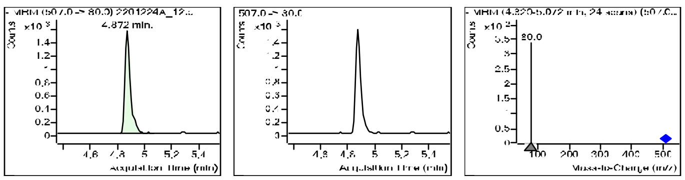

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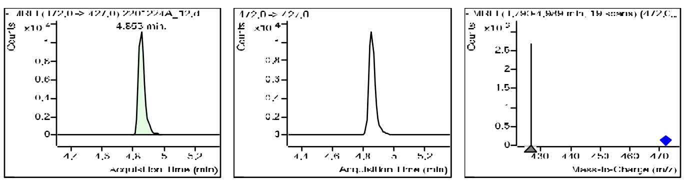

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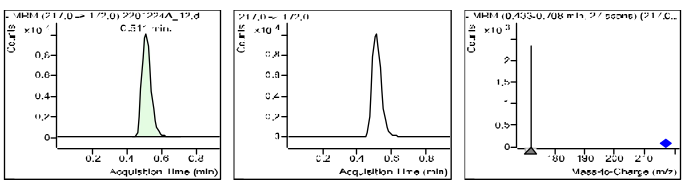

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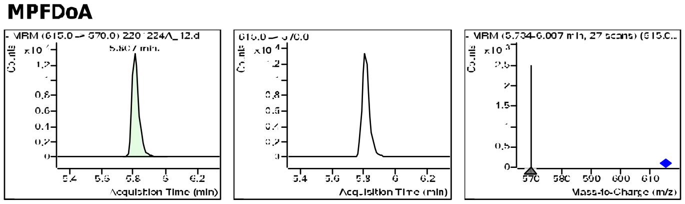

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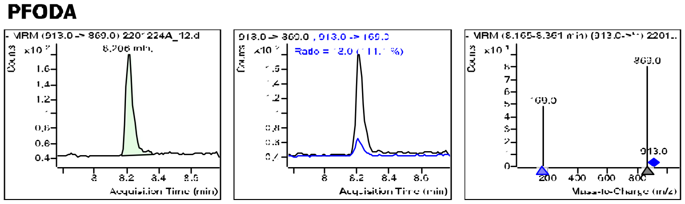

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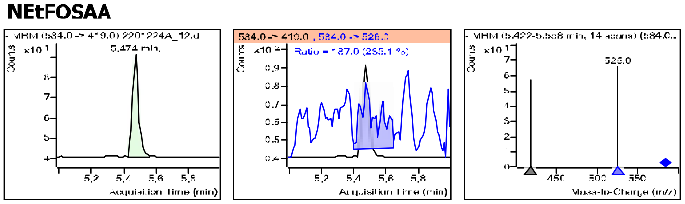

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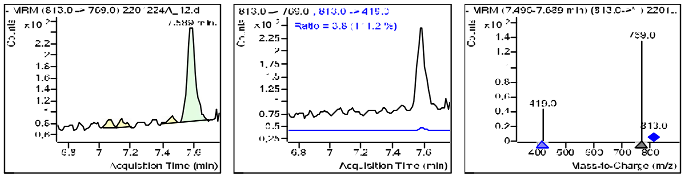

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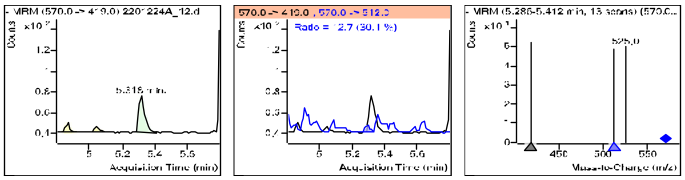

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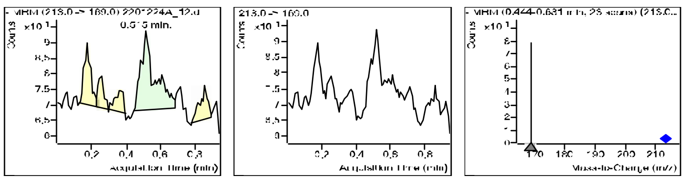

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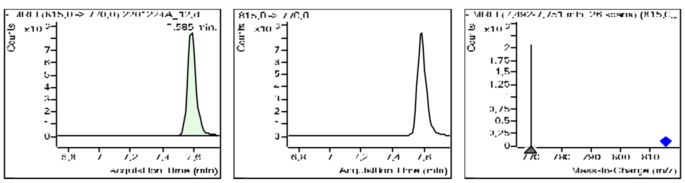

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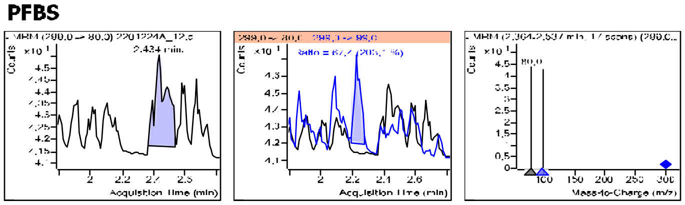

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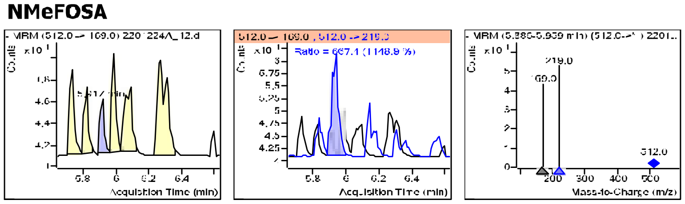

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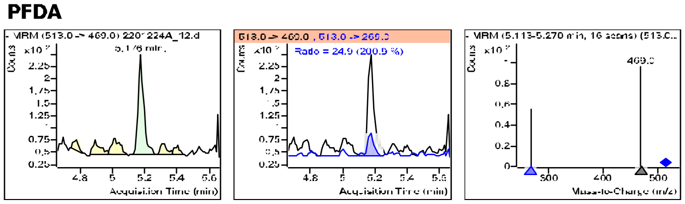

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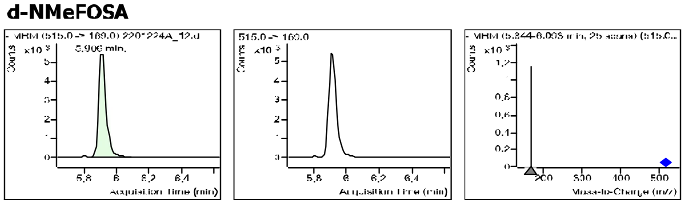

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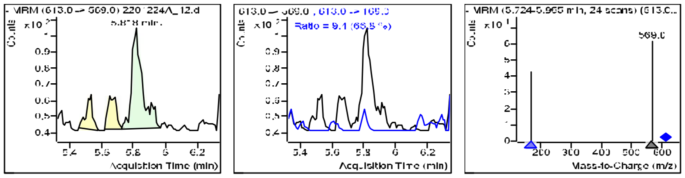

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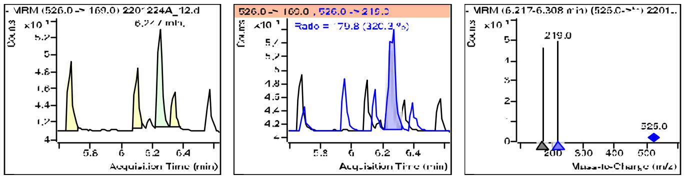

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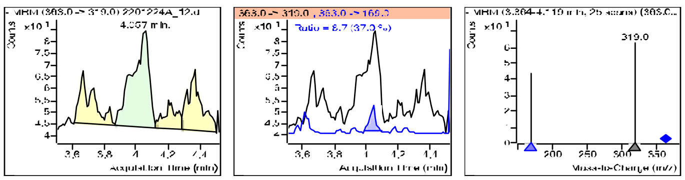

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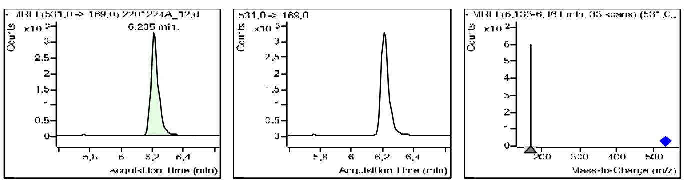

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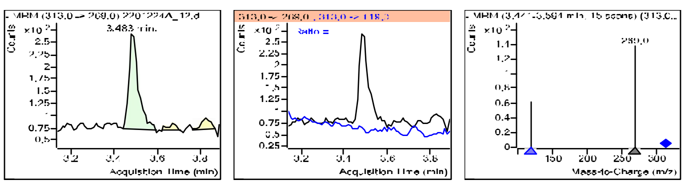

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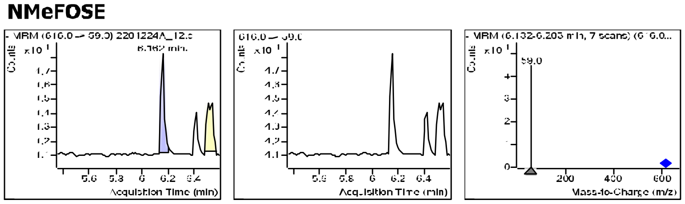

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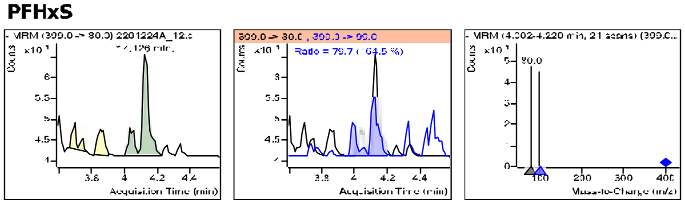

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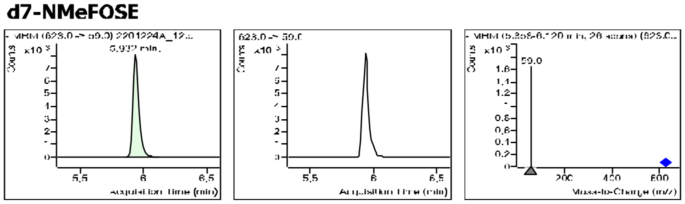

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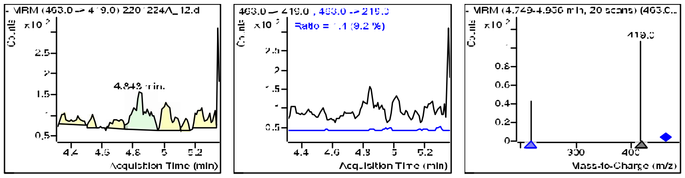

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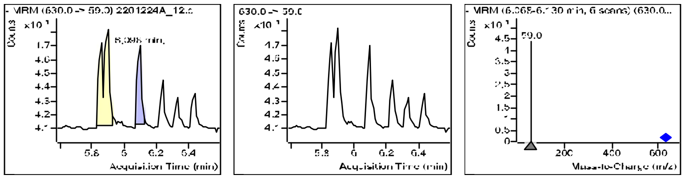

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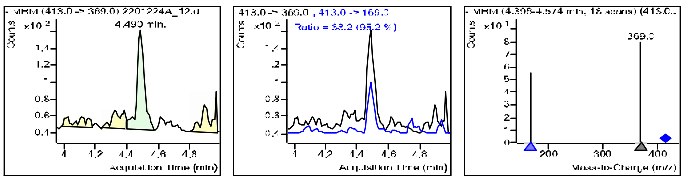

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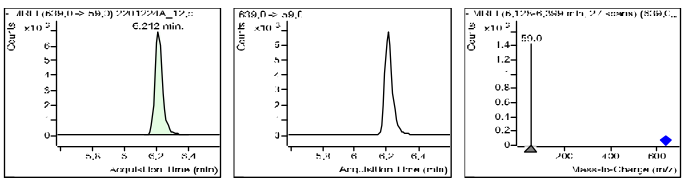

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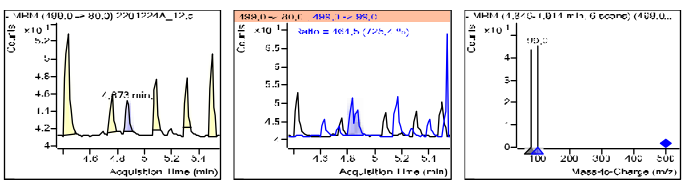

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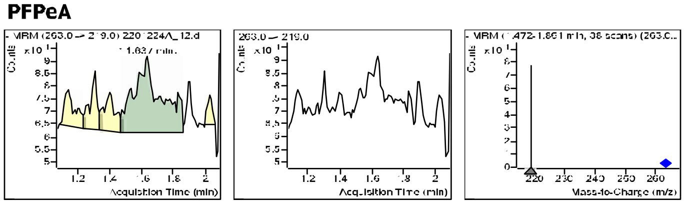

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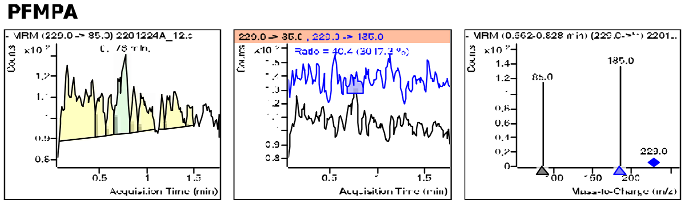

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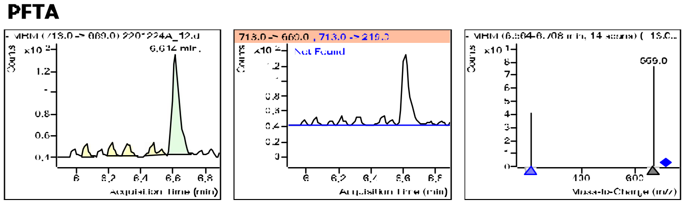

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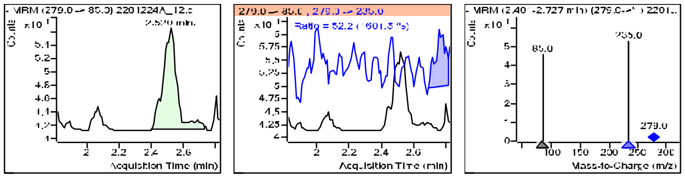

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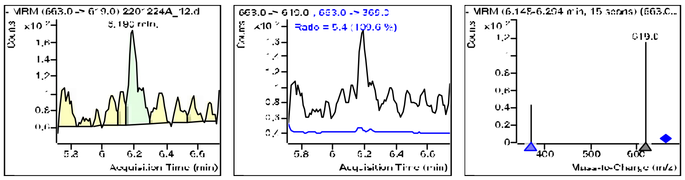

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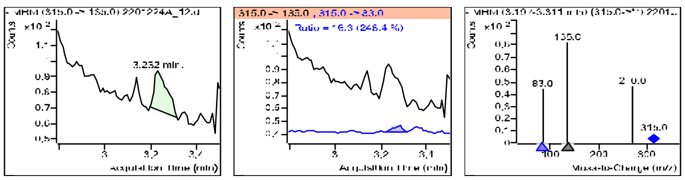

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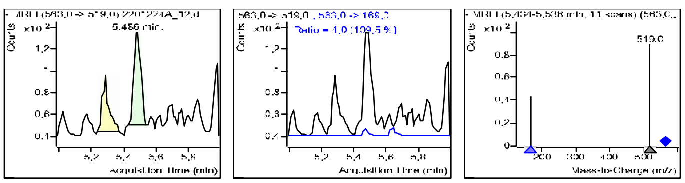

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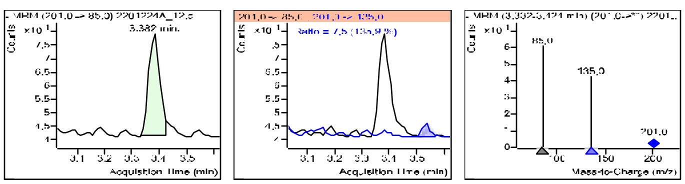

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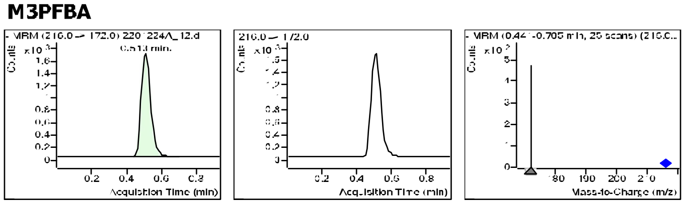

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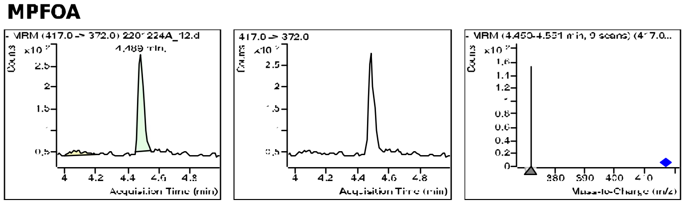

4I

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Report No:	220122279	Instrument ID:	QQQ2
Analysis Date:	01/04/2021 18:47	Lab File ID:	2210104B_10.d
Analytical Method:	EPA 537 Mod Isotope Dilution	Analytical Batch:	701166

ANALYTE	UNITS	RESULT	Q	DL	LOD	LOQ	#
6:2 Fluorotelomersulfonic acid	ng/L	4.00	U	1.79	4.00	10.0	
8:2 Fluorotelomersulfonic acid	ng/L	4.00	U	1.63	4.00	10.0	
Perfluorobutanesulfonic acid	ng/L	4.00	U	1.47	4.00	10.0	
Perfluorobutanoic acid	ng/L	4.00	U	2.13	4.00	10.0	
Perfluorodecanoic acid	ng/L	4.00	U	1.65	4.00	10.0	
Perfluoroheptanoic acid	ng/L	4.00	U	1.85	4.00	10.0	
Perfluorohexanesulfonic acid	ng/L	4.00	U	1.64	4.00	10.0	
Perfluorohexanoic acid	ng/L	4.00	U	1.94	4.00	10.0	
Perfluorononanoic acid	ng/L	4.00	U	1.68	4.00	10.0	
Perfluorooctanesulfonic acid	ng/L	4.00	U	1.70	4.00	10.0	
Perfluorooctanoic acid	ng/L	4.00	U	1.80	4.00	10.0	
Perfluoropentanoic acid	ng/L	4.00	U	2.35	4.00	10.0	
Perfluoroundecanoic acid	ng/L	4.00	U	1.86	4.00	10.0	

* - Result greater than 1/2 LOQ

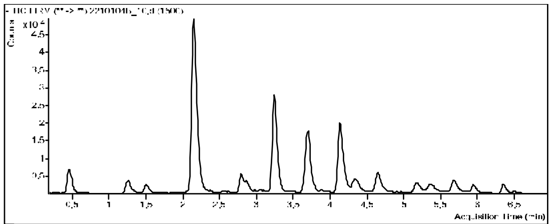
FORM 4I - ORG

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_10.d	**Position**	P1-A8	**Samp Name**	1500	**Dilution**	1
Acq Method	PFAS40Poroshell093020	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ2;Cal
Acq Date	1/4/2021 18:47						

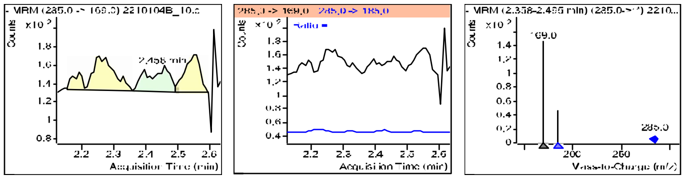
Sample Chromatogram



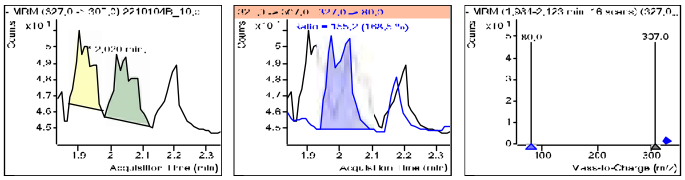
Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	78388.709	4.140				112.88	22.5762		2292.83	1.66	
M2PFHxA	223699.728	2.152				115.16	46.0630		619.87	1.59	
M2PFOA	94408.974	3.248				119.37	23.8741		3510.08	1.42	
M4PFOS	58320.926	3.703				115.38	23.0751		3830.48	1.52	
MPFOA	348.615	3.248				0.00	31.1829		5.90	3.15	
M3PFBA	3851.988	0.464				0.00	5.2539		22.35	1.64	
HFPO-DA	129.222	2.458	M3HFPODA	777	2.393	116.11	1.0967		2.69	0.68	
4:2 FTS	17.265	2.020	M2 4:2 FTS	2644	2.095	107.13	0.0207		0.65	1.77	m
6:2 FTS	19.320	3.217	M2 6:2 FTS	4867	3.226	107.68	0.0123		0.73	0.91	
ADONA	85.093	2.962	M8PFOA	23830	3.247	108.57	0.0054		1.70	0.81	
8:2 FTS	34.016	4.175	M2 8:2 FTS	4527	4.129	109.18	0.0209		1.50	1.05	
FOSA	58.645	4.326	M8FOSA	13273	4.325	98.39	0.0162		3.78	1.67	
9Cl-PF3ONS	67.315	3.970	M8PFOS	11173	3.702	108.44	0.0063		4.18	1.50	
PFDS	29.097	4.685	M6PFDA	17304	4.139	111.14	0.0103		0.71	1.01	m
11Cl-PF3OUdS	44.375	5.035	M8PFOS	11173	3.702	108.44	0.0044		1.07	0.79	m
PFHpS	15.119	3.279	M8PFOA	23830	3.247	108.57	0.0056		0.32	1.00	
10:2 FTS	33.868	5.174	M2 8:2 FTS	4527	4.129	109.18	0.0208		1.71	0.93	m
PFNS	30.951	4.126	M9PFNA	22404	3.669	108.38	0.0109		1.22	1.61	m
PFDoS	12.166	5.641	M8PFOS	11173	3.702	108.44	0.0036		0.73	1.12	
PFPeS	7.009	2.305	M5PFHxA	22153	2.151	106.92	0.0031		0.61	1.00	m
PFODA	69.435	6.706	M2PFHxDA	10780	6.348	96.58	0.0541		2.01	1.19	
NEtFOSAA	64.911	4.633	d5-NEtFOSAA	11927	4.641	110.10	0.0192		0.37	1.68	
PFHxDA	169.691	6.361	M2PFHxDA	10780	6.348	96.58	0.0857		0.91	1.30	
NMeFOSAA	132.749	4.394	d3-NMeFOSAA	7708	4.374	99.88	0.0419		3.56	0.85	m
PFBA	121.981	0.448	MPFBA	26251	0.463	107.08	0.0125		0.65	1.10	
PFBS	45.469	1.507	M3PFBS	10430	1.505	113.96	0.0171		3.10	1.22	
NMeFOSA	3.491	5.364	d-NMeFOSA	5860	5.353	97.45	0.0029		0.12	1.01	m
PFDA	120.674	4.131	M6PFDA	17304	4.139	111.14	0.0300		4.70	1.99	
PFDoA	93.493	5.233	MPFDoA	14936	5.177	110.44	0.0327		2.92	0.69	
NEtFOSA	21.581	5.658	d-NEtFOSA	6478	5.684	103.40	0.0132		0.69	0.92	
PFHpA	147.627	2.826	M4PFHpA	22841	2.797	111.42	0.0272		3.66	1.12	
PFHxA	214.762	2.134	M5PFHxA	22153	2.151	106.92	0.0425		3.07	1.07	
NMeFOSE	11.592	5.379	d7-NMeFOSE	7962	5.379	108.92	0.0050		1.04	1.21	
PFHxS	27.714	2.875	M3PFHxS	10479	2.874	109.75	0.0097		1.37	0.87	m
PFNA	57.376	3.652	M9PFNA	22404	3.669	108.38	0.0116		0.43	1.87	
NEtFOSE	8.783	5.693	d9-NEtFOSE	10515	5.682	106.64	0.0041		0.65	1.11	m
PFOA	323.316	3.249	M8PFOA	23830	3.247	108.57	0.0624		2.14	0.99	
PFOS	87.945	3.685	M8PFOS	11173	3.702	108.44	0.0247		1.18	1.70	m
PFPeA	115.807	1.265	M5PFPeA	18424	1.263	108.52	0.0197		6.36	0.98	
PFMPA	13.420	0.688	M5PFPeA	18424	1.263	108.52	0.0026		0.76	1.83	
PFTA	62.210	5.966	M2PFTA	9939	5.954	105.09	0.0363		0.51	0.77	m
PFMBA	23.424	1.557	M5PFHxA	22153	2.151	106.92	0.0042		1.45	2.15	
PFTrDA	116.214	5.691	MPFDoA	14936	5.177	110.44	0.0514		3.66	0.82	
PFEESA	52.531	1.895	M3PFHxS	10479	2.874	109.75	0.0057		1.77	2.25	
PFUnA	15.781	4.619	M7PFUnA	19058	4.662	114.15	0.0039		0.16	0.74	m
NFDHA	12.653	1.990	M4PFHpA	22841	2.797	111.42	0.0028		0.44	1.50	

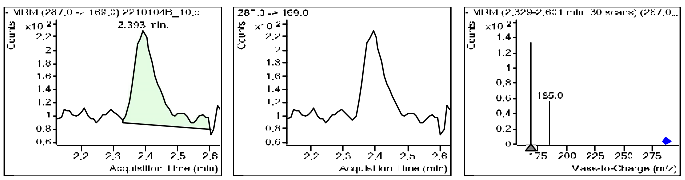
HFPO-DA



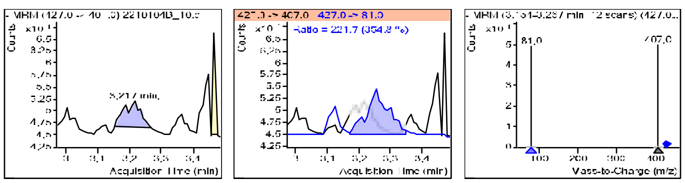
4:2 FTS



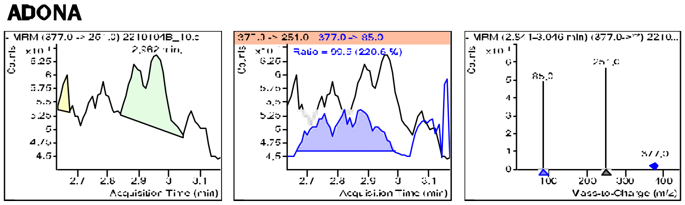
M3HFPODA



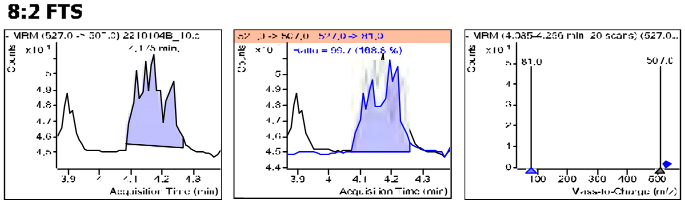
6:2 FTS



ADONA



8:2 FTS



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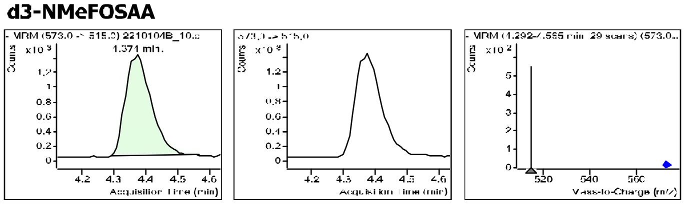

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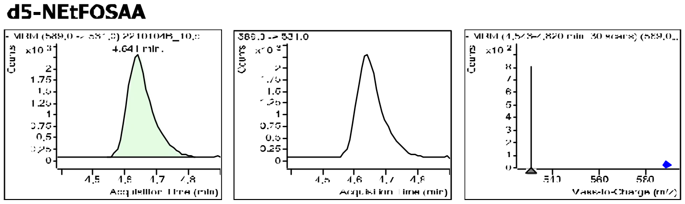
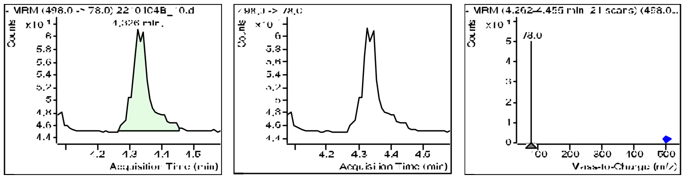
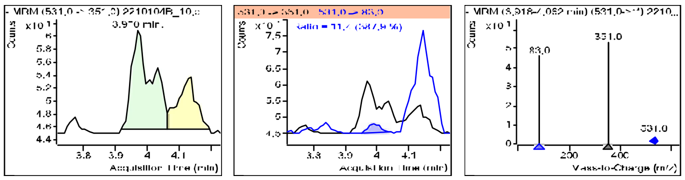


Quantitative Analysis Sample Report

FOSA



9Cl-PF3ONS



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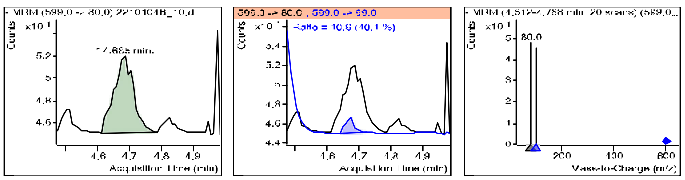

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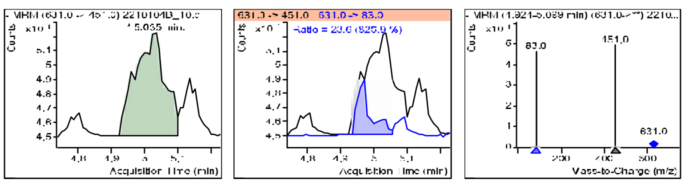
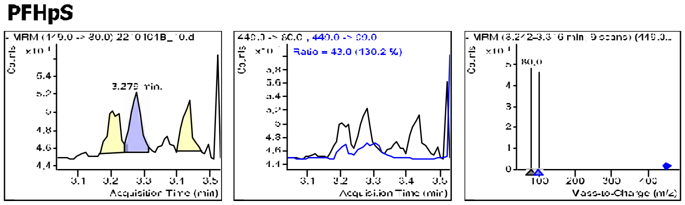
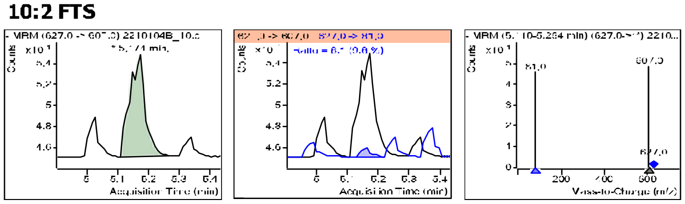


PFHpS



10:2 FTS



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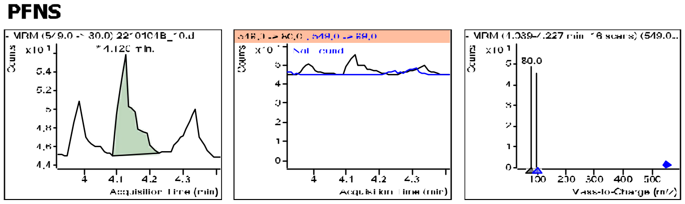

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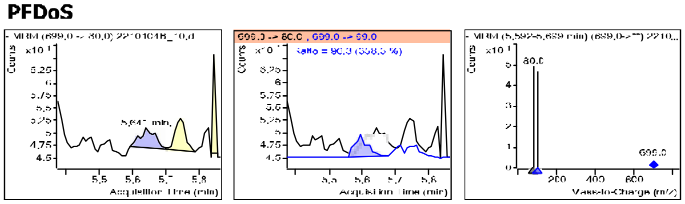

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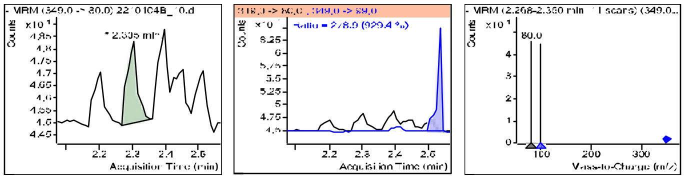

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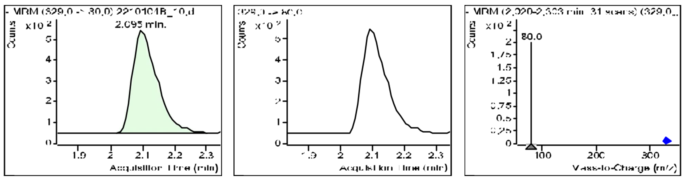
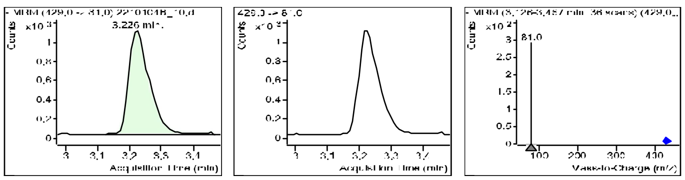
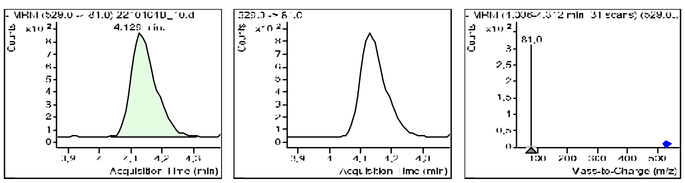


M2 6:2 FTS



M2 8:2 FTS



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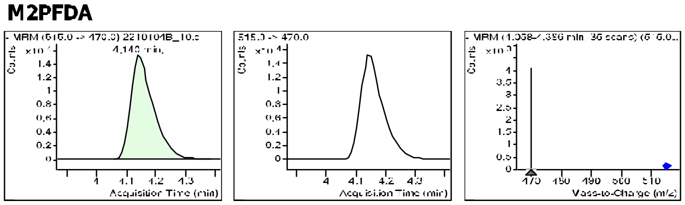

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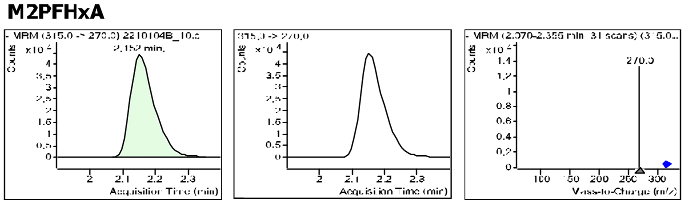

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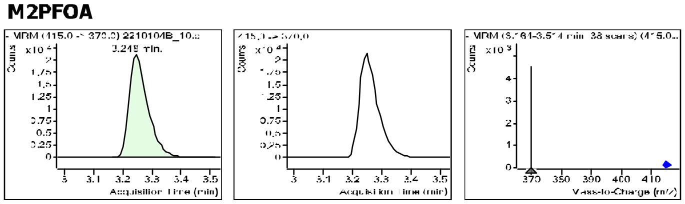

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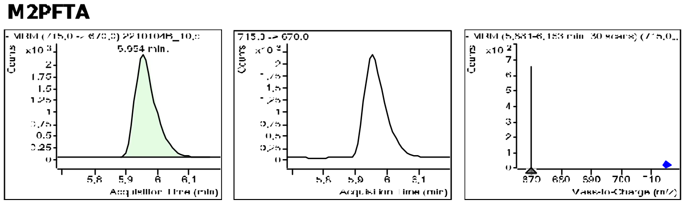

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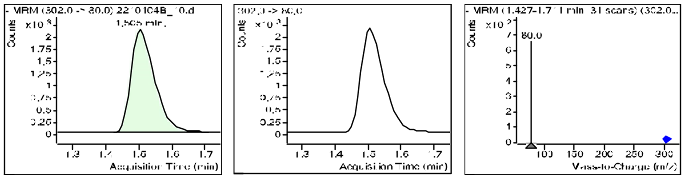

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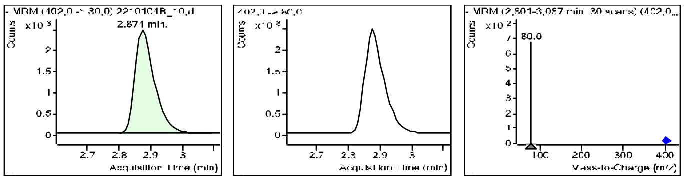

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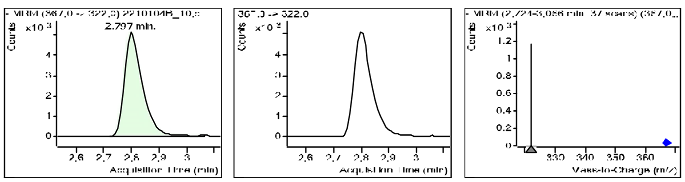

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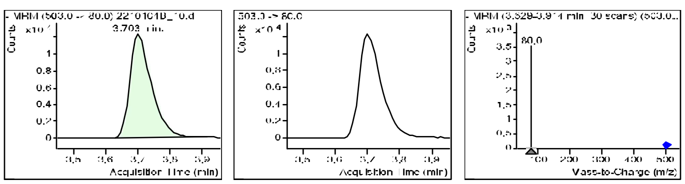

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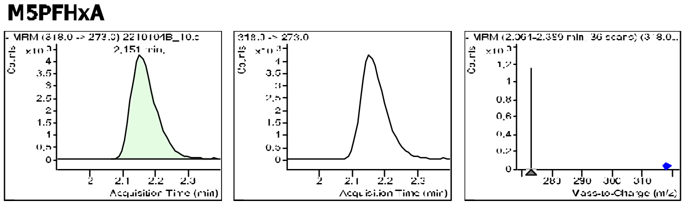

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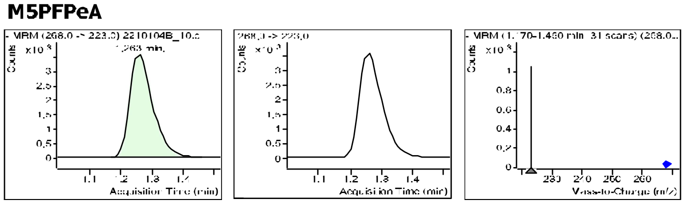

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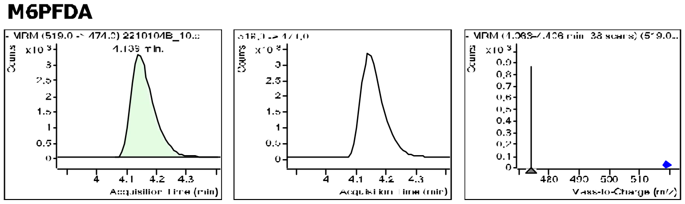

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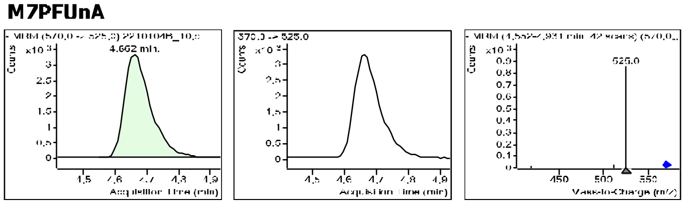
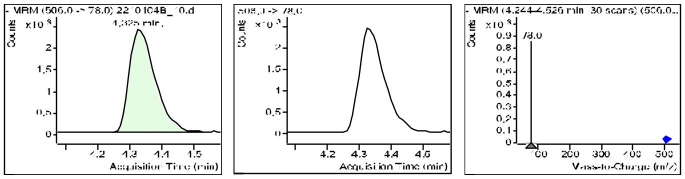


Quantitative Analysis Sample Report

M8FOSA



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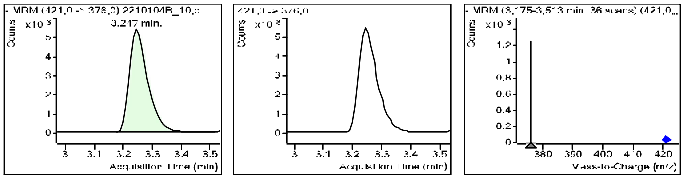

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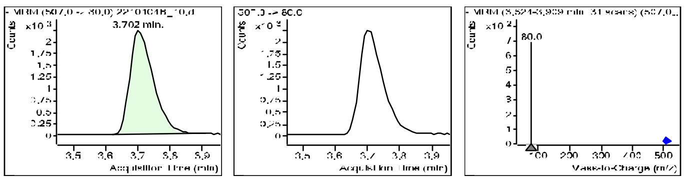

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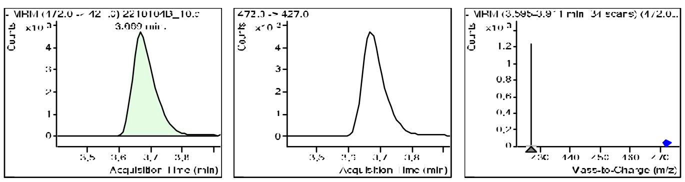

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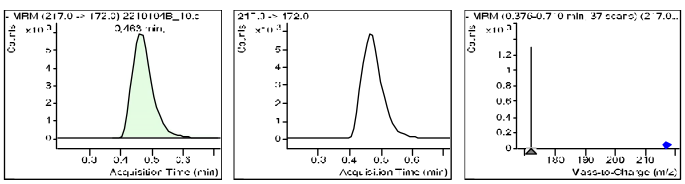

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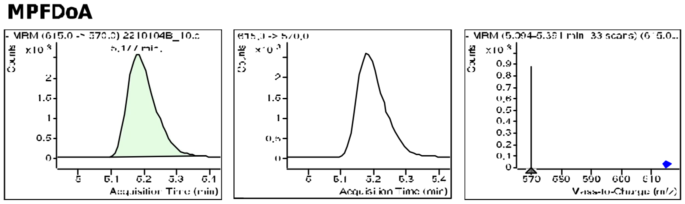

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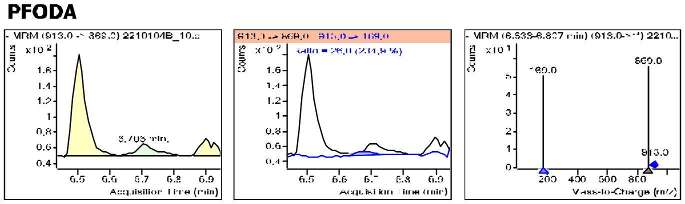

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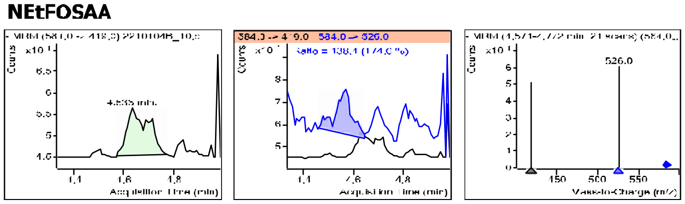
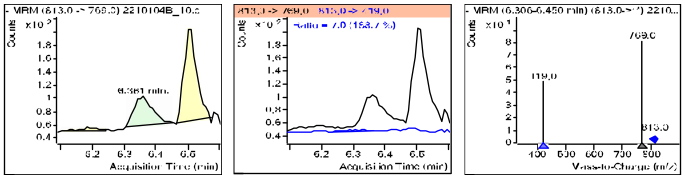


PFHxDA



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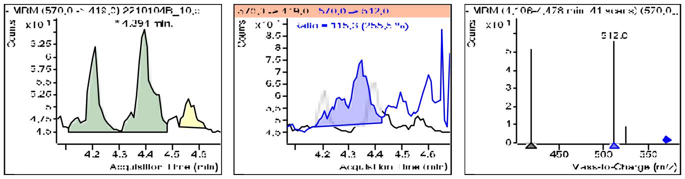

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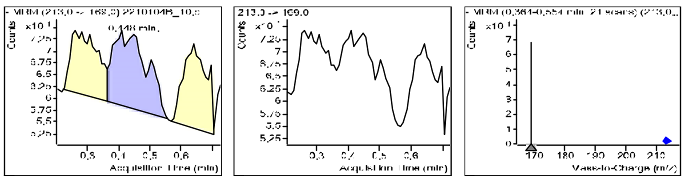

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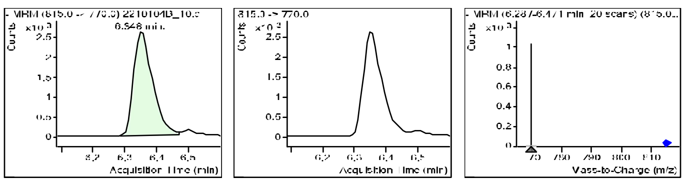

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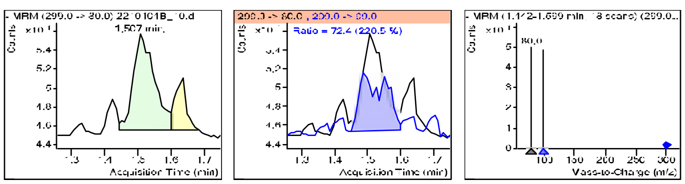

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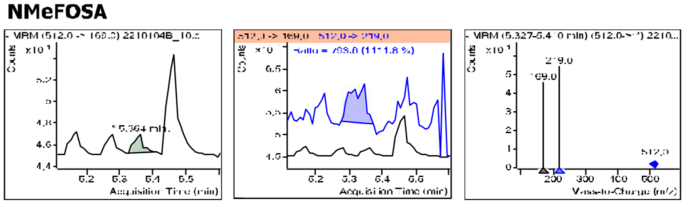

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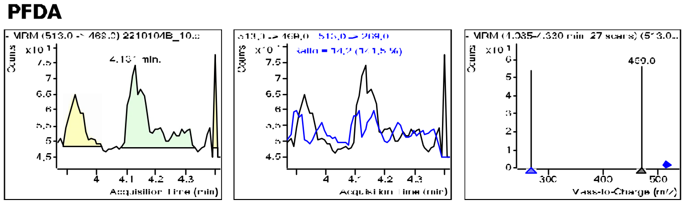

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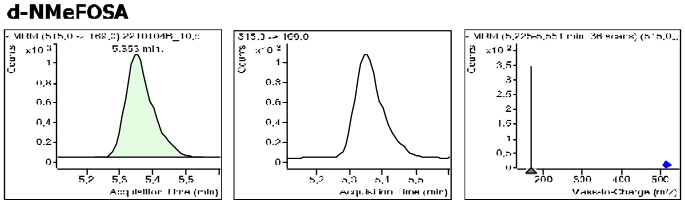

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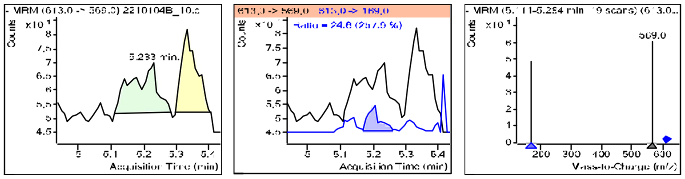

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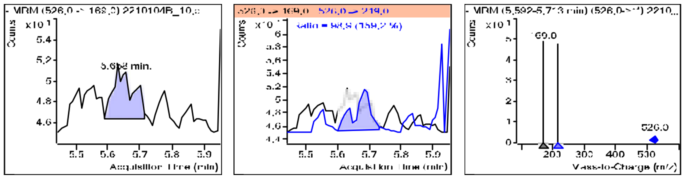

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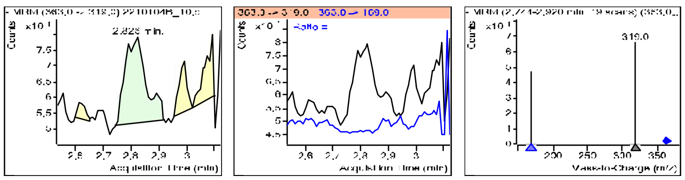

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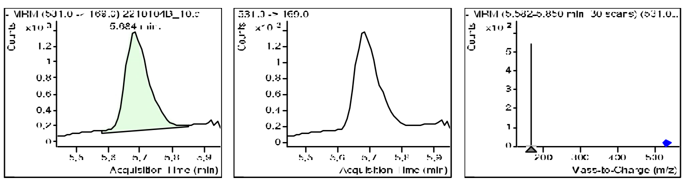

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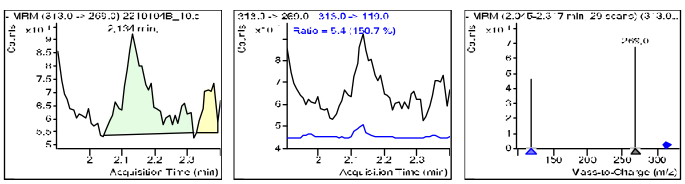

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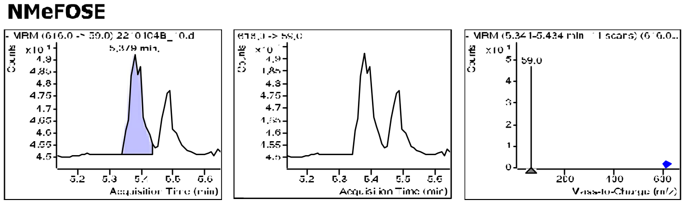

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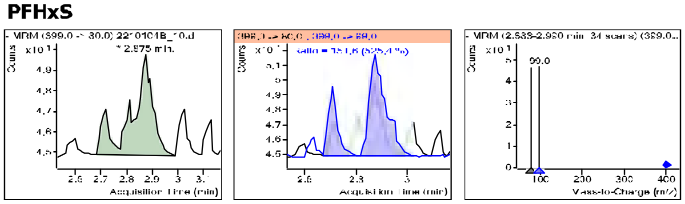

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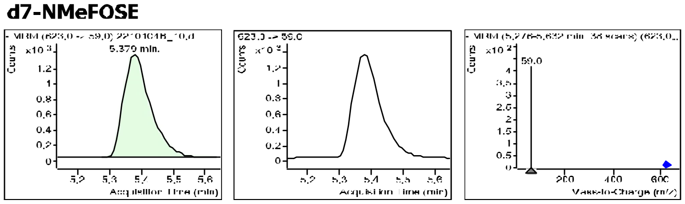

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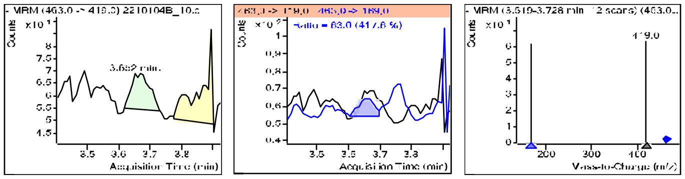
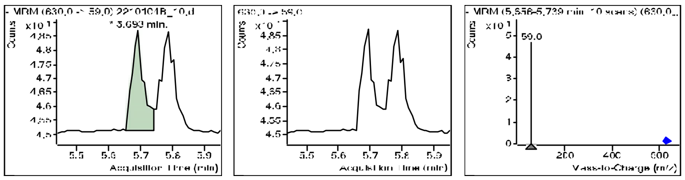


NEtFOSE



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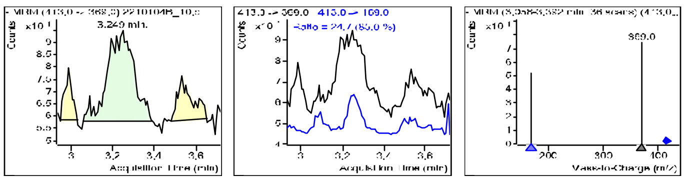
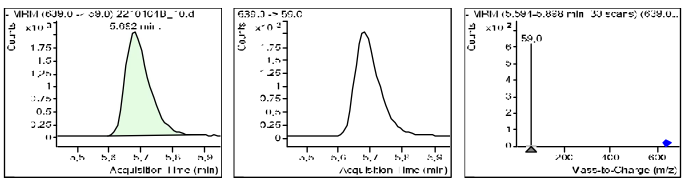


d9-NEtFOSE



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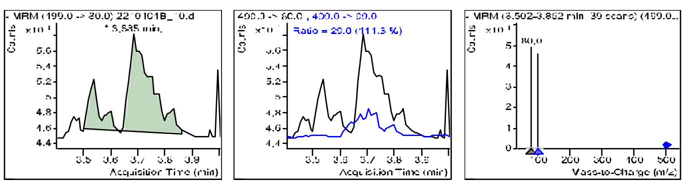

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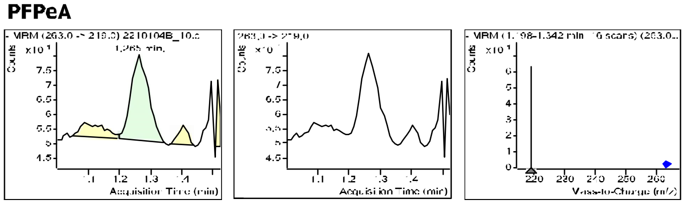

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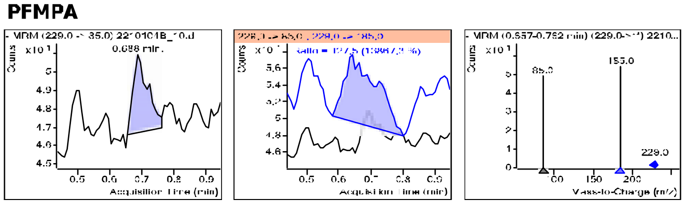

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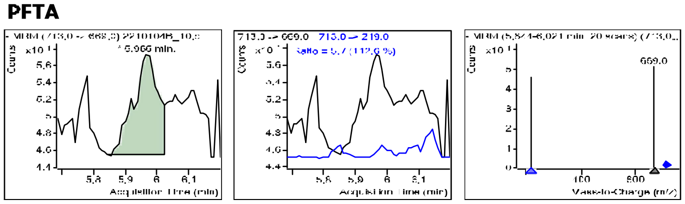

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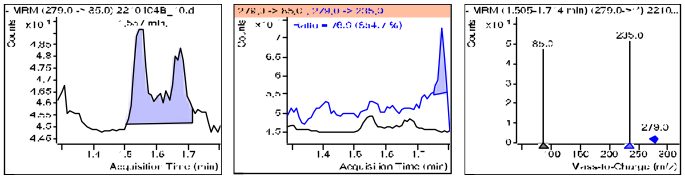

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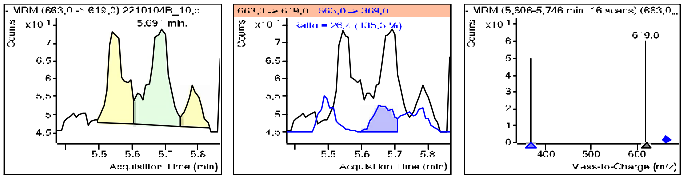
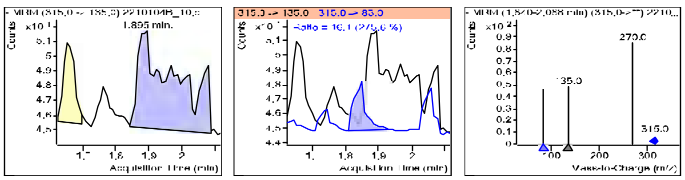


PFEESA



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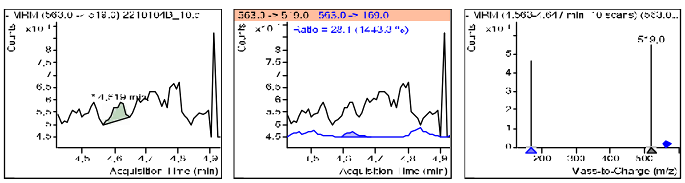
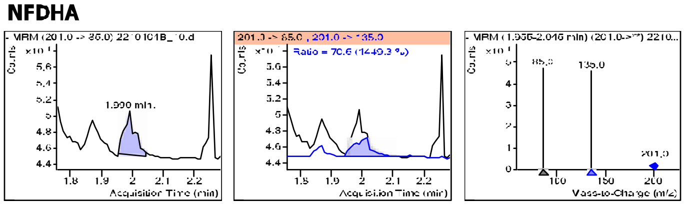


NFDHA



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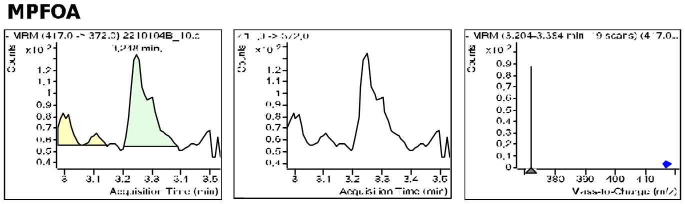

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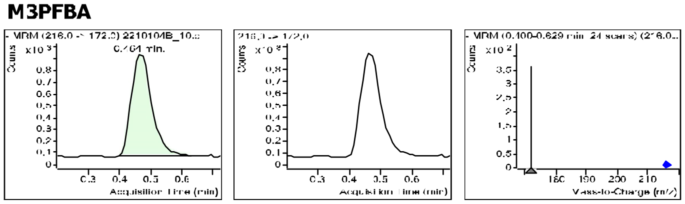

PFAS Isotope Dilution QSM B15

Form 5E

Tunes

QQQ Check Tune Report

Agilent Technologies

Instrument Name	Instrument 1
MS Model	G6460A
MS Instrument Serial	SG11477210
Software_Firmware Version	B.09.00.B9037.0, FW: A.00.08.64
Tune Date & Time	24 December 2020 09:09:28
Data Path	D:\MassHunter\Tune\QQQ\G6460A\atunes.tune.xml
Ion Source	AJS ESI
Ionization Mode	AJS ESI
Tuned Resolution	All
Vacuum Pressure	1.84E+0[R]; 1.92E-5[H]

Source Parameters

Parameter	Value
Gas Temp	300
Gas Flow	10
Nebulizer	15
Capillary	4000
Nozzle Voltage	1500
Sheath Gas Temp	250
Sheath Gas Flow	7

Positive Results

Analyzer: MS1 Polarity: Positive Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
118.09	118.08	-0.01	Pass	0.70	0.72	0.02	Pass	108602
322.05	322.06	0.01	Pass	0.70	0.70	0.00	Pass	44387
622.03	622.02	-0.01	Pass	0.70	0.67	-0.03	Pass	106454
922.01	922.00	-0.01	Pass	0.70	0.70	0.00	Pass	117335
1521.97	1521.96	-0.01	Pass	0.70	0.72	0.02	Pass	34259
2121.93	2121.91	-0.02	Pass	0.70	0.72	0.02	Pass	14222

Analyzer: MS2 Polarity: Positive Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
118.09	118.09	0.00	Pass	0.70	0.74	0.04	Pass	134444
322.05	322.02	-0.03	Pass	0.70	0.72	0.02	Pass	48478
622.03	621.99	-0.04	Pass	0.70	0.74	0.04	Pass	102196
922.01	921.94	-0.07	Pass	0.70	0.77	0.07	Pass	130407
1521.97	1521.91	-0.06	Pass	0.70	0.76	0.06	Pass	78505
2121.93	2121.75	-0.18	Pass	0.70	0.76	0.06	Pass	46602

Analyzer: MS1 Polarity: Positive Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
118.09	118.14	0.05	Pass	1.20	1.19	-0.01	Pass	143598
322.05	322.07	0.02	Pass	1.20	1.44	0.24	Pass	63187
622.03	622.05	0.02	Pass	1.20	1.30	0.10	Pass	158747
922.01	921.93	-0.08	Pass	1.20	1.29	0.09	Pass	201654
1521.97	1521.97	0.00	Pass	1.20	1.24	0.04	Pass	101141
2121.93	2121.81	-0.12	Pass	1.20	1.29	0.09	Pass	60853

Analyzer: MS2 Polarity: Positive Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
118.09	118.15	0.06	Pass	1.20	1.21	0.01	Pass	183536
322.05	322.02	-0.03	Pass	1.20	1.46	0.26	Pass	78024
622.03	621.96	-0.07	Pass	1.20	1.33	0.13	Pass	182217
922.01	921.93	-0.08	Pass	1.20	1.31	0.11	Pass	262131
1521.97	1521.87	-0.10	Pass	1.20	1.14	-0.06	Pass	195597
2121.93	2121.79	-0.14	Pass	1.20	1.17	-0.03	Pass	162935

Analyzer: MS1 Polarity: Positive Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
118.09	117.95	-0.14	Pass	2.50	2.43	-0.07	Pass	208217
322.05	322.07	0.02	Pass	2.50	2.63	0.13	Pass	86756
622.03	622.06	0.03	Pass	2.50	2.57	0.07	Pass	204606
922.01	922.05	0.04	Pass	2.50	2.51	0.01	Pass	289433
1521.97	1521.97	0.00	Pass	2.50	2.37	-0.13	Pass	183719
2121.93	2121.82	-0.11	Pass	2.50	2.32	-0.18	Pass	128474

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Analyzer: MS2   Polarity: Positive   Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
118.09	118.18	0.09	Pass	2.50	2.48	-0.02	Pass	243792
322.05	322.03	-0.02	Pass	2.50	2.71	0.21	Pass	121219
622.03	622.00	-0.03	Pass	2.50	2.55	0.05	Pass	254316
922.01	921.90	-0.11	Pass	2.50	2.52	0.02	Pass	414481
1521.97	1521.86	-0.11	Pass	2.50	2.55	0.05	Pass	395804
2121.93	2121.78	-0.15	Pass	2.50	2.69	0.19	Pass	387344

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Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.87	-0.12	Pass	0.70	0.81	0.11	Pass	107075
302.00	301.96	-0.04	Pass	0.70	0.74	0.04	Pass	45383
601.98	601.99	0.01	Pass	0.70	0.71	0.01	Pass	96336
1033.99	1034.00	0.01	Pass	0.70	0.73	0.03	Pass	182381
1633.95	1633.93	-0.02	Pass	0.70	0.70	0.00	Pass	212240
2233.91	2233.94	0.03	Pass	0.70	0.79	0.09	Pass	139415

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.99	0.00	Pass	0.70	0.66	-0.04	Pass	159111
302.00	301.95	-0.05	Pass	0.70	0.68	-0.02	Pass	57864
601.98	601.91	-0.07	Pass	0.70	0.71	0.01	Pass	78732
1033.99	1033.91	-0.08	Pass	0.70	0.71	0.01	Pass	169116
1633.95	1633.82	-0.13	Pass	0.70	0.73	0.03	Pass	330914
2233.91	2233.81	-0.10	Pass	0.70	0.67	-0.03	Pass	188785

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.85	-0.14	Pass	1.20	1.27	0.07	Pass	146511
302.00	301.96	-0.04	Pass	1.20	1.30	0.10	Pass	67433
601.98	601.97	-0.01	Pass	1.20	1.21	0.01	Pass	152149
1033.99	1033.97	-0.02	Pass	1.20	1.13	-0.07	Pass	366033
1633.95	1633.92	-0.03	Pass	1.20	1.10	-0.10	Pass	799117
2233.91	2233.92	0.01	Pass	1.20	1.11	-0.09	Pass	624202

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.03	0.04	Pass	1.20	1.20	0.00	Pass	196368
302.00	301.96	-0.04	Pass	1.20	1.22	0.02	Pass	84657
601.98	601.90	-0.08	Pass	1.20	1.30	0.10	Pass	125729
1033.99	1033.94	-0.05	Pass	1.20	1.26	0.06	Pass	339199
1633.95	1633.81	-0.14	Pass	1.20	1.14	-0.06	Pass	818397
2233.91	2233.75	-0.16	Pass	1.20	1.12	-0.08	Pass	700762

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.78	-0.21	Pass	2.50	2.59	0.09	Pass	221463
302.00	301.97	-0.03	Pass	2.50	2.67	0.17	Pass	92147
601.98	601.97	-0.01	Pass	2.50	2.73	0.23	Pass	194945
1033.99	1033.99	0.00	Pass	2.50	2.73	0.23	Pass	606931
1633.95	1634.03	0.08	Pass	2.50	2.76	0.26	Pass	1754473
2233.91	2233.88	-0.03	Pass	2.50	2.89	0.39	Pass	1763529

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.94	-0.05	Pass	2.50	2.50	0.00	Pass	242321
302.00	301.96	-0.04	Pass	2.50	2.50	0.00	Pass	119790
601.98	601.87	-0.11	Pass	2.50	2.63	0.13	Pass	183399
1033.99	1033.88	-0.11	Pass	2.50	2.53	0.03	Pass	566808
1633.95	1633.91	-0.04	Pass	2.50	2.52	0.02	Pass	1757864
2233.91	2233.84	-0.07	Pass	2.50	2.57	0.07	Pass	1859172

QQQ Check Tune Report

Agilent Technologies

Instrument Name	Instrument 1
MS Model	G6460A
MS Instrument Serial	SG13107204
Software_Firmware Version	B.09.00.B9037.0, FW: A.00.08.64
Tune Date & Time	04 January 2021 08:42:50
Data Path	D:\MassHunter\Tune\QQQ\G6460A\atunes.TUNE.XML
Ion Source	AJS ESI
Ionization Mode	AJS ESI
Tuned Resolution	All
Vacuum Pressure	1.70E+0[R]; 1.21E-5[H]

Source Parameters

Parameter	Value
Gas Temp	300
Gas Flow	10
Nebulizer	15
Capillary	4000
Nozzle Voltage	1500
Sheath Gas Temp	250
Sheath Gas Flow	7

Positive Results

Analyzer: MS1 Polarity: Positive Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
118.09	118.03	-0.06	Pass	0.70	0.77	0.07	Pass	291797
322.05	322.06	0.01	Pass	0.70	0.69	-0.01	Pass	136464
622.03	622.01	-0.02	Pass	0.70	0.71	0.01	Pass	186483
922.01	921.96	-0.05	Pass	0.70	0.69	-0.01	Pass	145150
1521.97	1521.95	-0.02	Pass	0.70	0.71	0.01	Pass	47897
2121.93	2121.86	-0.07	Pass	0.70	0.78	0.08	Pass	35998

Analyzer: MS2 Polarity: Positive Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
118.09	118.07	-0.02	Pass	0.70	0.75	0.05	Pass	273036
322.05	322.01	-0.04	Pass	0.70	0.73	0.03	Pass	101186
622.03	622.03	0.00	Pass	0.70	0.75	0.05	Pass	133295
922.01	921.96	-0.05	Pass	0.70	0.65	-0.05	Pass	89775
1521.97	1521.87	-0.10	Pass	0.70	0.78	0.08	Pass	54912
2121.93	2121.92	-0.01	Pass	0.70	0.65	-0.05	Pass	28002

Analyzer: MS1 Polarity: Positive Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
118.09	118.02	-0.07	Pass	1.20	1.21	0.01	Pass	345583
322.05	322.06	0.01	Pass	1.20	1.22	0.02	Pass	176174
622.03	621.97	-0.06	Pass	1.20	1.07	-0.13	Pass	238075
922.01	921.92	-0.09	Pass	1.20	1.08	-0.12	Pass	207168
1521.97	1521.94	-0.03	Pass	1.20	1.12	-0.08	Pass	81315
2121.93	2121.79	-0.14	Pass	1.20	1.26	0.06	Pass	67366

Analyzer: MS2 Polarity: Positive Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
118.09	118.00	-0.09	Pass	1.20	1.21	0.01	Pass	388077
322.05	322.12	0.07	Pass	1.20	1.31	0.11	Pass	199307
622.03	621.91	-0.12	Pass	1.20	1.31	0.11	Pass	298685
922.01	921.84	-0.17	Pass	1.20	1.37	0.17	Pass	254346
1521.97	1521.79	-0.18	Pass	1.20	1.27	0.07	Pass	139834
2121.93	2121.63	-0.30	Pass	1.20	1.18	-0.02	Pass	115456

Analyzer: MS1 Polarity: Positive Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
118.09	117.96	-0.13	Pass	2.50	2.44	-0.06	Pass	475711
322.05	322.08	0.03	Pass	2.50	2.52	0.02	Pass	234840
622.03	622.02	-0.01	Pass	2.50	2.45	-0.05	Pass	349823
922.01	922.15	0.14	Pass	2.50	2.30	-0.20	Pass	376260
1521.97	1522.07	0.10	Pass	2.50	2.27	-0.23	Pass	180087
2121.93	2121.86	-0.07	Pass	2.50	2.35	-0.15	Pass	167147

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Analyzer: MS2 Polarity: Positive Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
118.09	117.82	-0.27	Pass	2.50	2.51	0.01	Pass	575385
322.05	322.00	-0.05	Pass	2.50	2.73	0.23	Pass	326419
622.03	622.09	0.06	Pass	2.50	2.66	0.16	Pass	506749
922.01	921.83	-0.18	Pass	2.50	2.87	0.37	Pass	461312
1521.97	1521.97	0.00	Pass	2.50	2.90	0.40	Pass	384445
2121.93	2121.85	-0.08	Pass	2.50	3.06	0.56	Pass	459825

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Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.93	-0.06	Pass	0.70	0.78	0.08	Pass	119109
302.00	301.96	-0.04	Pass	0.70	0.73	0.03	Pass	69442
601.98	601.92	-0.06	Pass	0.70	0.72	0.02	Pass	118829
1033.99	1033.89	-0.10	Pass	0.70	0.72	0.02	Pass	193906
1633.95	1633.92	-0.03	Pass	0.70	0.69	-0.01	Pass	323495
2233.91	2233.83	-0.08	Pass	0.70	0.70	0.00	Pass	163618

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.98	-0.01	Pass	0.70	0.71	0.01	Pass	87359
302.00	302.00	0.00	Pass	0.70	0.72	0.02	Pass	54833
601.98	601.93	-0.05	Pass	0.70	0.69	-0.01	Pass	73045
1033.99	1033.90	-0.09	Pass	0.70	0.70	0.00	Pass	113832
1633.95	1633.83	-0.12	Pass	0.70	0.76	0.06	Pass	240154
2233.91	2233.76	-0.15	Pass	0.70	0.79	0.09	Pass	178819

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.88	-0.11	Pass	1.20	1.25	0.05	Pass	139315
302.00	302.00	0.00	Pass	1.20	1.19	-0.01	Pass	92476
601.98	601.91	-0.07	Pass	1.20	1.14	-0.06	Pass	184130
1033.99	1033.98	-0.01	Pass	1.20	1.02	-0.18	Pass	330974
1633.95	1633.87	-0.08	Pass	1.20	1.01	-0.19	Pass	728507
2233.91	2233.81	-0.10	Pass	1.20	1.30	0.10	Pass	524683

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.93	-0.06	Pass	1.20	1.18	-0.02	Pass	111148
302.00	301.91	-0.09	Pass	1.20	1.28	0.08	Pass	94806
601.98	601.98	0.00	Pass	1.20	1.39	0.19	Pass	174091
1033.99	1033.92	-0.07	Pass	1.20	1.46	0.26	Pass	364536
1633.95	1633.71	-0.24	Pass	1.20	1.61	0.41	Pass	969695
2233.91	2233.61	-0.30	Pass	1.20	1.61	0.41	Pass	1039386

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.79	-0.20	Pass	2.50	2.61	0.11	Pass	183076
302.00	302.04	0.04	Pass	2.50	2.56	0.06	Pass	113916
601.98	601.86	-0.12	Pass	2.50	2.41	-0.09	Pass	233578
1033.99	1034.16	0.17	Pass	2.50	2.23	-0.27	Pass	511513
1633.95	1633.83	-0.12	Pass	2.50	2.24	-0.26	Pass	1341396
2233.91	2233.73	-0.18	Pass	2.50	2.33	-0.17	Pass	1159607

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.92	-0.07	Pass	2.50	2.77	0.27	Pass	169663
302.00	301.84	-0.16	Pass	2.50	2.74	0.24	Pass	149547
601.98	601.68	-0.30	Pass	2.50	2.86	0.36	Pass	260179
1033.99	1033.80	-0.19	Pass	2.50	3.02	0.52	Pass	696644
1633.95	1633.77	-0.18	Pass	2.50	3.15	0.65	Pass	2456482
2233.91	2233.49	-0.42	Pass	2.50	3.57	1.07	Pass	2624757

PFAS Isotope Dilution QSM B15

Form 6E

Calibrations

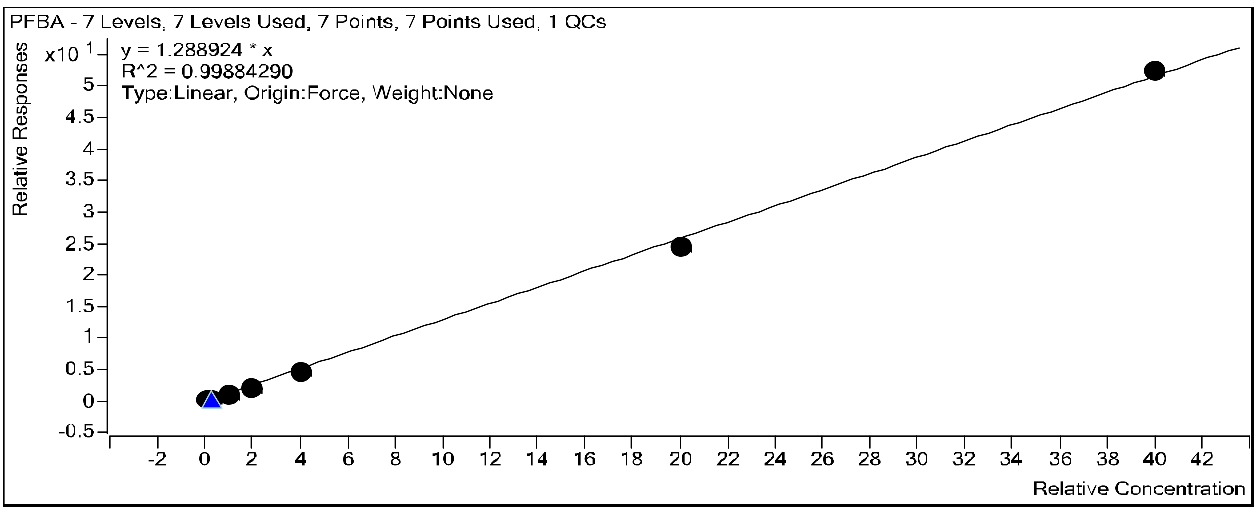
Quantitative Analysis Calibration Report

Batch Data Path	D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin		
Analysis Time	1/14/2021 9:10 AM	**Analyst Name**	GCAL\lcms
Report Time	1/14/2021 9:14 AM	**Reporter Name**	GCAL\lcms
Last Calib Update	12/24/2020 3:17 PM	**Batch State**	Processed

Calibration Info

Target Compound *PFBA*

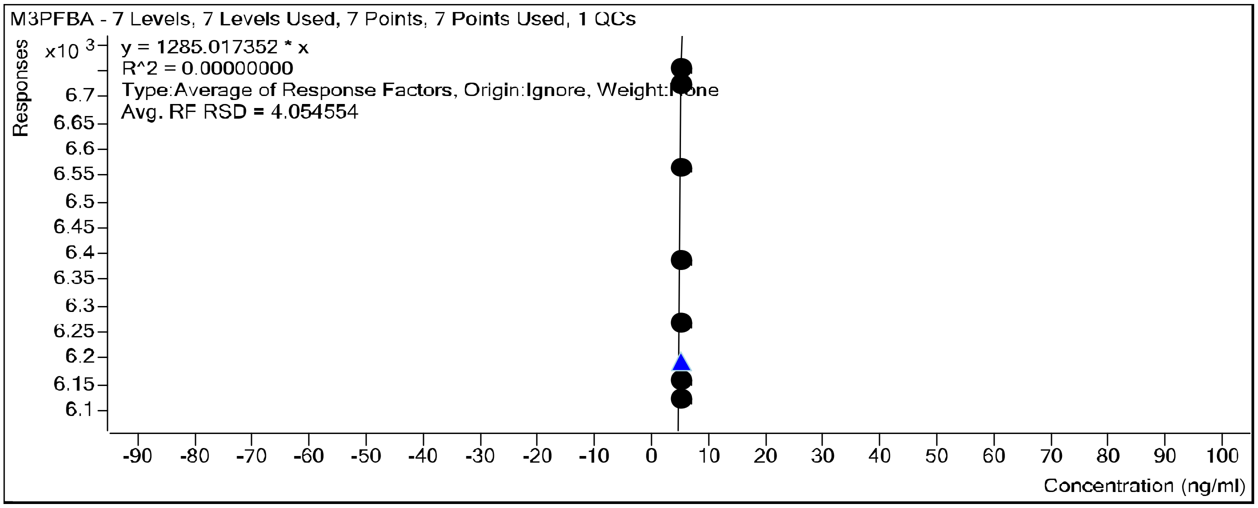
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	4165	0.5000	1.1860
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	9322	1.2500	1.0768
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	43295	5.0000	1.1922
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	81450	10.0000	1.1231
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	166398	20.0000	1.1370
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	883327	100.0000	1.2243
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	1692681	200.0000	1.3071



Instrument ISTD *M3PFBA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	6156	5.0000	1231.1254
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	6123	5.0000	1224.5732
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	6725	5.0000	1345.0660
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	6754	5.0000	1350.7240
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	6386	5.0000	1277.2520
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	6563	5.0000	1312.6821
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	6268	5.0000	1253.6988

Quantitative Analysis Calibration Report



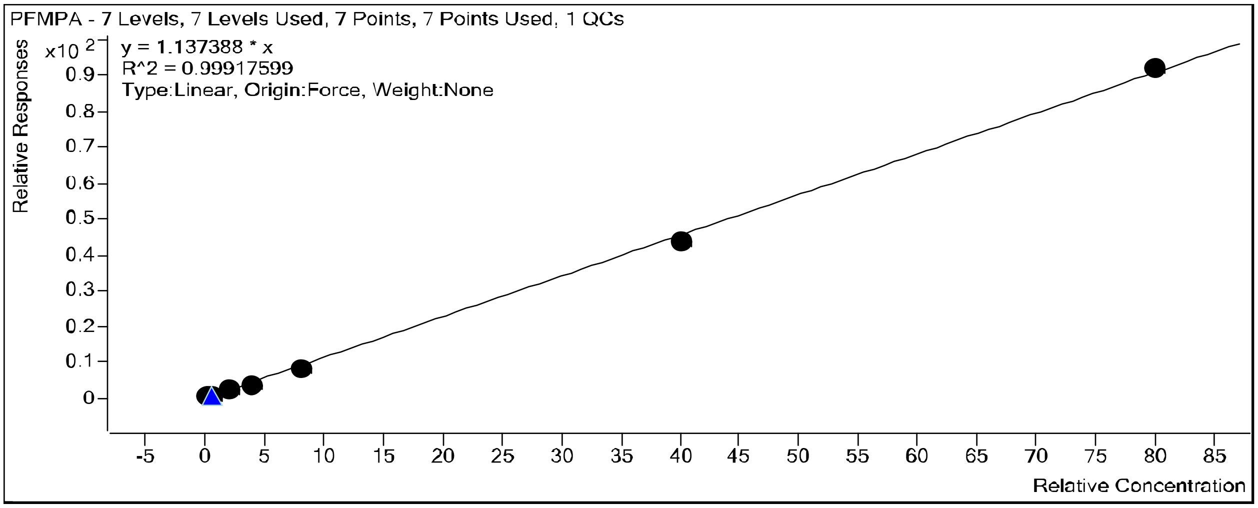
Extracted ISTD *MPFBA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	35115	5.0000	7023.0854
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	34626	5.0000	6925.1690
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	36315	5.0000	7262.9669
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	36260	5.0000	7251.9506
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	36586	5.0000	7317.1578
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	36075	5.0000	7215.0088
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	32375	5.0000	6475.0241

Target Compound *PFMPA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	3280	1.0000	0.9887
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	7942	2.5000	0.9635
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	36975	10.0000	1.0612
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	68183	20.0000	0.9939
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	142350	40.0000	1.0278
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	742898	200.0000	1.0896
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	1445520	400.0000	1.1509

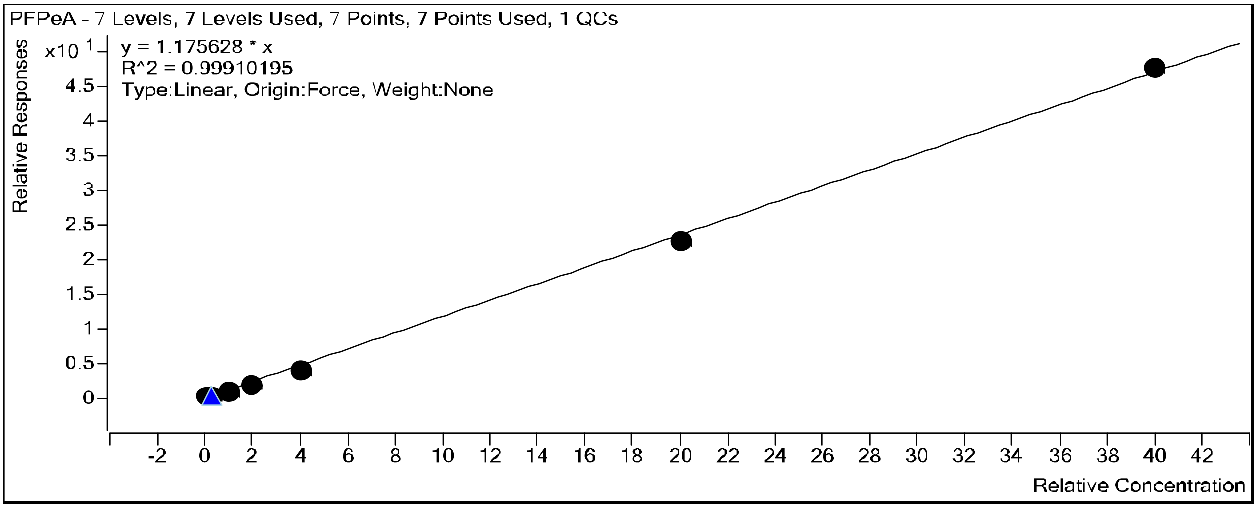
Quantitative Analysis Calibration Report



Extracted ISTD	*M5PFPeA*					
Calibration STD	**Cal Type**	**Level**	**Enabled**	**Response**	**Exp Conc (ng/mL)**	**RF**
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	16589	5.0000	3317.8142
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	16485	5.0000	3296.9173
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	17421	5.0000	3484.1517
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	17150	5.0000	3430.0518
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	17313	5.0000	3462.5456
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	17046	5.0000	3409.1734
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	15700	5.0000	3140.0991

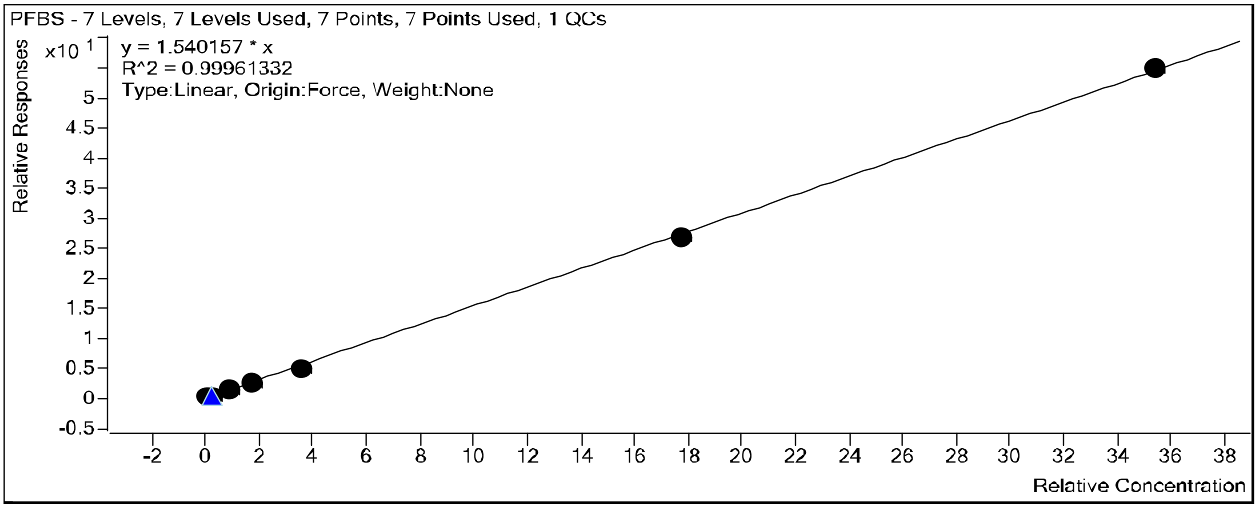
Target Compound	*PFPeA*					
Calibration STD	**Cal Type**	**Level**	**Enabled**	**Response**	**Exp Conc (ng/mL)**	**RF**
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	1969	0.5000	1.1867
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	4039	1.2500	0.9800
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	18316	5.0000	1.0514
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	33741	10.0000	0.9837
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	69746	20.0000	1.0071
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	385328	100.0000	1.1303
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	746852	200.0000	1.1892

Quantitative Analysis Calibration Report



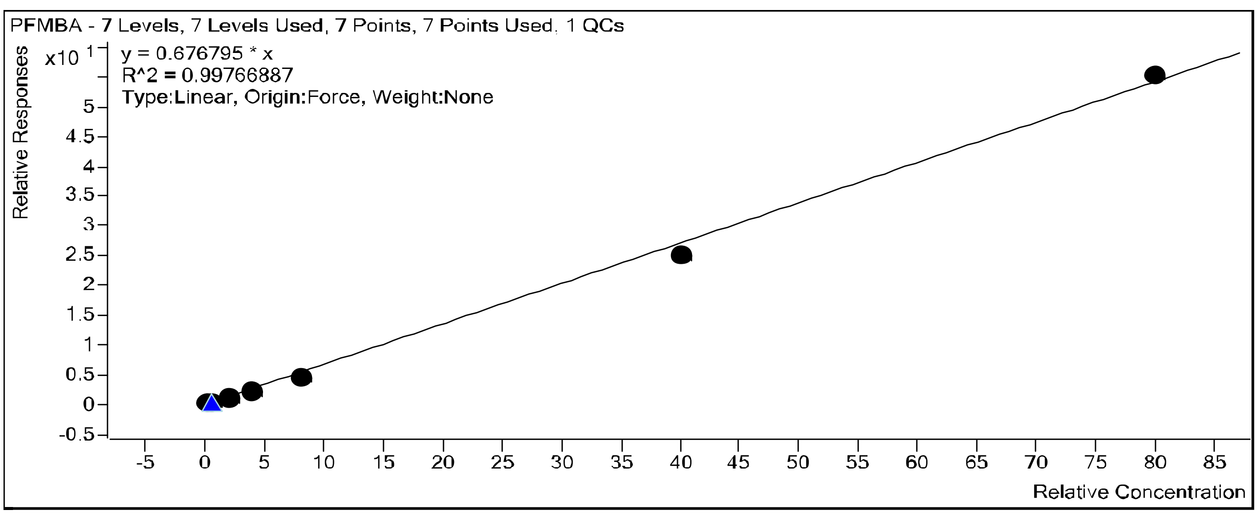
Extracted ISTD	*M3PFBS*					
Calibration STD	**Cal Type**	**Level**	**Enabled**	**Response**	**Exp Conc (ng/mL)**	**RF**
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	11769	5.0000	2353.8931
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	11497	5.0000	2299.3293
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	11965	5.0000	2392.9856
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	11783	5.0000	2356.6324
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	12994	5.0000	2598.8356
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	11878	5.0000	2375.6905
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	10684	5.0000	2136.8860

Target Compound	*PFBS*					
Calibration STD	**Cal Type**	**Level**	**Enabled**	**Response**	**Exp Conc (ng/mL)**	**RF**
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	1546	0.4425	1.4843
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	3315	1.1100	1.2987
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	15192	4.4250	1.4347
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	28732	8.8500	1.3776
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	61419	17.7000	1.3352
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	317753	88.5000	1.5113
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	586216	177.0000	1.5499



Target Compound *PFMBA*

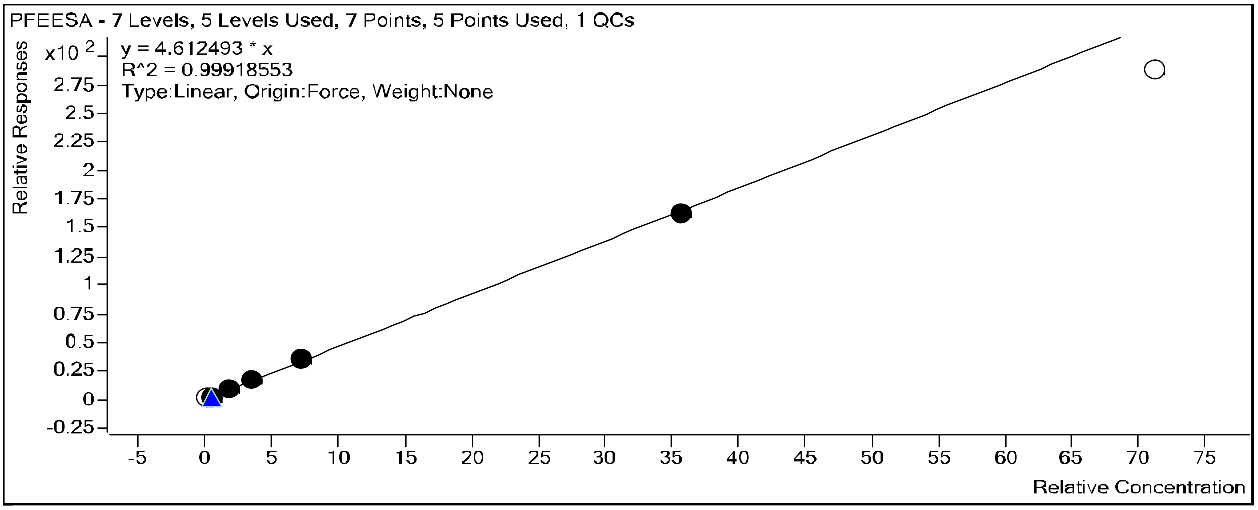
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	3266	1.0000	0.6269
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	7291	2.5000	0.5776
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	33516	10.0000	0.6149
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	62043	20.0000	0.5545
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	131101	40.0000	0.5516
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	687526	200.0000	0.6293
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	1352795	400.0000	0.6903



Target Compound *PFEESA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF

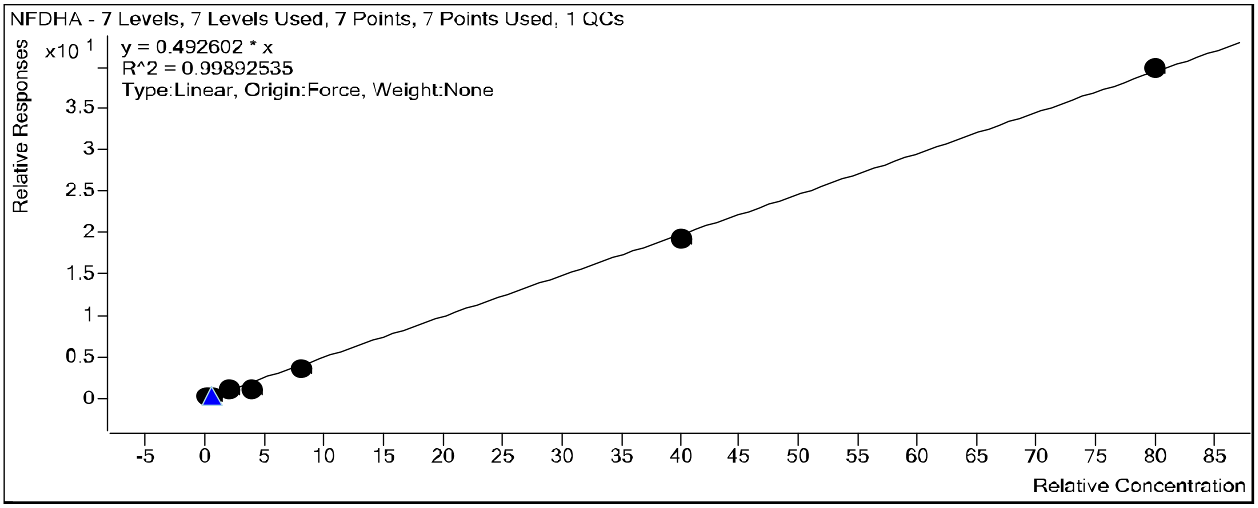
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☐	7996	0.8900	4.5079
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	18564	2.2250	4.4193
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	87186	8.9000	5.0470
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	165137	17.8000	5.1016
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	340937	35.6000	5.0624
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	1721105	178.0000	4.5886
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	3366211	356.0000	4.0405



Target Compound *NFDHA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	3255	1.0000	0.5107
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	7174	2.5000	0.4205
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	34809	10.0000	0.4688
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	38494	20.0000	0.2711
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	137369	40.0000	0.4400
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	683172	200.0000	0.4778
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	1338181	400.0000	0.4974

Quantitative Analysis Calibration Report

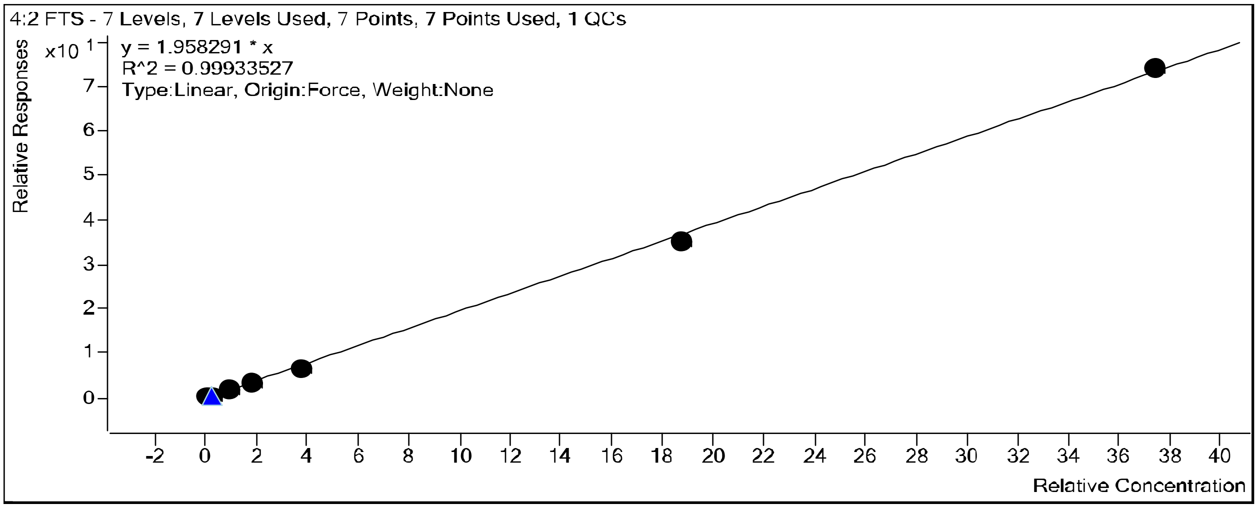


Extracted ISTD	*M2 4:2 FTS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	10664	5.0000	2132.8416
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	10921	5.0000	2184.1518
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	11036	5.0000	2207.2610
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	11657	5.0000	2331.3711
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	13263	5.0000	2652.6324
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	10638	5.0000	2127.6703
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	9337	5.0000	1867.3055

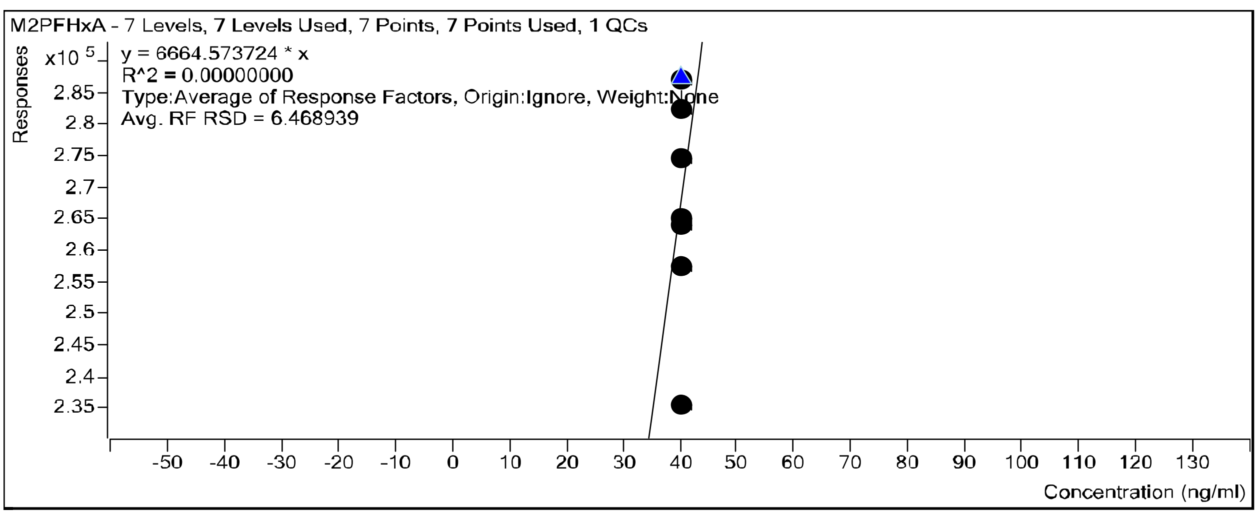
Target Compound	*4:2 FTS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	1984	0.4675	1.9895
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	4000	1.1700	1.5652
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	20087	4.6700	1.9487
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	37905	9.3500	1.7389
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	86974	19.0000	1.7257
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	376140	93.5000	1.8907
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	690741	187.0000	1.9781



Instrument ISTD *M2PFHxA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	235533	40.0000	5888.3212
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	263974	40.0000	6599.3625
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	282277	40.0000	7056.9298
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	286984	40.0000	7174.5938
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	265102	40.0000	6627.5609
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	274716	40.0000	6867.8959
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	257494	40.0000	6437.3519



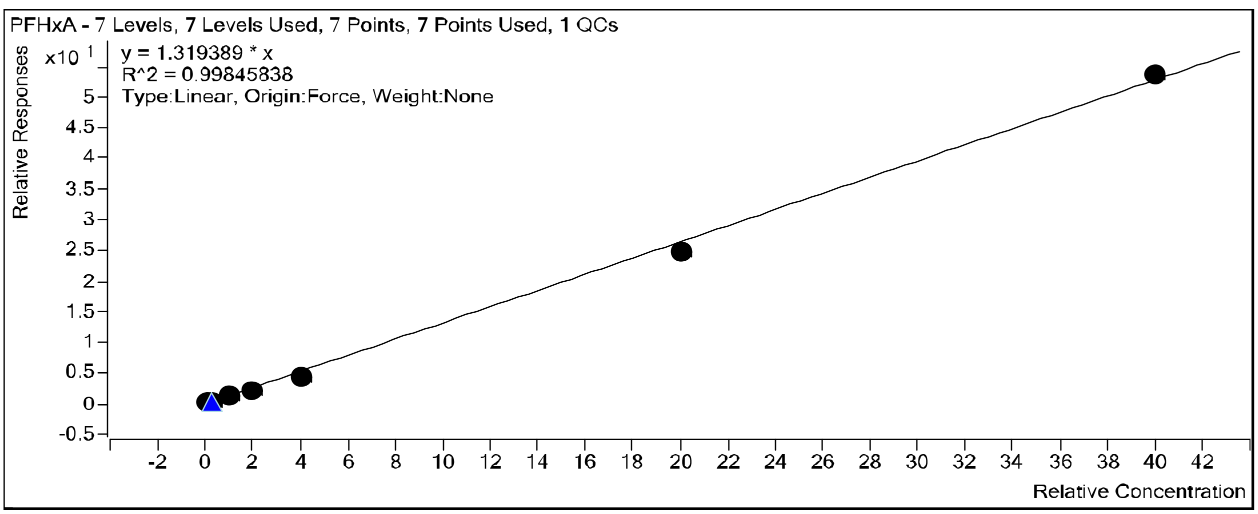
Extracted ISTD *M5PFHxA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF

D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	26046	5.0000	5209.1599
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	25248	5.0000	5049.5232
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	27253	5.0000	5450.5474
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	27970	5.0000	5594.0998
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	29707	5.0000	5941.4772
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	27313	5.0000	5462.5051
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	24498	5.0000	4899.5466

Target Compound *PFHxA*

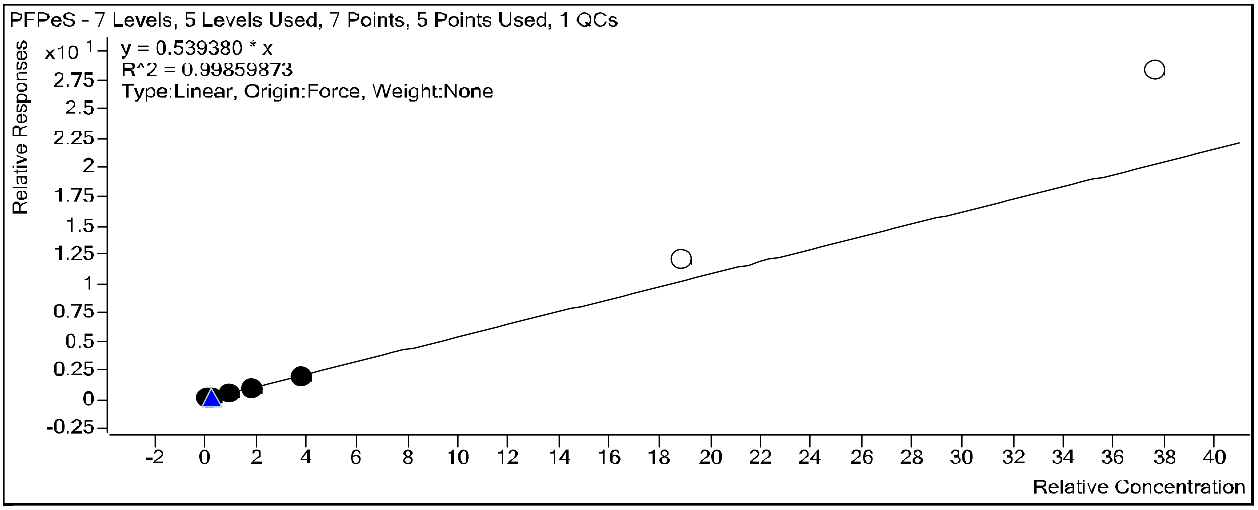
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	3581	0.5000	1.3747
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	7413	1.2500	1.1744
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	36119	5.0000	1.3253
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	63465	10.0000	1.1345
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	134949	20.0000	1.1356
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	678882	100.0000	1.2428
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	1313899	200.0000	1.3408



Target Compound *PFPeS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	1576	0.4700	0.6437
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	3113	1.1800	0.5225
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	15333	4.7000	0.5985

D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	28591	9.4000	0.5437
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	59715	18.8000	0.5346
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☐	333326	94.0000	0.6492
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	696240	188.0000	0.7559



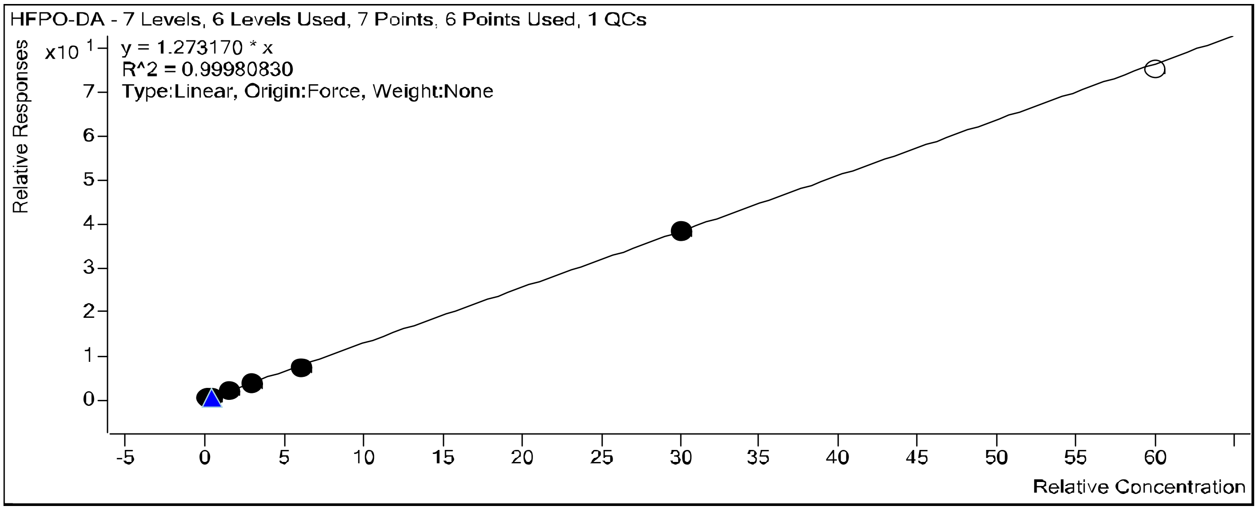
Extracted ISTD *M3HFPODA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	2294	10.0000	229.4025
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	2693	10.0000	269.3273
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	2884	10.0000	288.3609
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	3041	10.0000	304.0655
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	3243	10.0000	324.3076
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	3118	10.0000	311.7705
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	3257	10.0000	325.6730

Target Compound *HFPO-DA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	563	1.5000	1.6363
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	1613	3.7500	1.5968
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	5798	15.0000	1.3405
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	10461	30.0000	1.1468
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	24194	60.0000	1.2434
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	119289	300.0000	1.2754

D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	244643	600.0000	1.2520



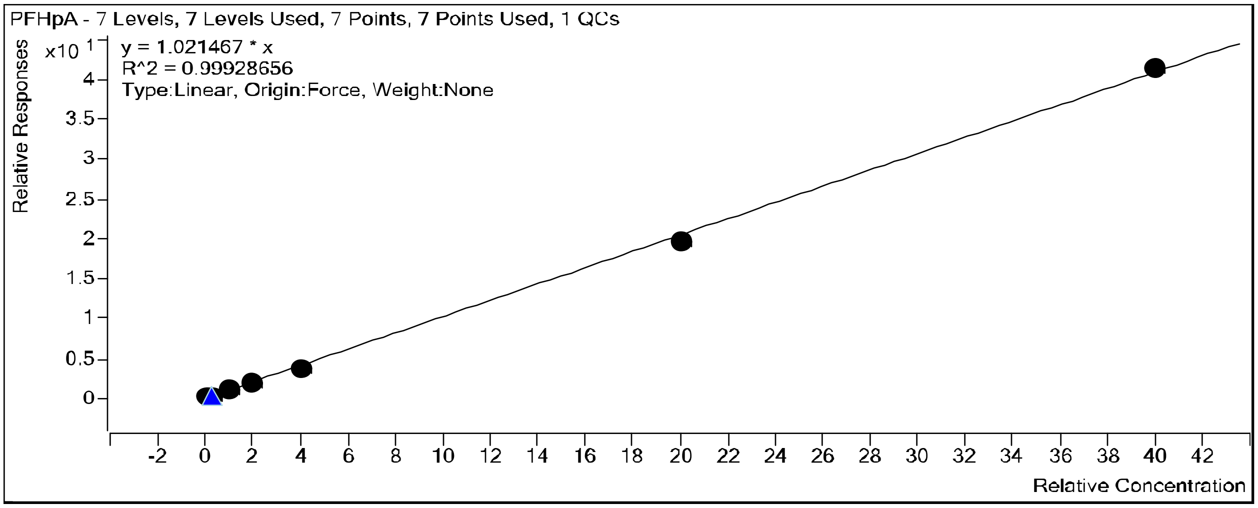
Extracted ISTD *M4PFHpA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	31874	5.0000	6374.8437
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	34120	5.0000	6823.9291
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	37129	5.0000	7425.7530
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	35500	5.0000	7099.9009
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	39028	5.0000	7805.5095
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	35748	5.0000	7149.6348
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	33629	5.0000	6725.7723

Target Compound *PFHpA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	3240	0.5000	1.0165
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	7704	1.2500	0.9032
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	35971	5.0000	0.9688
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	66346	10.0000	0.9345
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	143371	20.0000	0.9184
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	701901	100.0000	0.9817
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	1389124	200.0000	1.0327

Quantitative Analysis Calibration Report



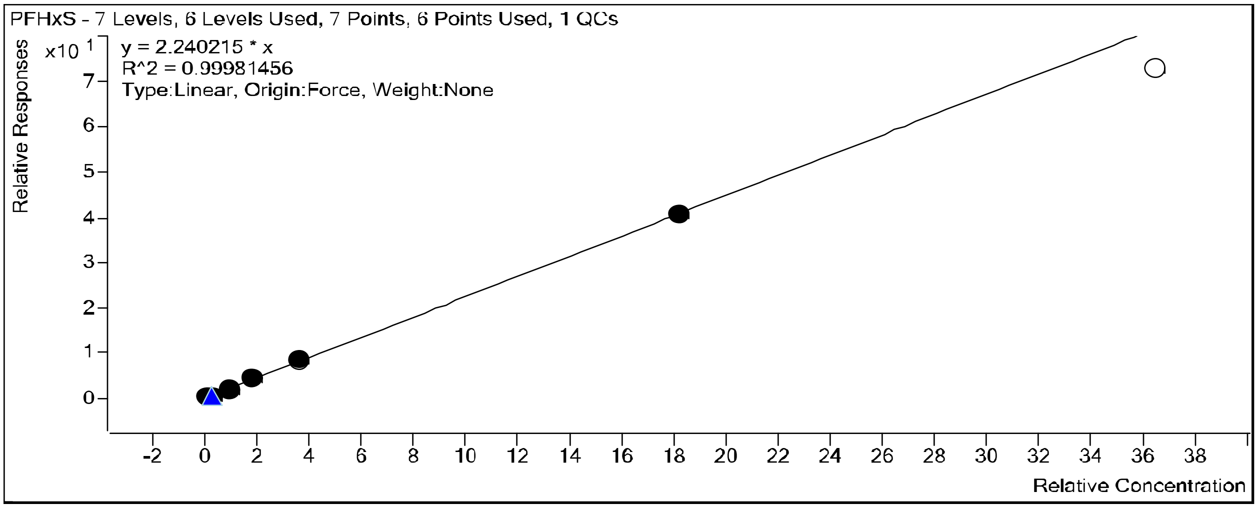
Extracted ISTD *M3PFHxS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	9965	5.0000	1992.9924
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	9440	5.0000	1887.9672
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	9705	5.0000	1940.9832
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	9093	5.0000	1818.5299
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	9459	5.0000	1891.7762
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	10536	5.0000	2107.2291
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	11701	5.0000	2340.2130

Target Compound *PFHxS*

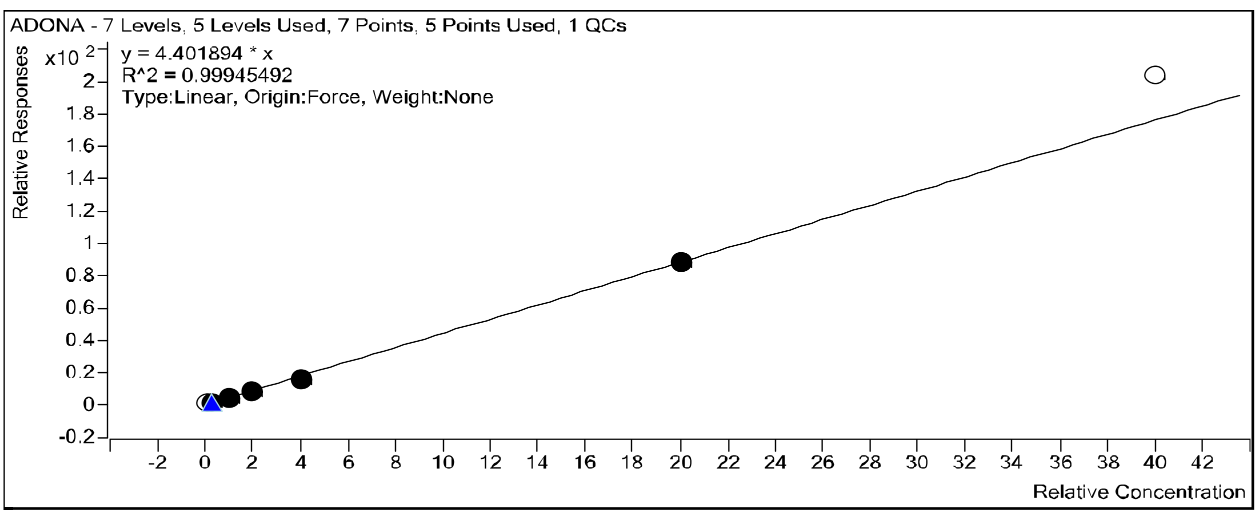
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	2078	0.4560	2.2867
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	4705	1.1400	2.1861
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	20937	4.5600	2.3655
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	39082	9.1200	2.3565
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	81059	18.2400	2.3491
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	429403	91.2000	2.2344
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	853053	182.4000	1.9985

Quantitative Analysis Calibration Report



Target Compound *ADONA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☐	8854	0.5000	3.9979
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	20357	1.2500	3.8657
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	99773	5.0000	4.5689
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	181914	10.0000	4.1861
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	366936	20.0000	4.0016
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	1796086	100.0000	4.4197
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	3428205	200.0000	5.0969



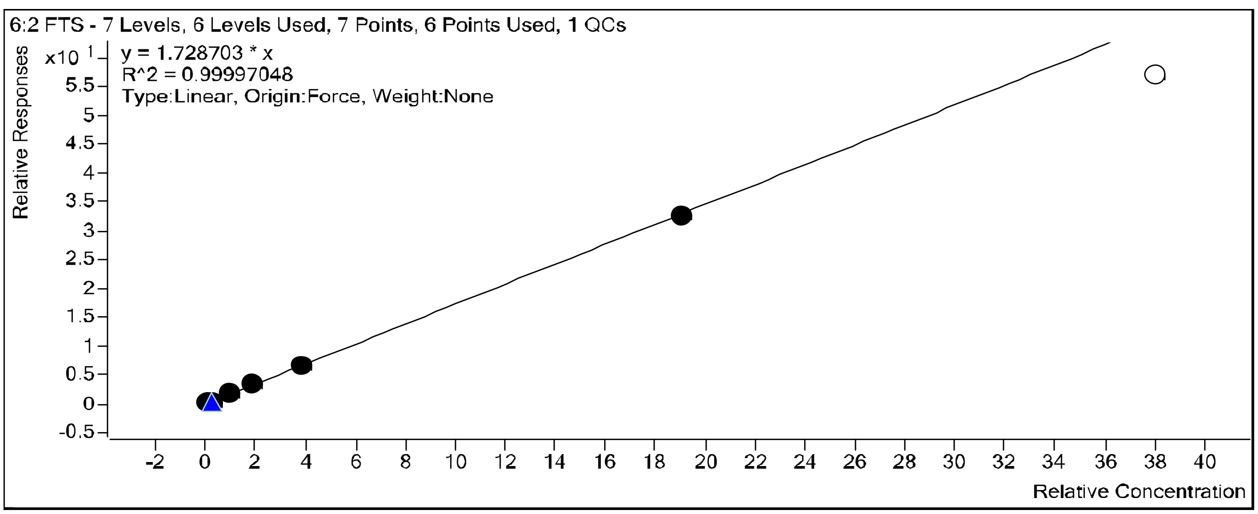
Extracted ISTD *M2 6:2 FTS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF

D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	21929	5.0000	4385.7149
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	20634	5.0000	4126.7543
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	22898	5.0000	4579.6560
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	21742	5.0000	4348.3055
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	24177	5.0000	4835.4784
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	21132	5.0000	4226.4794
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	21080	5.0000	4216.0848

Target Compound *6:2 FTS*

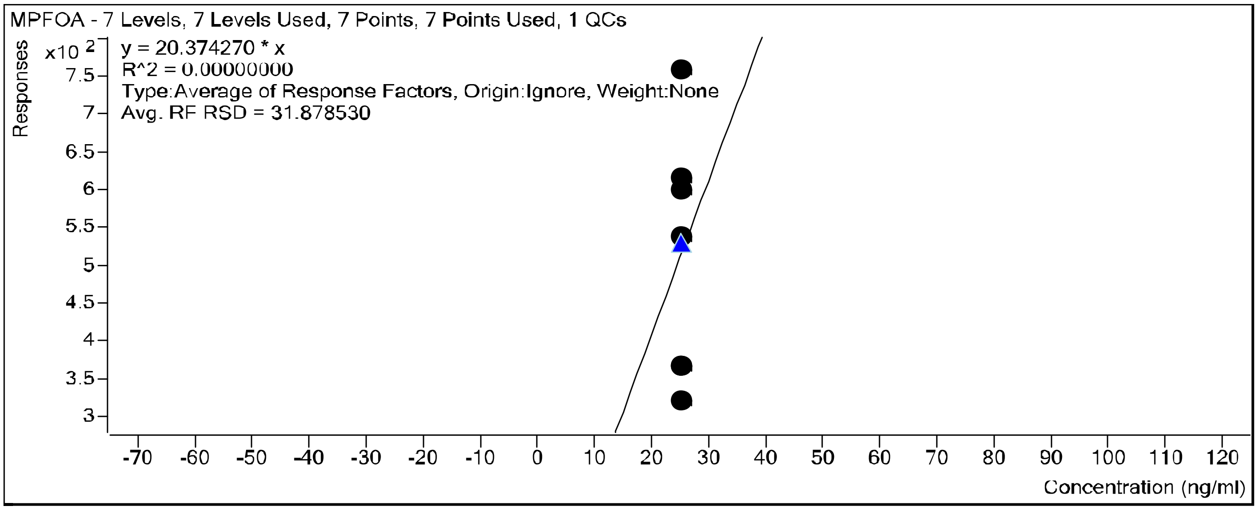
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	3573	0.4750	1.7151
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	8385	1.1900	1.7074
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	40016	4.7500	1.8396
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	73397	9.5000	1.7768
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	160224	19.0000	1.7440
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	693553	95.0000	1.7273
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	1203654	190.0000	1.5026



Instrument ISTD *MPFOA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	366	25.0000	14.6408
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	600	25.0000	23.9971
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	322	25.0000	12.8791

D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	759	25.0000	30.3438
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	614	25.0000	24.5619
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	538	25.0000	21.5373
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	366	25.0000	14.6598



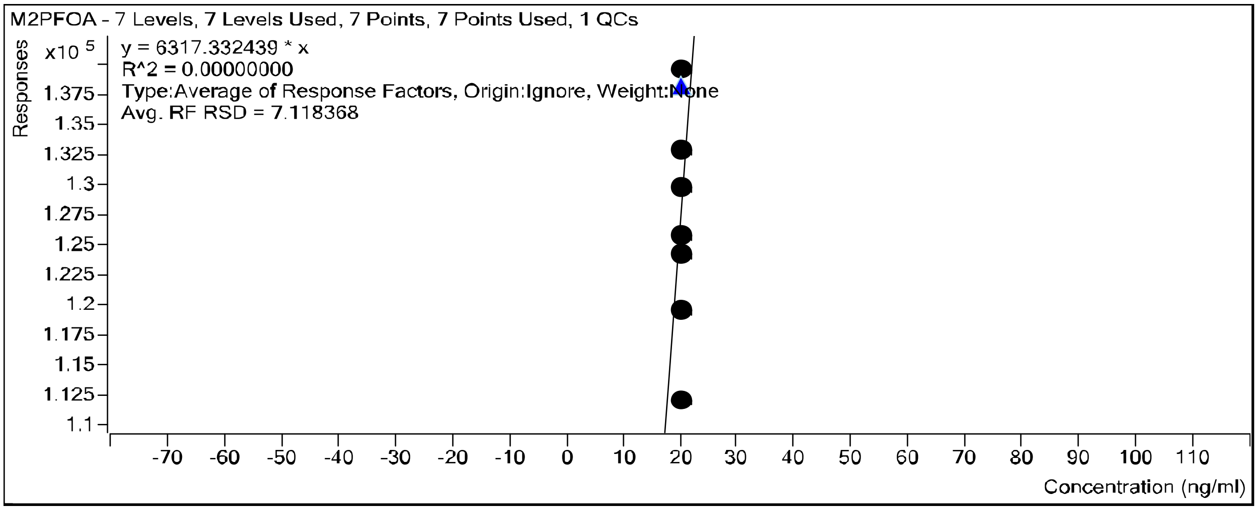
Extracted ISTD *M8PFOA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	22148	5.0000	4429.5460
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	21064	5.0000	4212.8375
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	21837	5.0000	4367.4841
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	21728	5.0000	4345.6184
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	22924	5.0000	4584.8540
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	20319	5.0000	4063.7928
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	16815	5.0000	3363.0181

Instrument ISTD *M2PFOA*

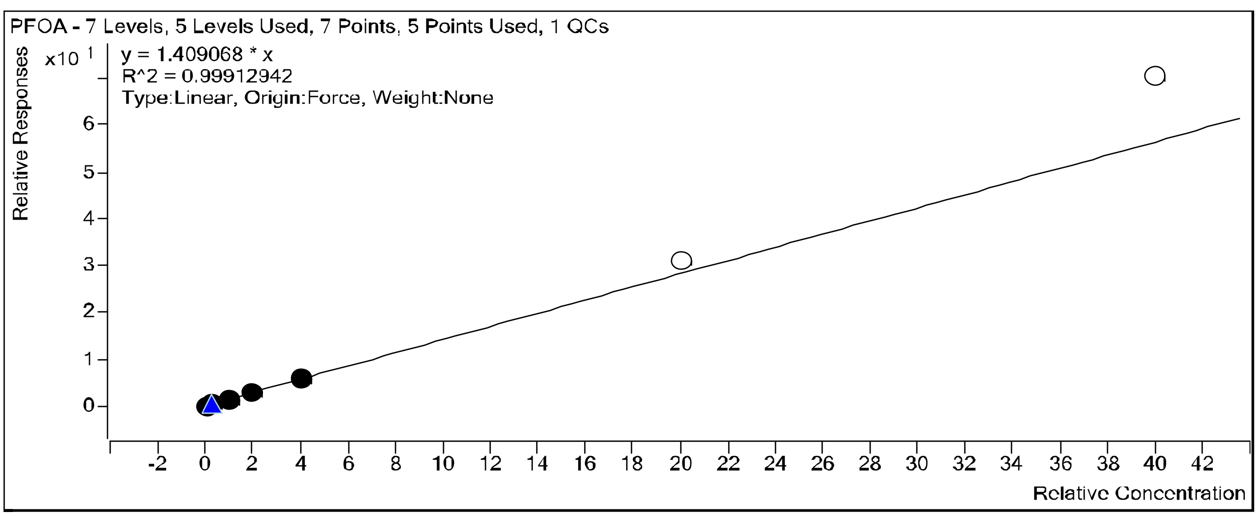
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	112128	20.0000	5606.3992
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	124308	20.0000	6215.4198
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	132986	20.0000	6649.3098
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	139641	20.0000	6982.0460
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	125809	20.0000	6290.4483
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	129923	20.0000	6496.1703

D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	119631	20.0000	5981.5337



Target Compound *PFOA*

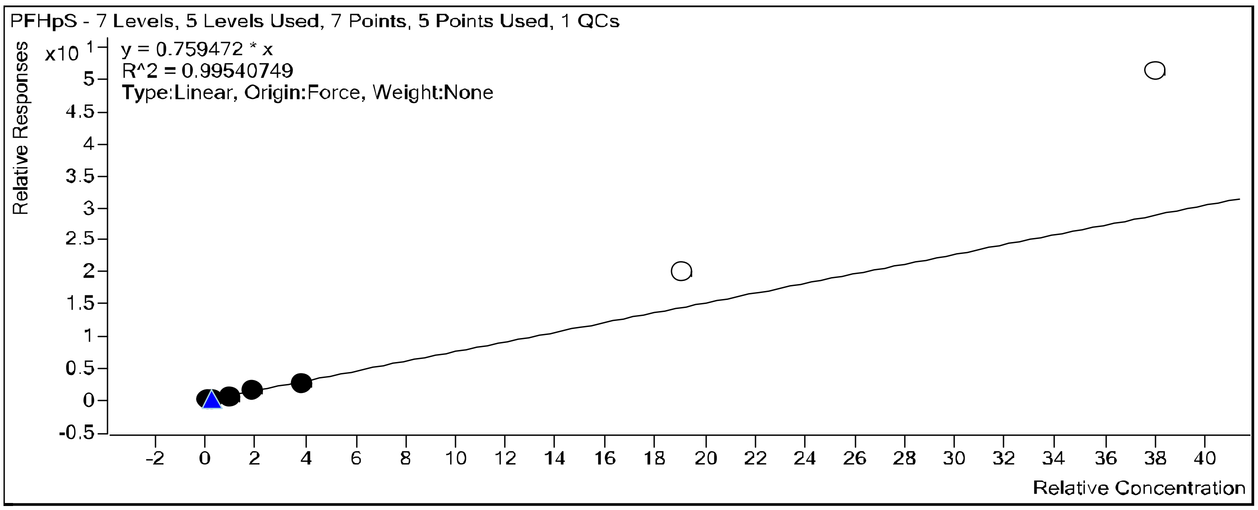
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	2719	0.5000	1.2275
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	6146	1.2500	1.1670
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	30968	5.0000	1.4181
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	58941	10.0000	1.3563
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	130462	20.0000	1.4227
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☐	634692	100.0000	1.5618
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	1184442	200.0000	1.7610



Target Compound *PFHpS*

Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	2107	0.4750	
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	3915	1.1900	0.7809
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	17218	4.7500	0.8299
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	33811	9.5000	0.8190
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	64459	19.0000	0.7400
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☐	409017	95.0000	
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	864142	190.0000	1.3524



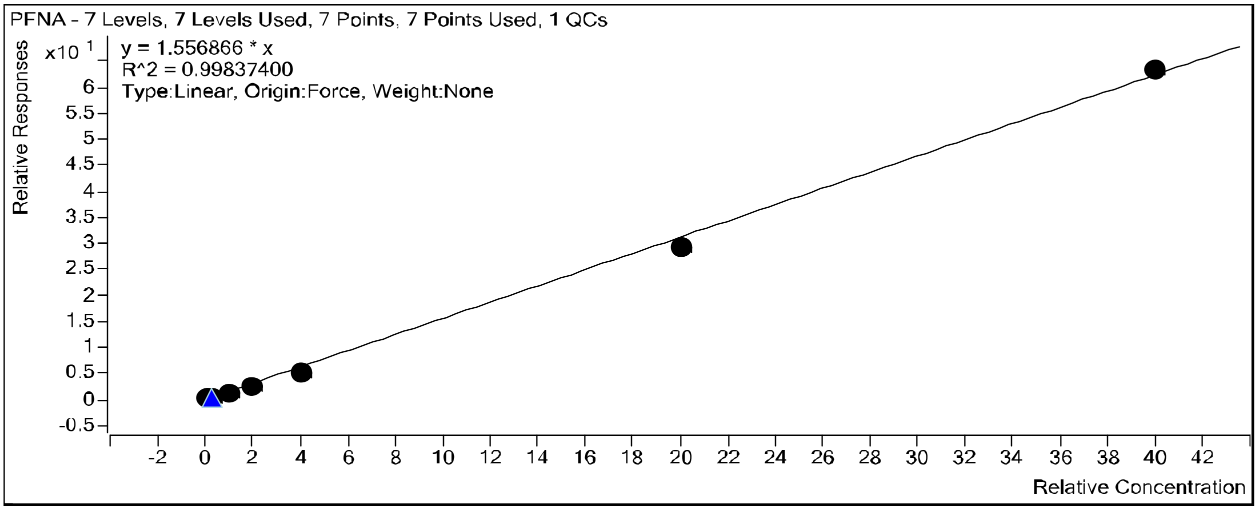
Extracted ISTD *M9PFNA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	29071	5.0000	5814.1059
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	26182	5.0000	5236.4197
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	27867	5.0000	5573.4469
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	27263	5.0000	5452.5375
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	29221	5.0000	5844.2241
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	24794	5.0000	4958.7502
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	22008	5.0000	4401.6350

Target Compound *PFNA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	3483	0.5000	1.1982

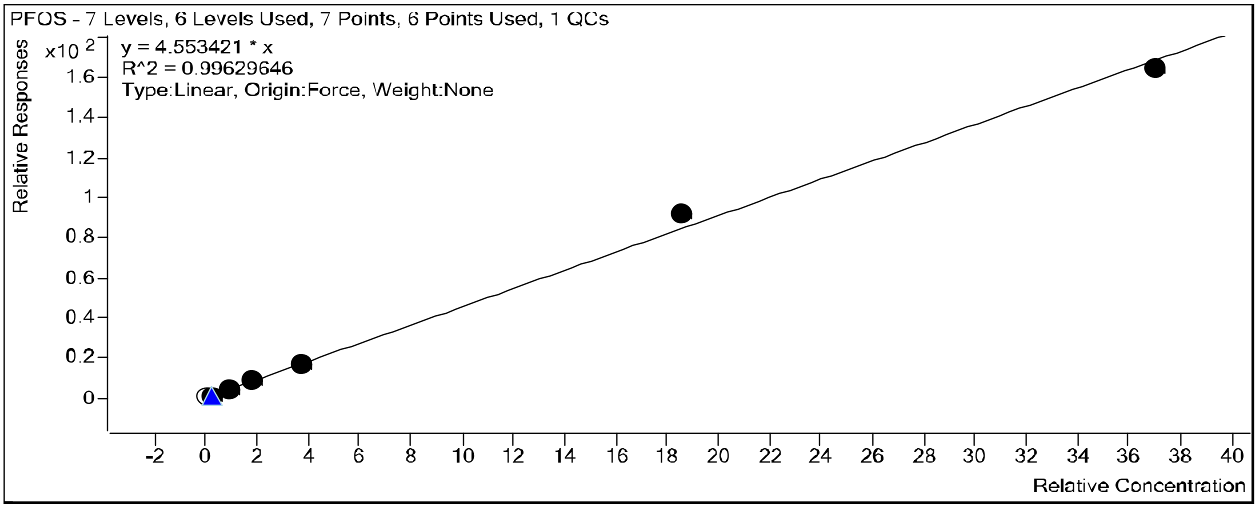
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	8395	1.2500	1.2826
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	37064	5.0000	1.3300
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	72045	10.0000	1.3213
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	153813	20.0000	1.3159
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	727158	100.0000	1.4664
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	1393233	200.0000	1.5826



Target Compound *PFOS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☐	1600	0.4628	3.6406
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	4831	1.1600	4.6391
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	20616	4.6280	5.0172
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	37896	9.2550	4.7369
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	77946	18.5100	4.5216
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	443086	92.5500	4.9898
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	910615	185.1000	4.4439

Quantitative Analysis Calibration Report

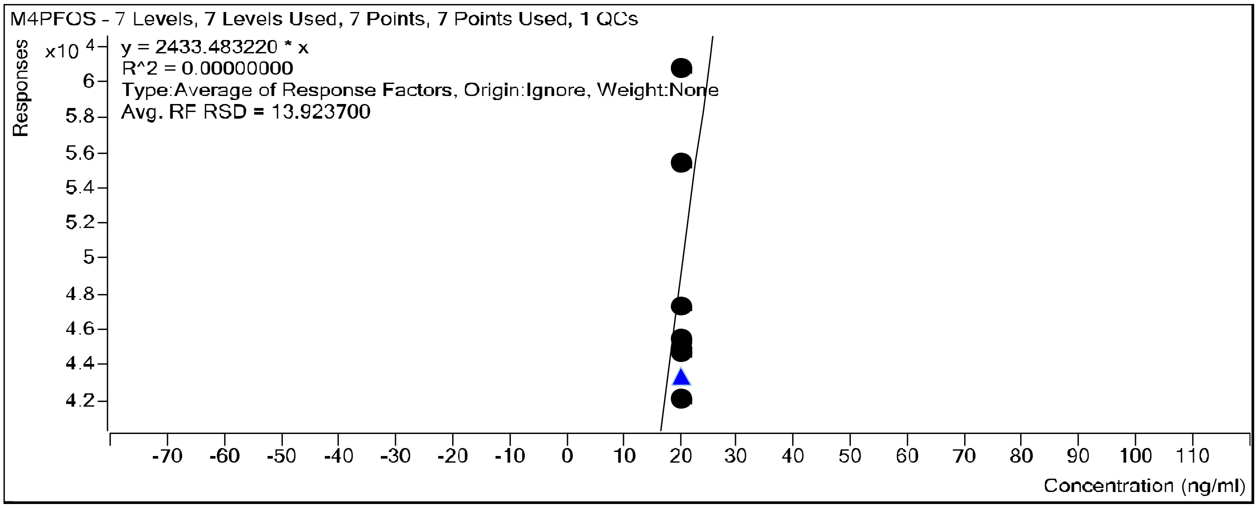


Extracted ISTD *M8PFOS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	4747	5.0000	949.4733
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	4489	5.0000	897.7364
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	4439	5.0000	887.8503
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	4322	5.0000	864.4317
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	4656	5.0000	931.2985
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	4797	5.0000	959.4619
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	5535	5.0000	1107.0443

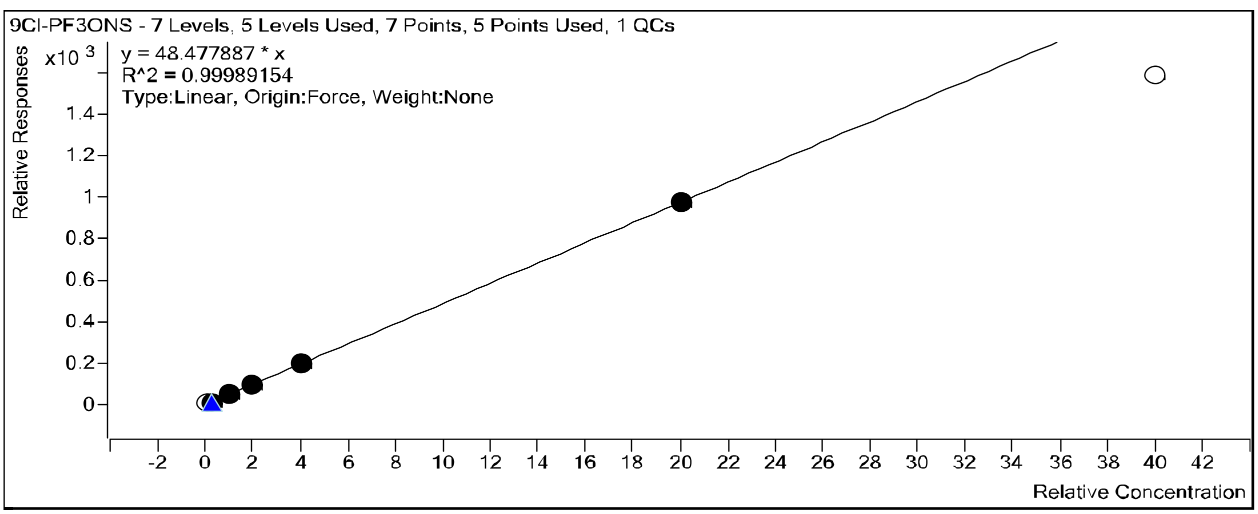
Instrument ISTD *M4PFOS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	45005	20.0000	2250.2530
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	44662	20.0000	2233.1025
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	45467	20.0000	2273.3639
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	47312	20.0000	2365.6220
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	42115	20.0000	2105.7700
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	55367	20.0000	2768.3643
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	60758	20.0000	3037.9068



Target Compound *9Cl-PF3ONS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☐	21624	0.5000	45.5491
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	50450	1.2500	44.9575
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	242741	5.0000	54.6807
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	441127	10.0000	51.0309
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	894234	20.0000	48.0101
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	4649180	100.0000	48.4561
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	8749125	200.0000	39.5157



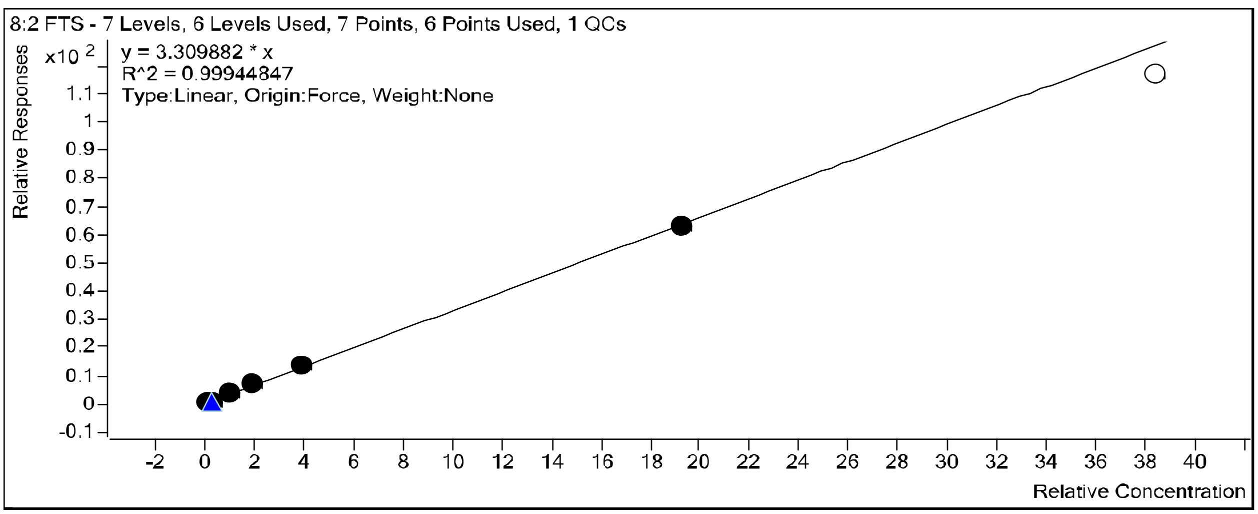
Extracted ISTD *M2 8:2 FTS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF

D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	10142	5.0000	2028.3564
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	10234	5.0000	2046.8689
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	10030	5.0000	2005.9601
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	8941	5.0000	1788.2580
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	10748	5.0000	2149.5932
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	11282	5.0000	2256.4171
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	10712	5.0000	2142.4694

Target Compound *8:2 FTS*

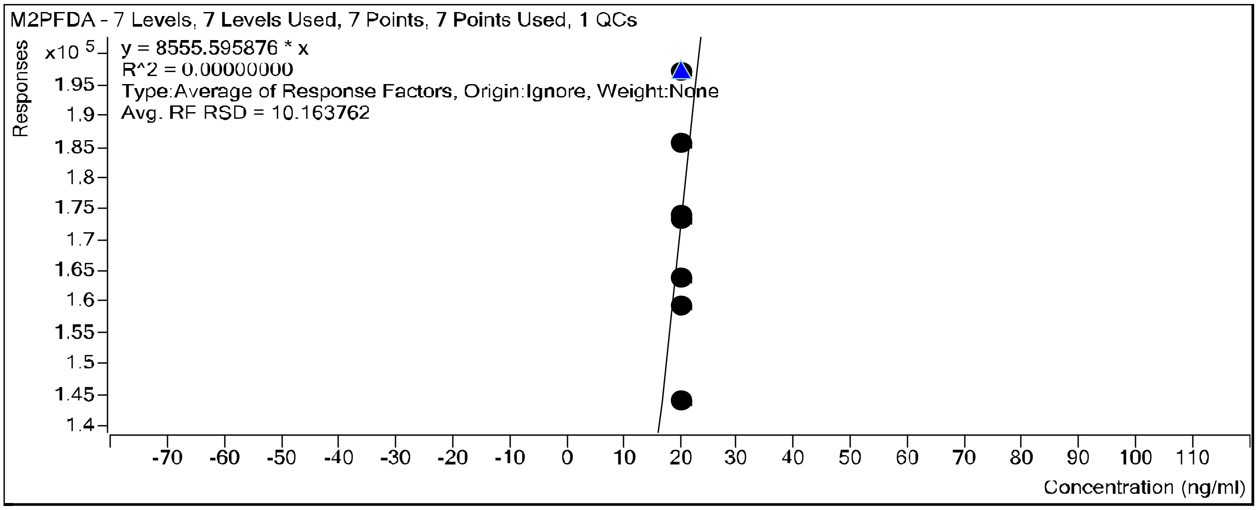
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	4027	0.4800	4.1364
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	7904	1.2000	3.2179
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	40005	4.8000	4.1548
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	62498	9.6000	3.6405
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	144147	19.2000	3.4926
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	714215	96.0000	3.2971
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	1255666	192.0000	3.0525



Instrument ISTD *M2PFDA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	159361	20.0000	7968.0613
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	174154	20.0000	8707.6762
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	197086	20.0000	9854.2800

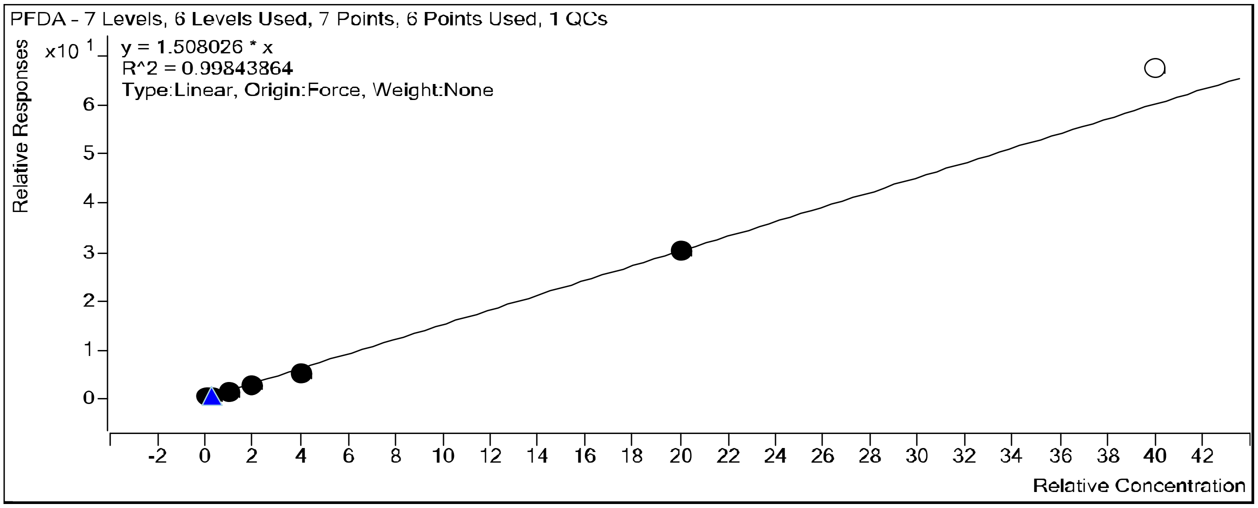
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	185659	20.0000	9282.9701
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	173420	20.0000	8671.0115
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	163894	20.0000	8194.7065
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	144209	20.0000	7210.4656



Target Compound *PFDA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	4390	0.5000	1.4443
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	8850	1.2500	1.0945
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	45688	5.0000	1.3278
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	84076	10.0000	1.2594
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	181850	20.0000	1.2930
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	846495	100.0000	1.5196
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	1542793	200.0000	1.6909

Quantitative Analysis Calibration Report

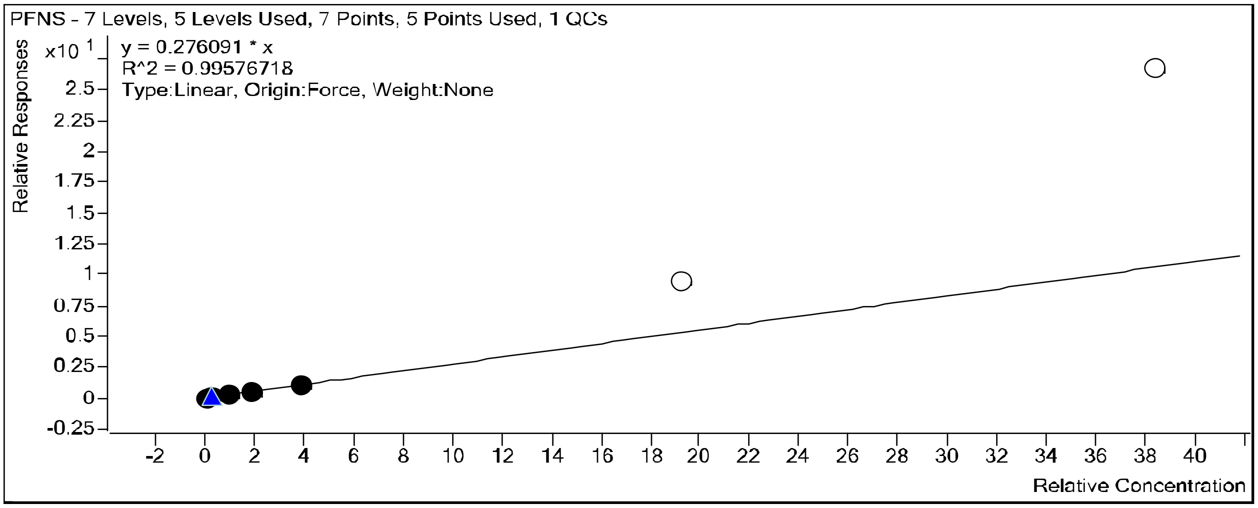


Extracted ISTD *M6PFDA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	30397	5.0000	6079.3530
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	32345	5.0000	6469.0121
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	34410	5.0000	6881.9918
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	33380	5.0000	6675.9259
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	35160	5.0000	7032.0062
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	27852	5.0000	5570.4045
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	22810	5.0000	4561.9920

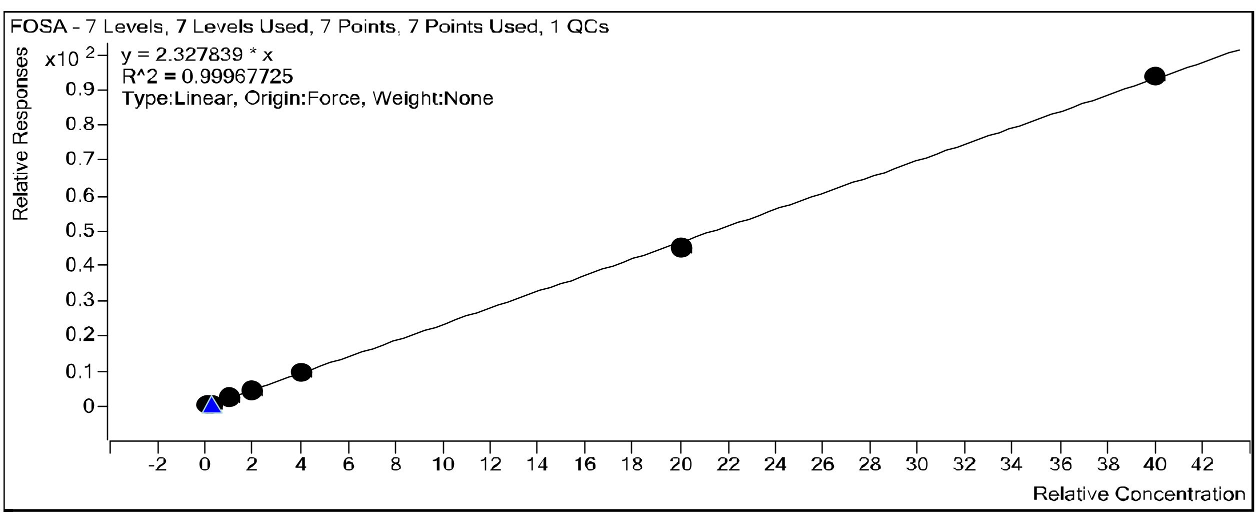
Target Compound *PFNS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	706	0.4800	0.2530
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	1970	1.2000	0.3135
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	8142	4.8000	0.3044
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	13232	9.6000	0.2528
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	31421	19.2000	0.2800
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☐	237234	96.0000	0.4983
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	587313	192.0000	0.6950



Target Compound	*FOSA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	4734	0.5000	2.1404
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	10881	1.2500	2.0962
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	53818	5.0000	2.5009
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	97468	10.0000	2.3404
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	209222	20.0000	2.4099
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	1089938	100.0000	2.2598
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	2153765	200.0000	2.3439



Extracted ISTD	*M8FOSA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF

D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	22117	5.0000	4423.3904
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	20764	5.0000	4152.7074
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	21519	5.0000	4303.8264
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	20823	5.0000	4164.5814
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	21704	5.0000	4340.7988
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	24116	5.0000	4823.1444
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	22972	5.0000	4594.4123

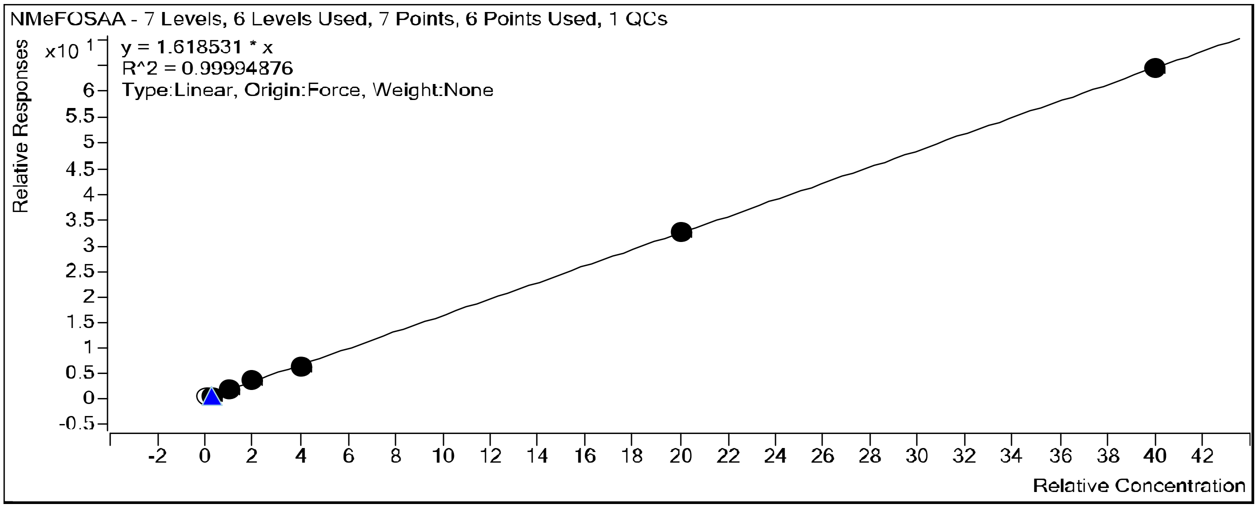
Extracted ISTD *d3-NMeFOSAA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	8663	5.0000	1732.6212
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	7753	5.0000	1550.5304
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	9182	5.0000	1836.4137
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	8909	5.0000	1781.7218
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	10907	5.0000	2181.3538
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	10740	5.0000	2148.0264
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	10546	5.0000	2109.2166

Target Compound *NMeFOSAA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☐	1764	0.5000	2.0367
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	3553	1.2500	1.8329
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	17336	5.0000	1.8880
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	30245	10.0000	1.6975
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	69827	20.0000	1.6005
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	350052	100.0000	1.6296
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	681512	200.0000	1.6156

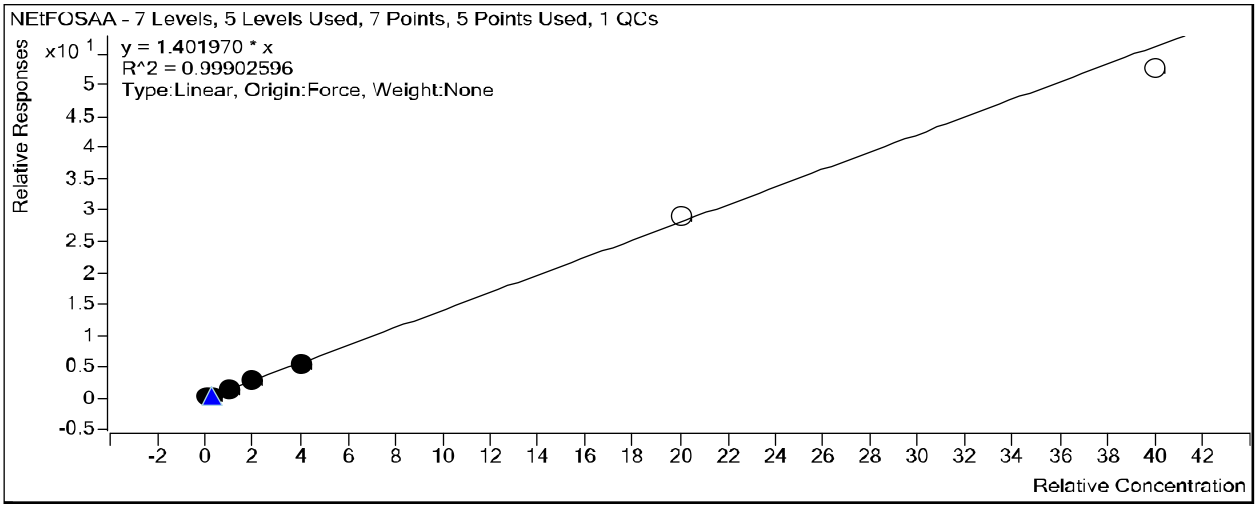
Quantitative Analysis Calibration Report



Extracted ISTD	*d5-NEtFOSAA*					
Calibration STD	**Cal Type**	**Level**	**Enabled**	**Response**	**Exp Conc (ng/mL)**	**RF**
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	12551	5.0000	2510.2021
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	12752	5.0000	2550.3150
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	12868	5.0000	2573.6034
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	12554	5.0000	2510.8105
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	13866	5.0000	2773.2712
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	11903	5.0000	2380.5087
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	11417	5.0000	2283.3364

Target Compound	*NEtFOSAA*					
Calibration STD	**Cal Type**	**Level**	**Enabled**	**Response**	**Exp Conc (ng/mL)**	**RF**
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	2014	0.5000	1.6047
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	4015	1.2500	1.2595
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	19692	5.0000	1.5303
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	35287	10.0000	1.4054
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	77292	20.0000	1.3935
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☐	347584	100.0000	1.4601
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	600113	200.0000	1.3141

Quantitative Analysis Calibration Report

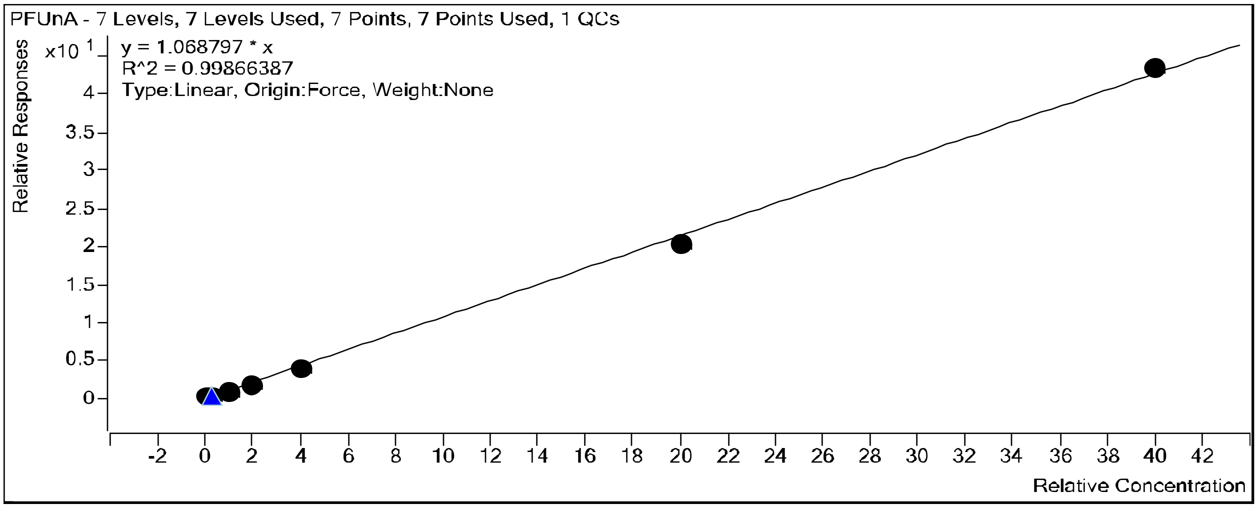


Extracted ISTD *M7PFUnA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	50870	5.0000	10173.9951
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	53105	5.0000	10620.9592
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	57294	5.0000	11458.8502
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	55933	5.0000	11186.5068
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	58421	5.0000	11684.1153
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	50272	5.0000	10054.3374
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	41440	5.0000	8288.0219

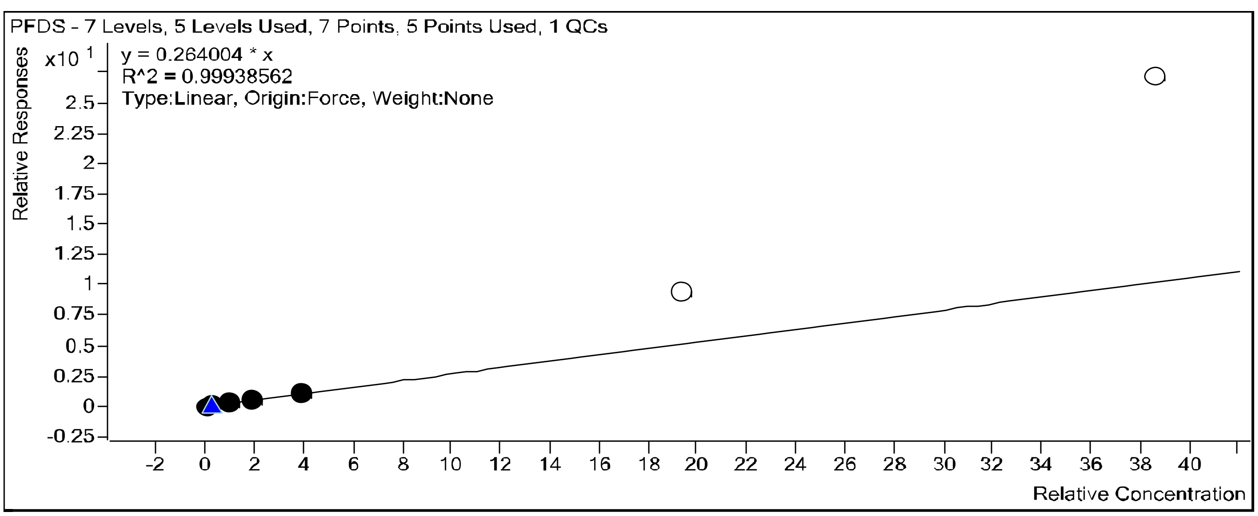
Target Compound *PFUnA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	5441	0.5000	1.0696
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	10332	1.2500	0.7782
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	54106	5.0000	0.9444
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	101718	10.0000	0.9093
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	225929	20.0000	0.9668
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	1014718	100.0000	1.0092
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	1798825	200.0000	1.0852



Target Compound *PFDS*

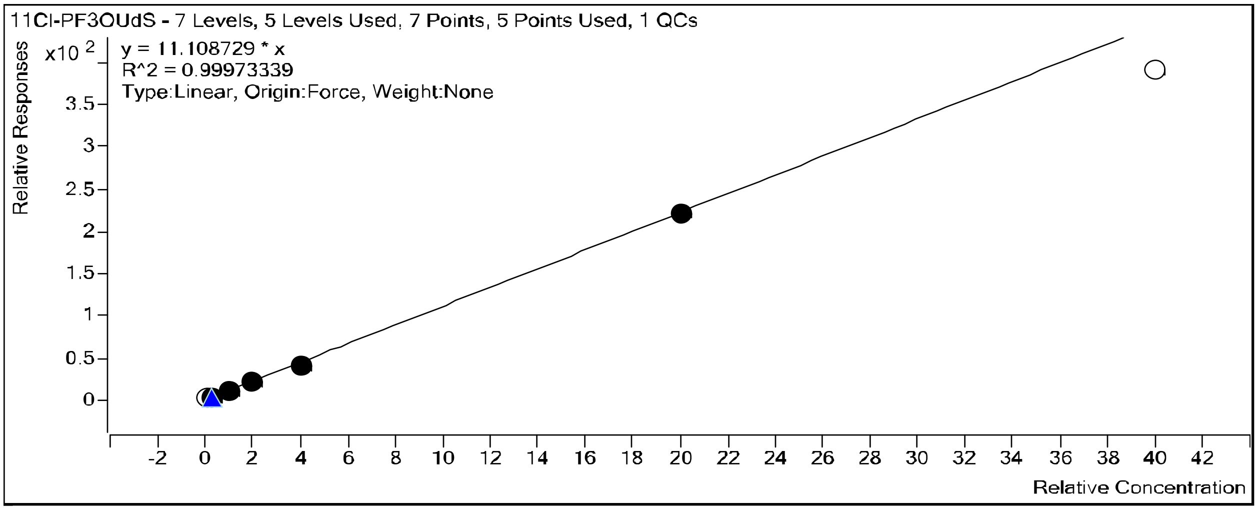
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	805	0.4825	0.2743
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	2137	1.2100	0.2730
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	8996	4.8250	0.2709
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	16419	9.6500	0.2549
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	36076	19.3000	0.2658
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☐	263996	96.5000	0.4911
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	619521	193.0000	0.7036



Target Compound *11Cl-PF3OUdS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF

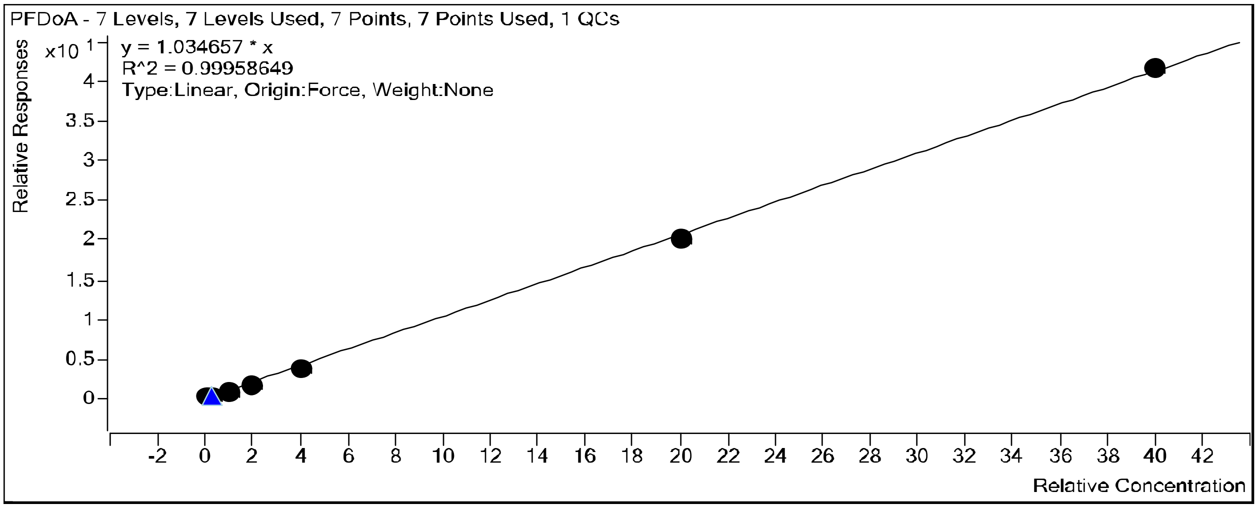
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☐	4924	0.5000	10.3719
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	10876	1.2500	9.6922
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	51028	5.0000	11.4948
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	93399	10.0000	10.8047
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	193708	20.0000	10.3999
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	1068781	100.0000	11.1394
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	2163719	200.0000	9.7725



Target Compound *PFDoA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	3313	0.5000	0.9614
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	8002	1.2500	0.9166
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	36310	5.0000	0.9157
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	70438	10.0000	0.9021
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	159259	20.0000	0.9409
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	767233	100.0000	1.0079
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	1465098	200.0000	1.0427

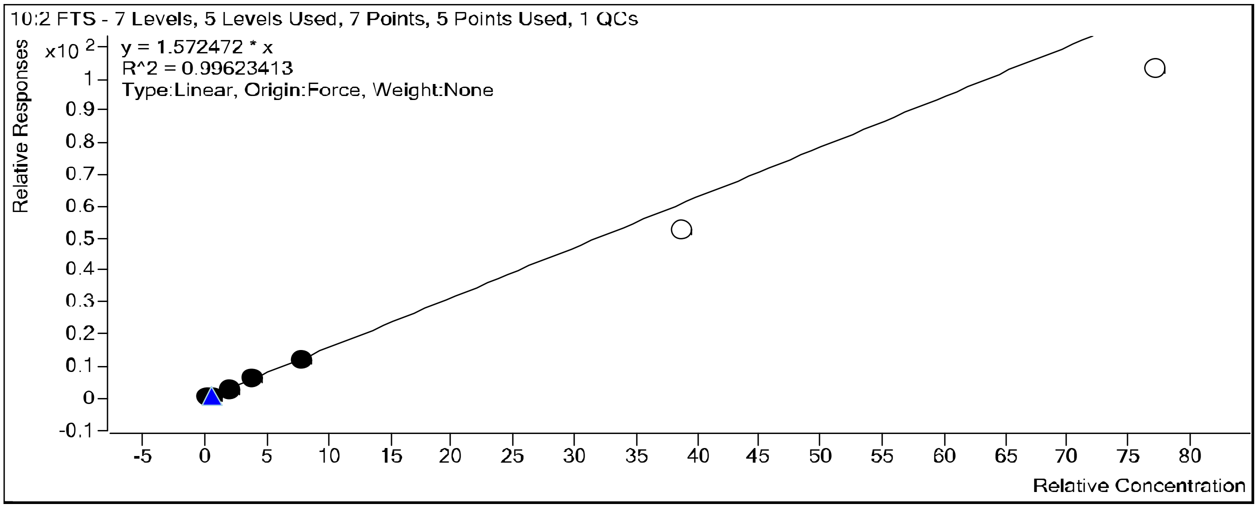
Quantitative Analysis Calibration Report



Extracted ISTD	*MPFDoA*					
Calibration STD	**Cal Type**	**Level**	**Enabled**	**Response**	**Exp Conc (ng/mL)**	**RF**
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	34458	5.0000	6891.5417
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	34920	5.0000	6984.0130
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	39651	5.0000	7930.2674
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	39039	5.0000	7807.7489
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	42313	5.0000	8462.6773
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	38062	5.0000	7612.4078
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	35127	5.0000	7025.4980

Target Compound	*10:2 FTS*					
Calibration STD	**Cal Type**	**Level**	**Enabled**	**Response**	**Exp Conc (ng/mL)**	**RF**
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	2888	0.9640	1.4769
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	6090	2.4100	1.2345
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	30058	9.6400	1.5544
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	58852	19.2800	1.7070
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	127760	38.5600	1.5414
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☐	593768	192.8000	1.3649
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	1104780	385.6000	1.3373

Quantitative Analysis Calibration Report



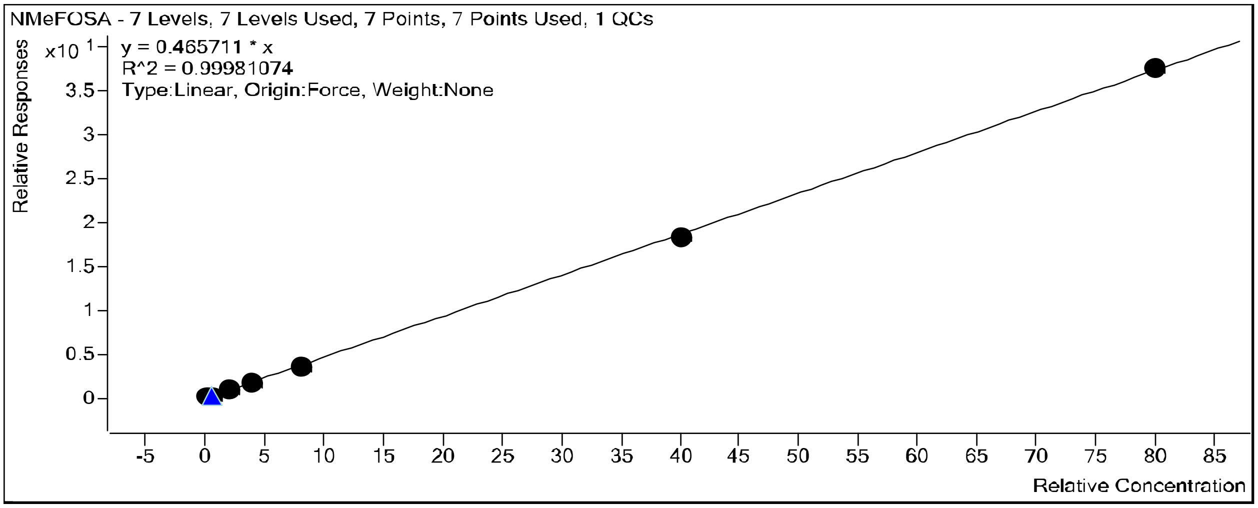
Extracted ISTD	*d-NMeFOSA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	15655	5.0000	3131.0068
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	15530	5.0000	3105.9721
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	17489	5.0000	3497.8916
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	16633	5.0000	3326.5830
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	17370	5.0000	3473.9223
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	17910	5.0000	3582.0857
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	17097	5.0000	3419.3176

Target Compound	*NMeFOSA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	1423	1.0000	0.4544
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	3272	2.5000	0.4213
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	14997	10.0000	0.4288
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	28940	20.0000	0.4350
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	61210	40.0000	0.4405
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	327339	200.0000	0.4569
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	640459	400.0000	0.4683

Quantitative Analysis Calibration Report

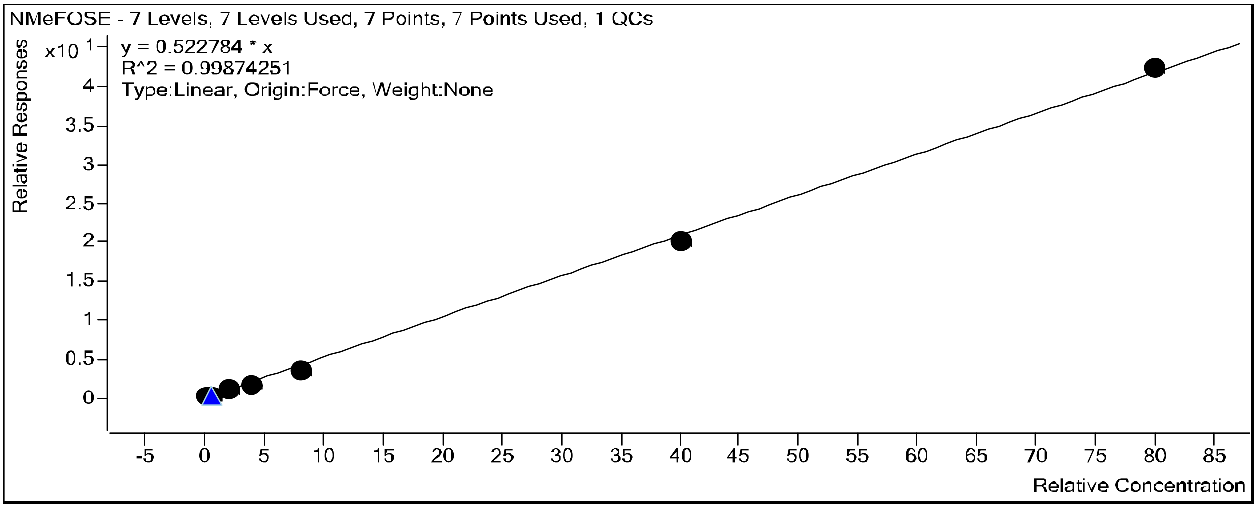


Extracted ISTD	*d7-NMeFOSE*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	22578	5.0000	4515.6608
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	21911	5.0000	4382.2988
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	23879	5.0000	4775.8889
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	24166	5.0000	4833.2870
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	25512	5.0000	5102.4001
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	23530	5.0000	4706.0797
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	21294	5.0000	4258.8303

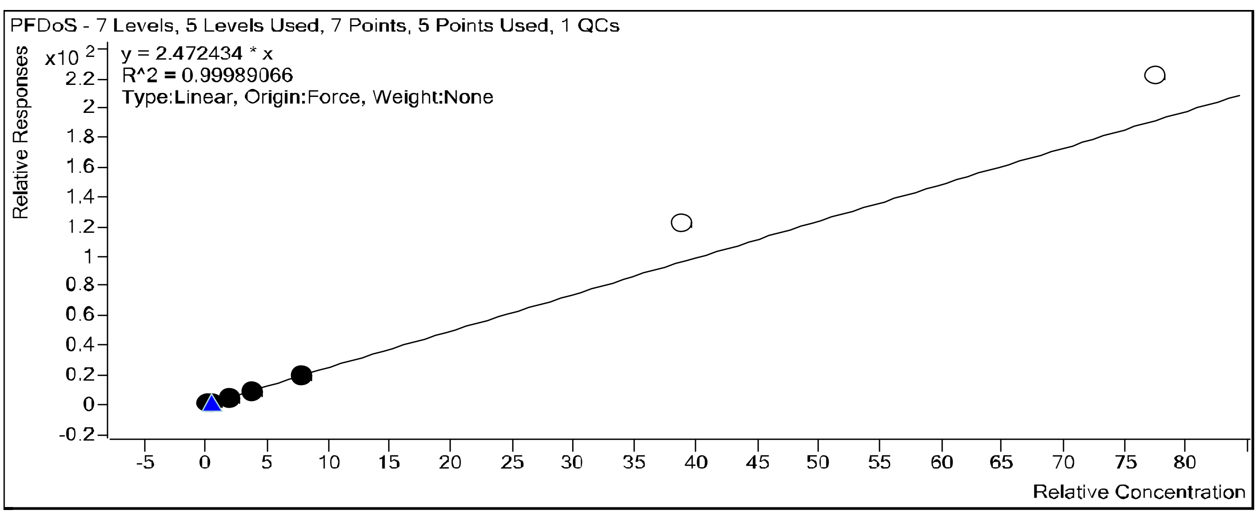
Target Compound	*NMeFOSE*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	1852	1.0000	0.4102
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	4738	2.5000	0.4325
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	23478	10.0000	0.4916
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	40688	20.0000	0.4209
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	86514	40.0000	0.4239
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	470681	200.0000	0.5001
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	902409	400.0000	0.5297



Target Compound	*PFDoS*

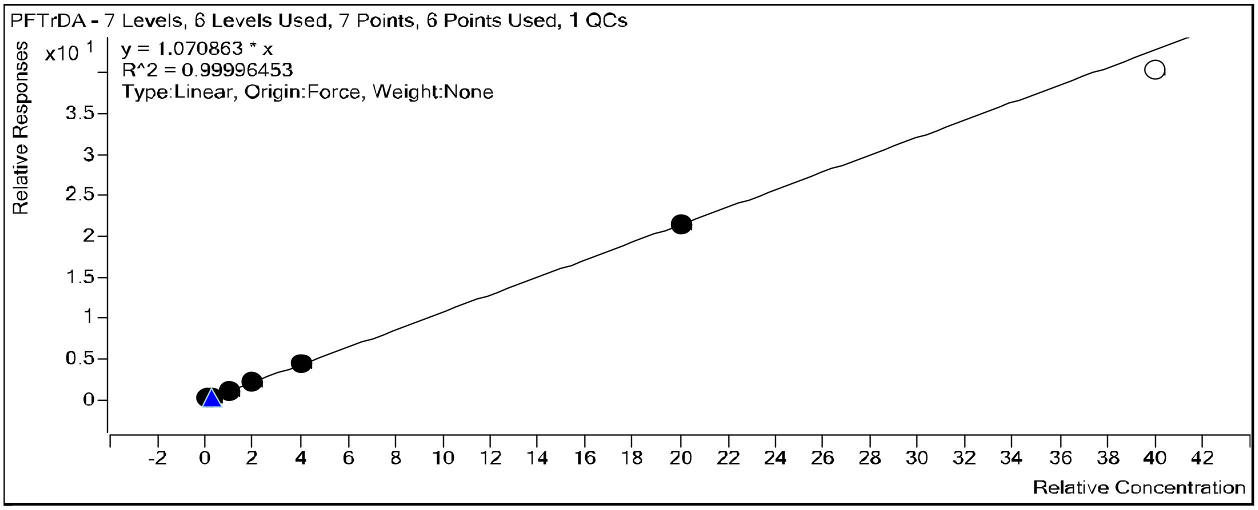
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	2682	0.9680	2.9184
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	5043	2.4200	2.3214
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	21717	9.6800	2.5269
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	41200	19.3600	2.4618
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	89140	38.7200	2.4720
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☐	586827	193.6000	3.1592
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	1229478	387.2000	2.8683



Target Compound	*PFTrDA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF

D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	3919	0.5000	1.1375
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	9207	1.2500	1.0547
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	43976	5.0000	1.1091
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	82491	10.0000	1.0565
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	185338	20.0000	1.0950
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	814485	100.0000	1.0699
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	1416995	200.0000	1.0085



Extracted ISTD *d-NEtFOSA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	11371	5.0000	2274.1891
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	11524	5.0000	2304.7593
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	12321	5.0000	2464.1147
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	11653	5.0000	2330.6284
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	11963	5.0000	2392.5542
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	12486	5.0000	2497.2609
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	11753	5.0000	2350.6937

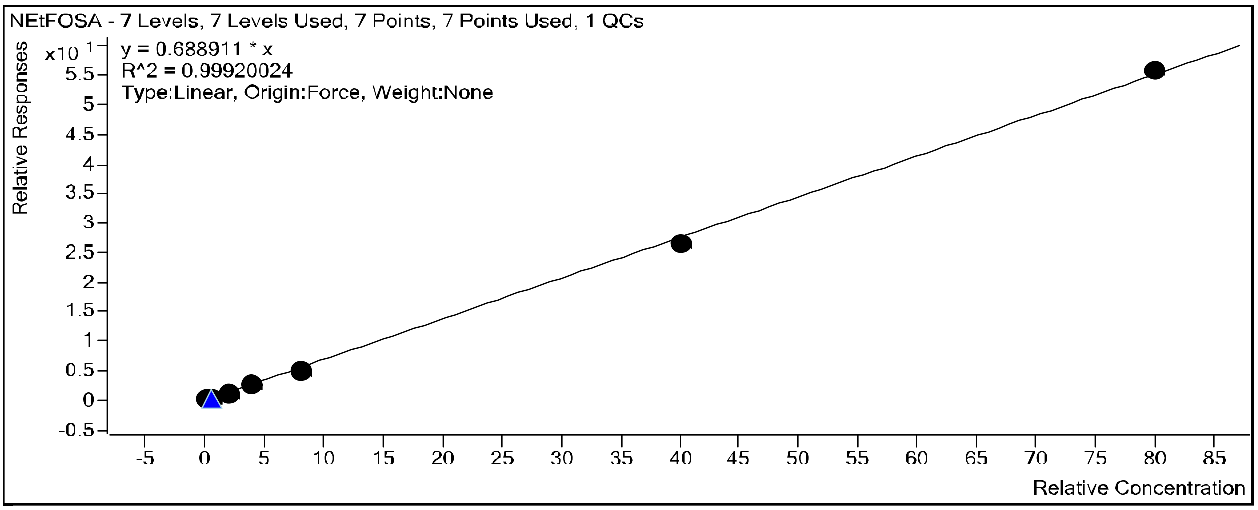
Extracted ISTD *d9-NEtFOSE*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	20086	5.0000	4017.1856
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	19255	5.0000	3850.9595
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	21385	5.0000	4276.9459

D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	21735	5.0000	4346.9173
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	22376	5.0000	4475.2077
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	21064	5.0000	4212.7207
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	19623	5.0000	3924.5575

Target Compound *NEtFOSA*

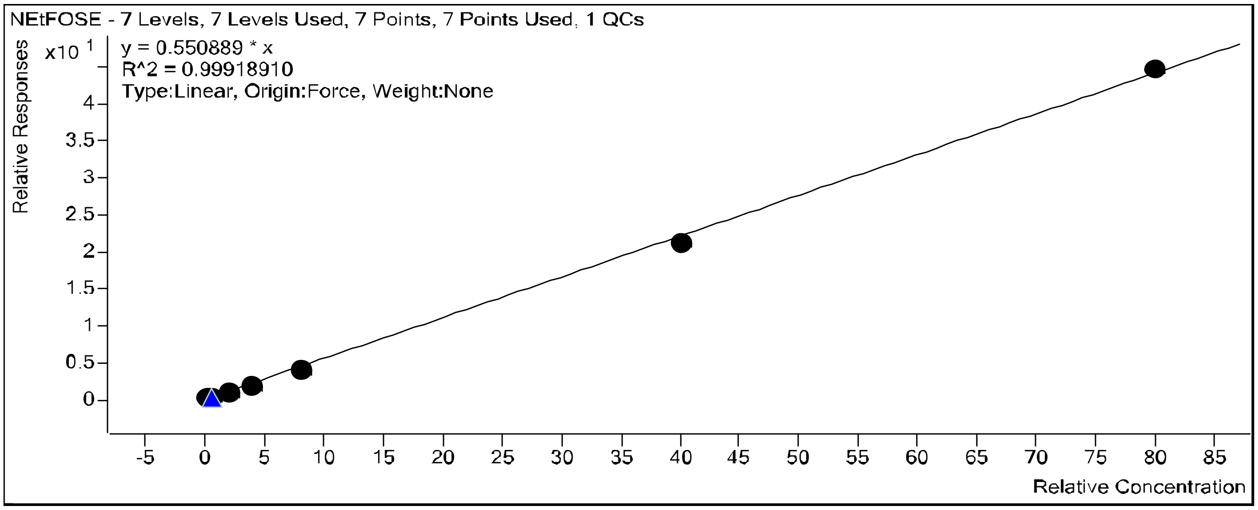
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	1758	1.0000	0.7729
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	3334	2.5000	0.5787
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	15632	10.0000	0.6344
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	29656	20.0000	0.6362
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	60696	40.0000	0.6342
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	329130	200.0000	0.6590
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	655477	400.0000	0.6971



Target Compound *NEtFOSE*

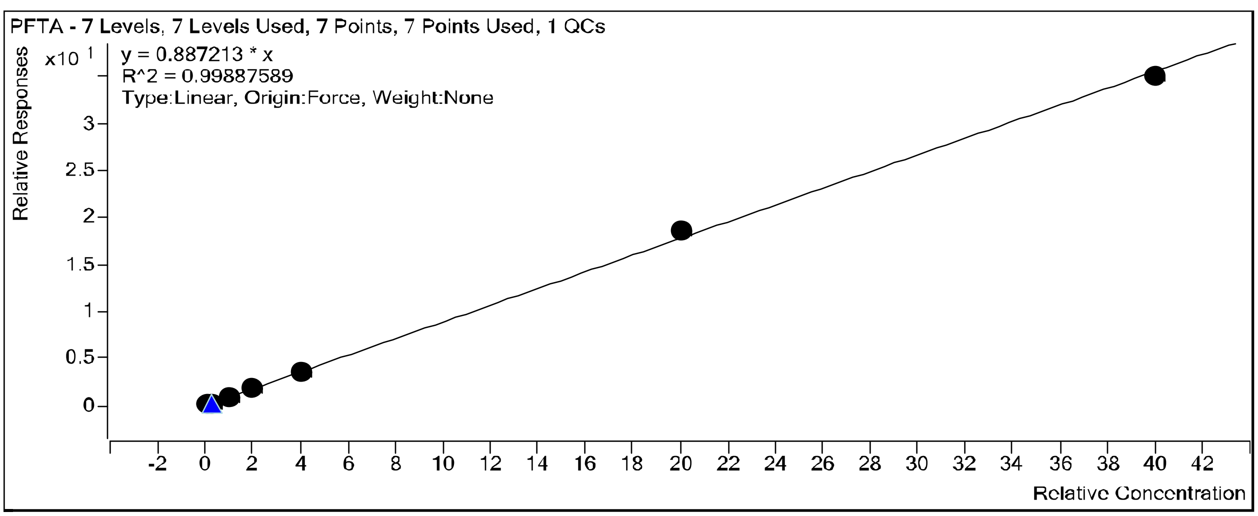
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	2070	1.0000	0.5153
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	4426	2.5000	0.4597
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	20873	10.0000	0.4880
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	39785	20.0000	0.4576
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	87482	40.0000	0.4887
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	446219	200.0000	0.5296

D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	874560	400.0000	0.5571



Target Compound *PFTA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	2642	0.5000	0.9414
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	5769	1.2500	0.8128
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	30316	5.0000	0.9483
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	57507	10.0000	0.9202
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	124987	20.0000	0.9028
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	630685	100.0000	0.9358
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	1207136	200.0000	0.8748



Extracted ISTD *M2PFTA*

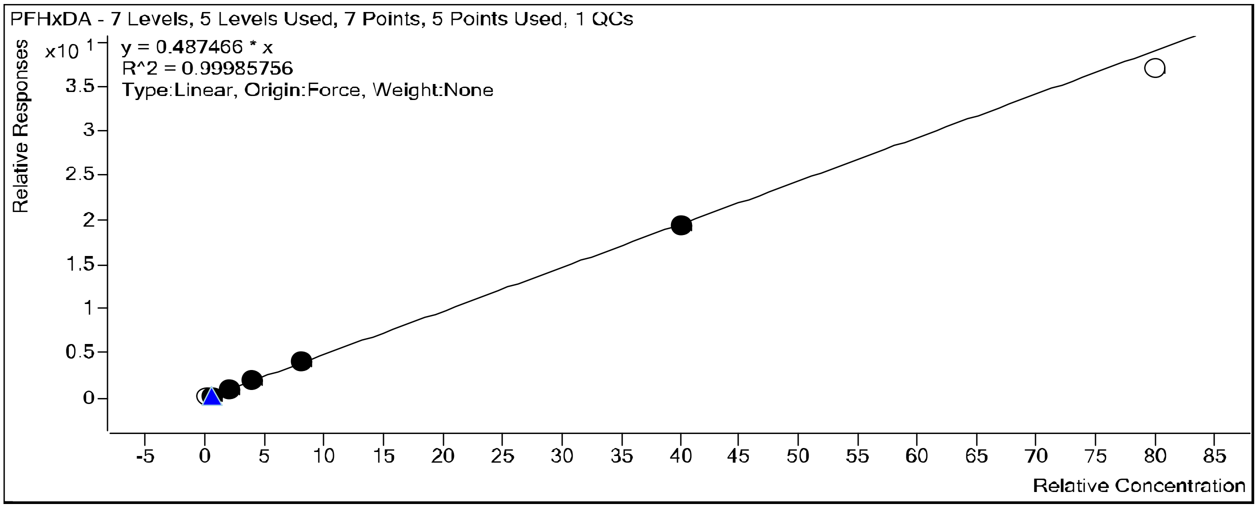
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	28064	5.0000	5612.8401
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	28391	5.0000	5678.2423
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	31970	5.0000	6394.0649
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	31248	5.0000	6249.5966
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	34610	5.0000	6921.9580
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	33697	5.0000	6739.4932
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	34498	5.0000	6899.5699

Extracted ISTD *M2PFHxDA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	28625	5.0000	5724.9099
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	31530	5.0000	6305.9402
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	35951	5.0000	7190.1888
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	32497	5.0000	6499.3455
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	34999	5.0000	6999.8577
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	34622	5.0000	6924.4782
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☑	38621	5.0000	7724.2949

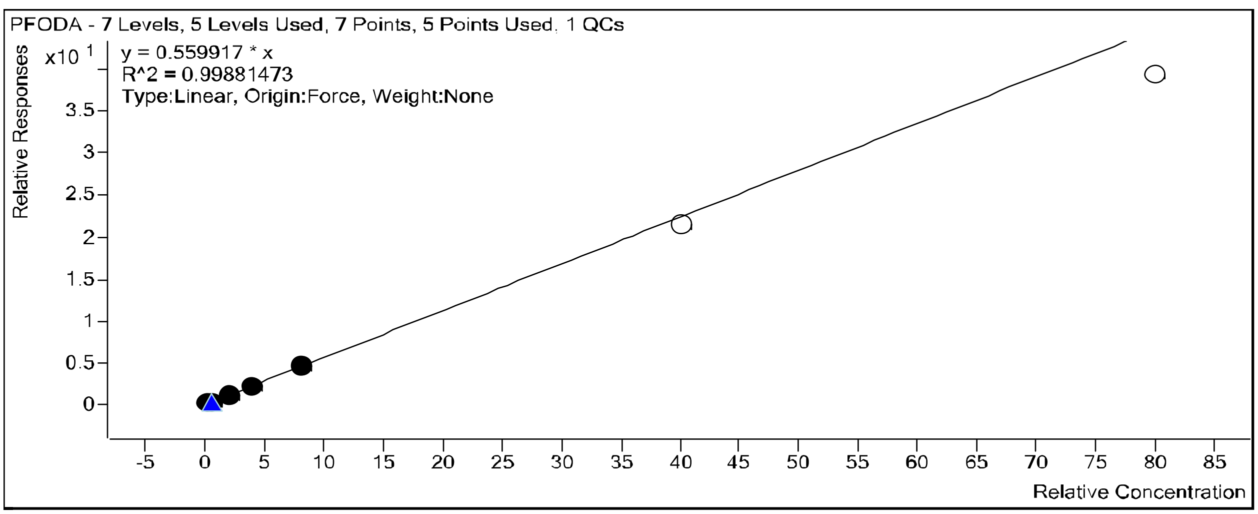
Target Compound *PFHxDA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☐	3170	1.0000	0.5538
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	7060	2.5000	0.4478
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	38039	10.0000	0.5290
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	63255	20.0000	0.4866
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	142337	40.0000	0.5084
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☑	673809	200.0000	0.4865
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	1428247	400.0000	0.4623



Target Compound *PFODA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2201224ACAL\2201224A_02.d	Calibration	1	☑	3183	1.0000	0.5559
D:\MassHunter\Data\2201224ACAL\2201224A_03.d	Calibration	2	☑	7857	2.5000	0.4984
D:\MassHunter\Data\2201224ACAL\2201224A_04.d	Calibration	3	☑	38114	10.0000	0.5301
D:\MassHunter\Data\2201224ACAL\2201224A_05.d	Calibration	4	☑	69952	20.0000	0.5381
D:\MassHunter\Data\2201224ACAL\2201224A_10.d	Calibration	5	☑	158887	40.0000	0.5675
D:\MassHunter\Data\2201224ACAL\2201224A_07.d	Calibration	6	☐	742849	200.0000	0.5364
D:\MassHunter\Data\2201224ACAL\2201224A_08.d	Calibration	7	☐	1524512	400.0000	0.4934

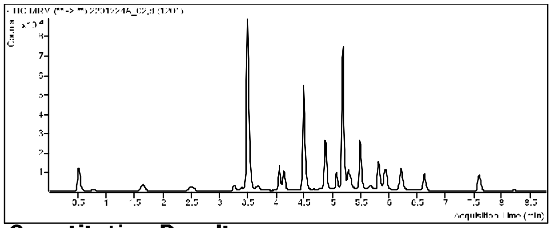


Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_02.d	**Position**	Vial 1	**Samp Name**	1201	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	Calibration	**Comment**	MRA,QQQ1;Cal
Acq Date	12/24/2020 10:18						

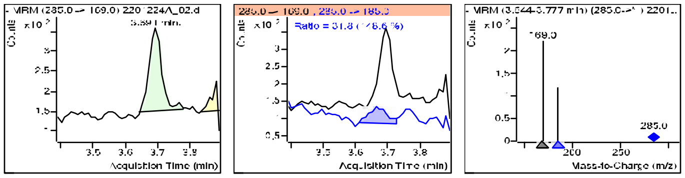
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	159361.226	5.186				93.13	18.6265	93.13	25270.65	1.35	
M2PFHxA	235532.849	3.501				88.35	35.3410	88.35	2269.24	1.35	
M2PFOA	112127.984	4.499				88.75	17.7493	88.75	1608.52	1.33	
M4PFOS	45005.060	4.883				92.47	18.4941	92.47	4197.50	1.42	
M3PFBA	6155.627	0.503				0.00	4.7903	95.81	210.47	1.75	
MPFOA	366.020	4.489				0.00	17.9648	71.86	8.09	2.38	
HFPO-DA	563.065	3.694	M3HFPODA	2294	3.693	78.22	1.9279	128.52	5.90	0.99	
4:2 FTS	1983.708	3.468	M2 4:2 FTS	10664	3.458	96.30	0.4749	101.59	15.48	1.66	
6:2 FTS	3572.988	4.477	M2 6:2 FTS	21929	4.477	99.94	0.4713	99.21	113.15	1.80	
ADONA	8854.450	4.148	M8PFOA	22148	4.499	105.58	0.4541	90.82	700.87	1.33	
8:2 FTS	4027.227	5.175	M2 8:2 FTS	10142	5.175	98.48	0.5999	124.97	793.50	1.86	
FOSA	4733.837	5.282	M8FOSA	22117	5.291	100.52	0.4597	91.95	398.44	1.94	
9Cl-PF3ONS	21623.829	5.069	M8PFOS	4747	4.882	100.74	0.4698	93.96	1551.74	1.45	
PFDS	804.617	5.494	M6PFDA	30397	5.186	98.35	0.5013	103.90	159.94	1.61	
11Cl-PF3OUdS	4923.900	5.669	M8PFOS	4747	4.882	100.74	0.4668	93.37	135.63	1.88	
PFHpS	2106.972	4.539	M8PFOA	22148	4.499	105.58	0.6263	131.85	221.37	1.23	
10:2 FTS	2887.929	5.827	M2 8:2 FTS	10142	5.175	98.48	0.9054	93.93	771.02	1.36	
PFNS	706.063	5.194	M9PFNA	29071	4.863	109.17	0.4399	91.64	50.87	1.76	
PFDoS	2687.297	6.179	M8PFOS	4747	4.882	100.74	1.1476	118.04	153.45	1.83	
PFPeS	1576.059	3.657	M5PFHxA	26046	3.501	96.96	0.5609	119.35	33.75	1.15	
PFODA	3182.699	8.216	M2PFHxDA	28625	7.596	84.60	0.9929	99.29	263.02	1.37	
NEtFOSAA	2014.055	5.484	d5-NEtFOSAA	12551	5.484	99.94	0.5723	114.46	261.50	1.45	
PFHxDA	3170.417	7.589	M2PFHxDA	28625	7.596	84.60	1.1361	113.61	277.18	1.77	
NMeFOSAA	1764.402	5.318	d3-NMeFOSAA	8663	5.317	90.92	0.6292	125.84	90.46	2.12	
PFBA	4164.837	0.505	MPFBA	35115	0.511	99.38	0.4601	92.02	25.35	1.66	
PFBS	1546.060	2.496	M3PFBS	11769	2.494	99.78	0.4265	96.37	77.05	1.05	
NMeFOSA	1422.680	5.927	d-NMeFOSA	15655	5.917	93.12	0.9757	97.57	55.41	1.23	
PFDA	4390.209	5.187	M6PFDA	30397	5.186	98.35	0.4789	95.77	316.92	1.37	
PFDoA	3312.740	5.818	MPFDoA	34458	5.818	91.51	0.4646	92.92	247.80	1.53	
NEtFOSA	1757.796	6.227	d-NEtFOSA	11371	6.216	95.82	1.1220	112.20	151.18	1.66	
PFHpA	3240.119	4.067	M4PFHpA	31874	4.067	90.32	0.4976	99.52	129.88	1.53	
PFHxA	3580.590	3.503	M5PFHxA	26046	3.501	96.96	0.5210	104.19	24.16	1.23	
NMeFOSE	1852.448	5.953	d7-NMeFOSE	22578	5.943	97.04	0.7847	78.47	131.42	1.62	
PFHxS	2078.207	4.137	M3PFHxS	9965	4.136	99.79	0.4655	102.08	116.26	1.34	m
PFNA	3483.198	4.864	M9PFNA	29071	4.863	109.17	0.3848	76.96	28.45	1.35	
NEtFOSE	2069.987	6.244	d9-NEtFOSE	20086	6.223	96.62	0.9354	93.54	234.07	1.22	
PFOA	2718.542	4.500	M8PFOA	22148	4.499	105.58	0.4356	87.11	92.94	1.32	
PFOS	1599.558	4.883	M8PFOS	4747	4.882	100.74	0.3700	79.95	47.34	1.65	m
PFPeA	1968.617	1.637	M5PFPeA	16589	1.635	98.66	0.5047	100.94	60.90	1.31	
PFMPA	3280.348	0.766	M5PFPeA	16589	1.635	98.66	0.8693	86.93	40.36	1.08	
PFTA	2642.079	6.624	M2PFTA	28064	6.623	88.30	0.5306	106.11	166.59	1.49	
PFMBA	3265.677	2.520	M5PFHxA	26046	3.501	96.96	0.9263	92.63	355.41	1.32	
PFTrDA	3919.445	6.190	MPFDoA	34458	5.818	91.51	0.5311	106.22	24.07	1.83	
PFEESA	7995.925	3.263	M3PFHxS	9965	4.136	99.79	0.8698	97.73	32.41	1.27	
PFUnA	5440.983	5.486	M7PFUnA	50870	5.485	96.94	0.5004	100.07	114.10	2.11	
NFDHA	3255.366	3.382	M4PFHpA	31874	4.067	90.32	1.0367	103.67	245.63	1.75	

HFPO-DA



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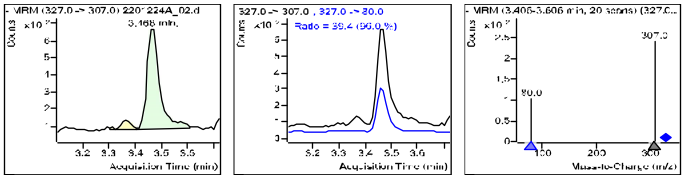

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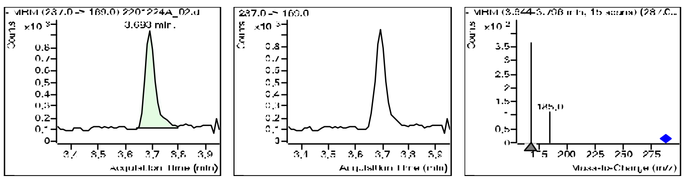

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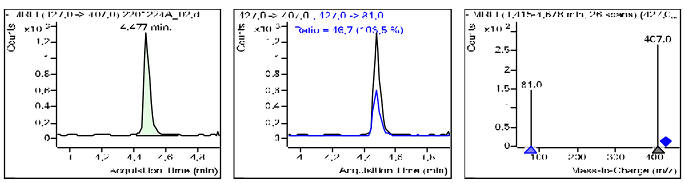

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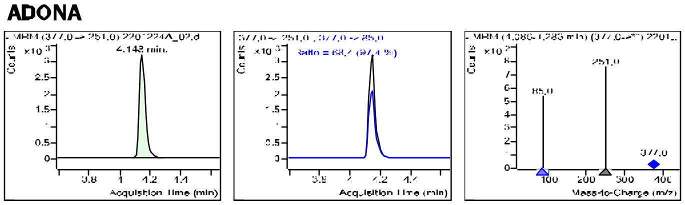

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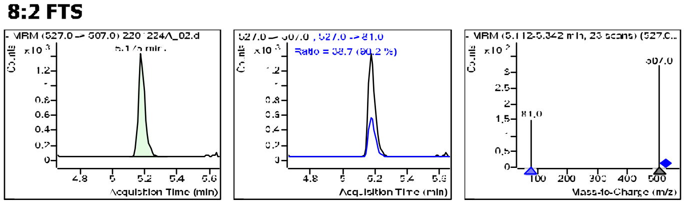

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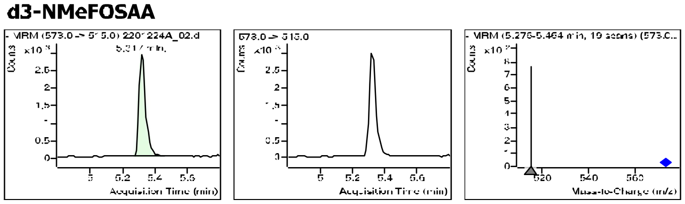

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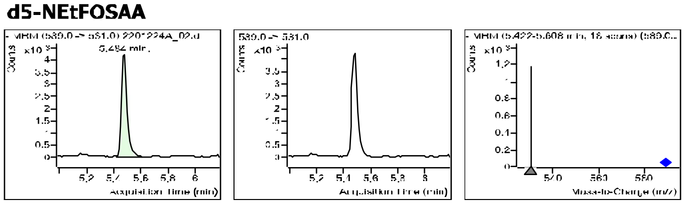

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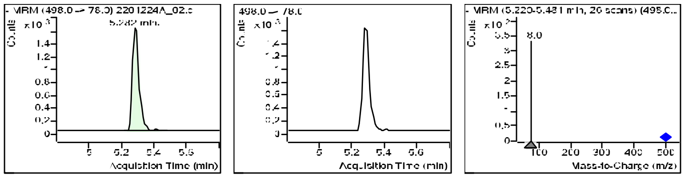

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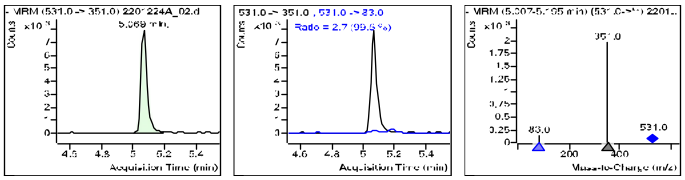

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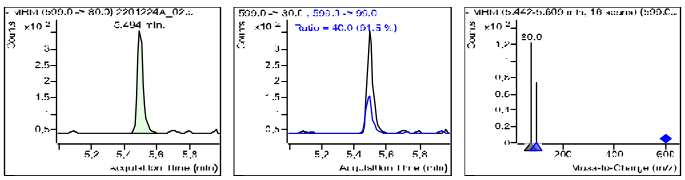

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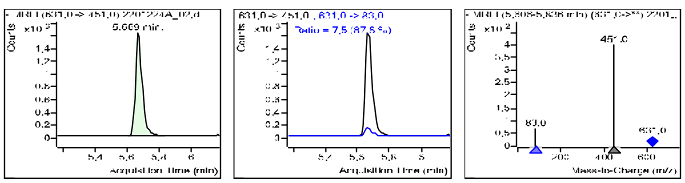

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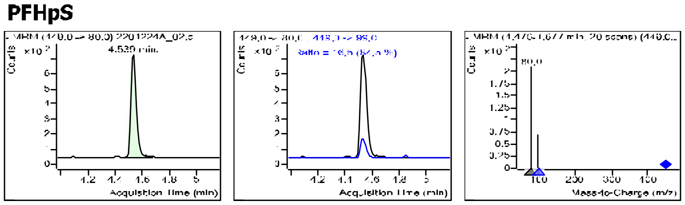

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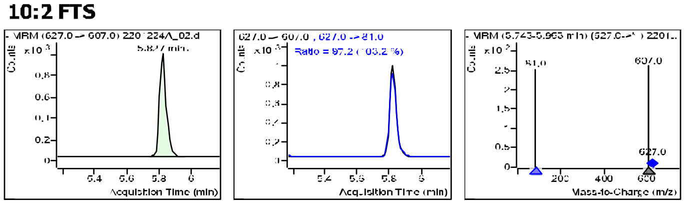

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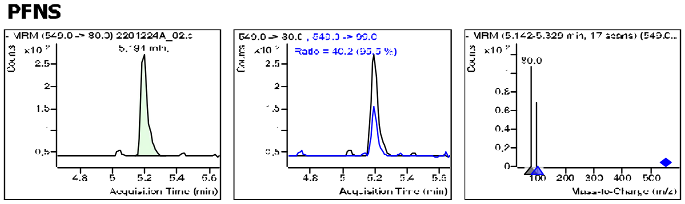

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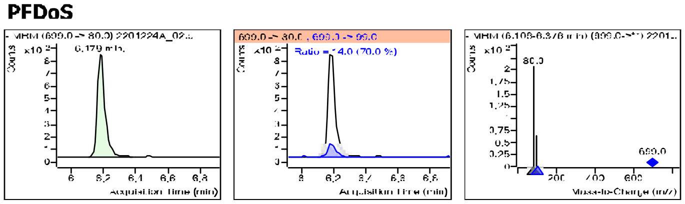

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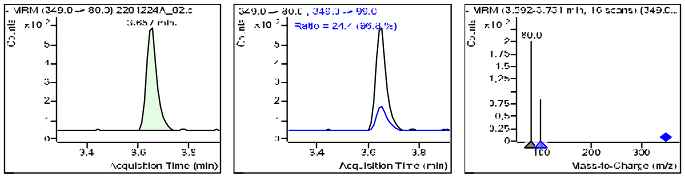

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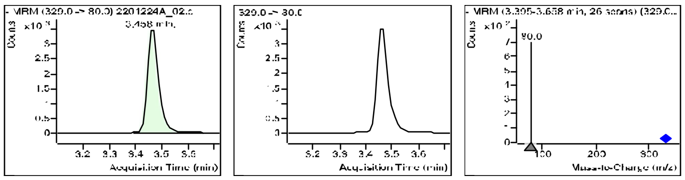

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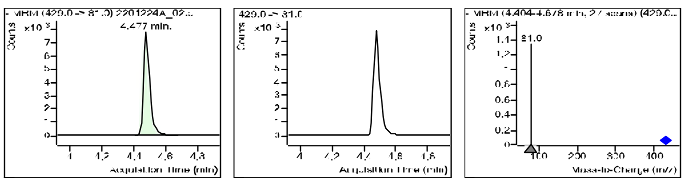

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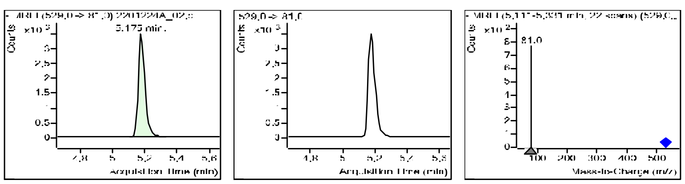

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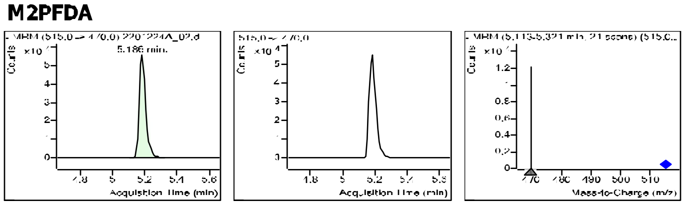

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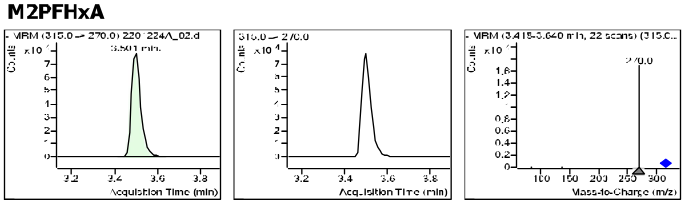

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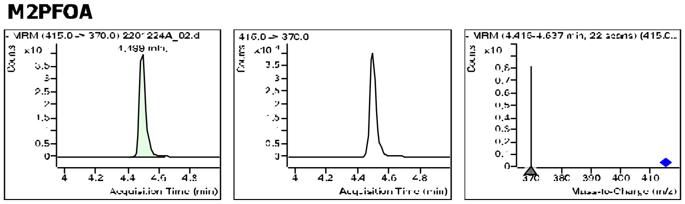

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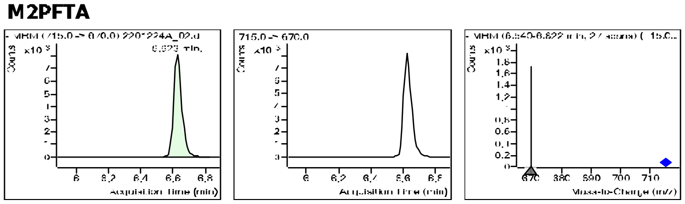

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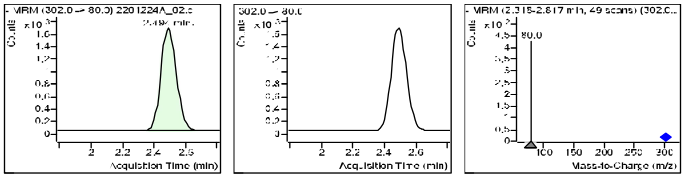

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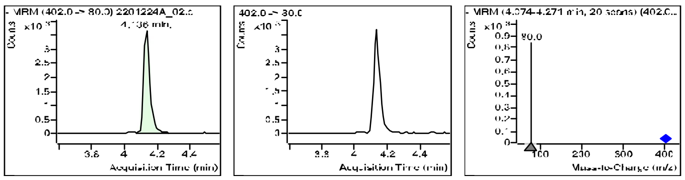

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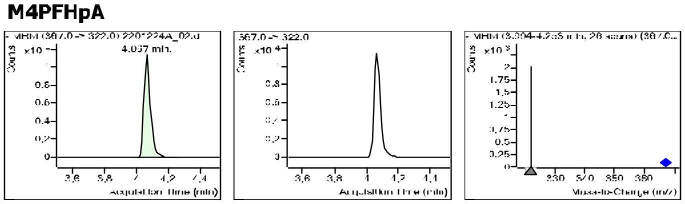

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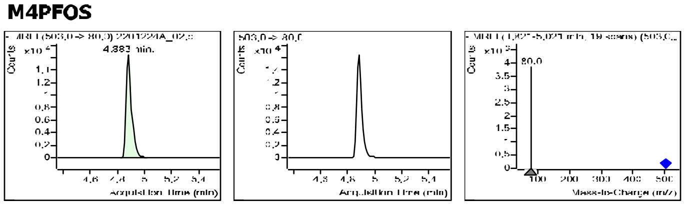

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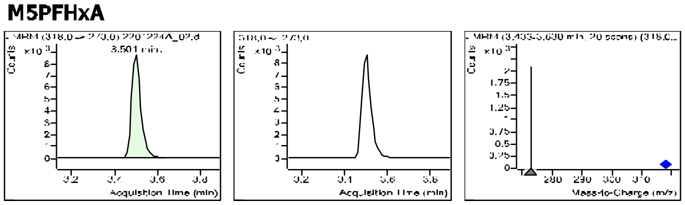

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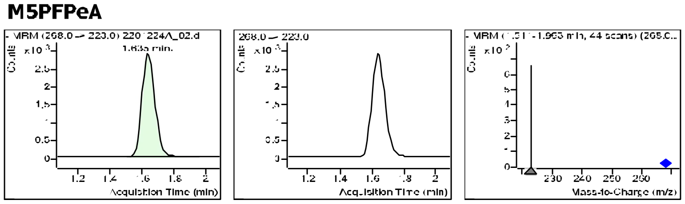

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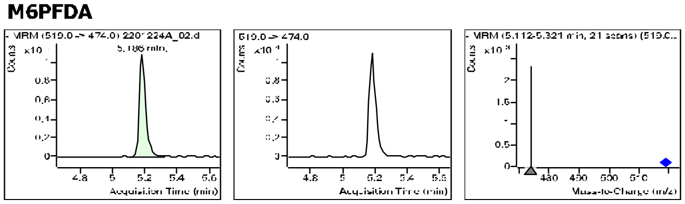

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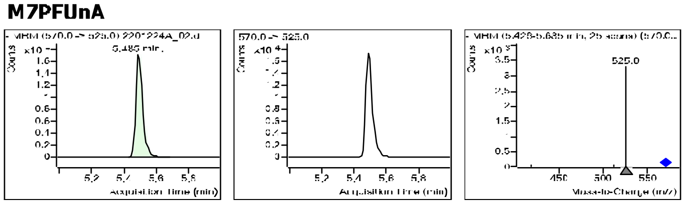

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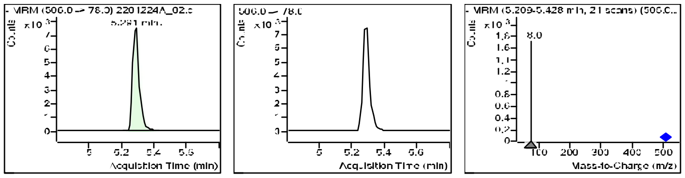

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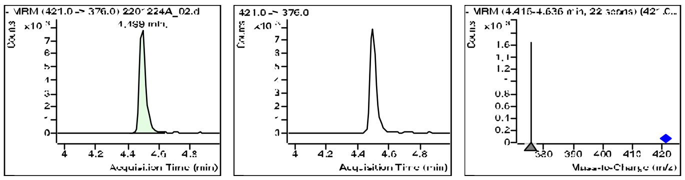

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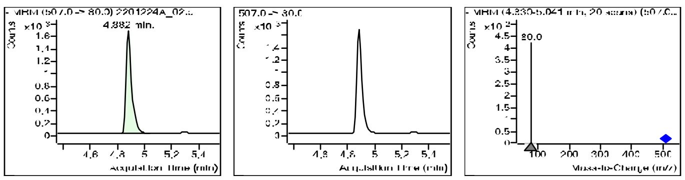

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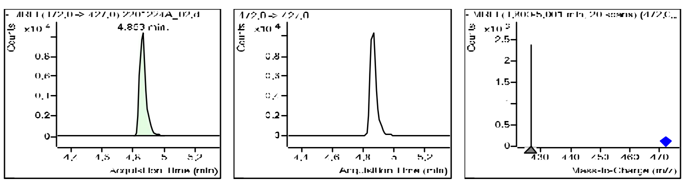

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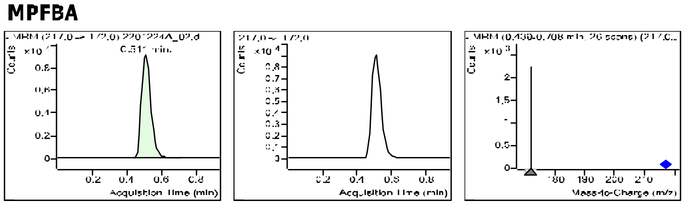

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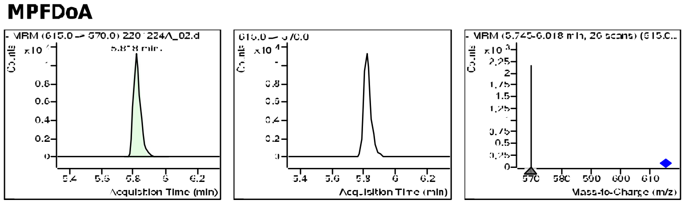

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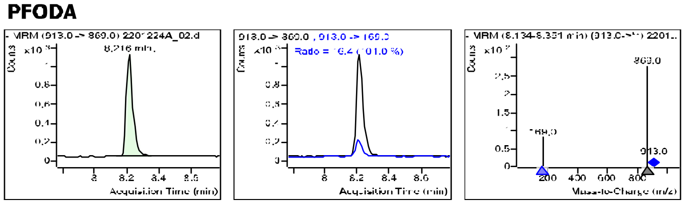

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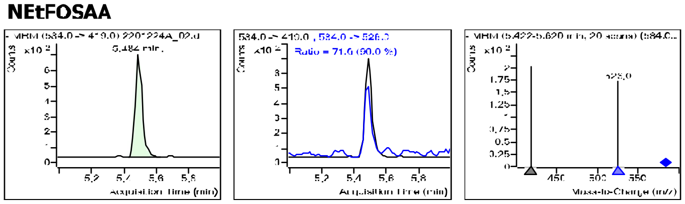

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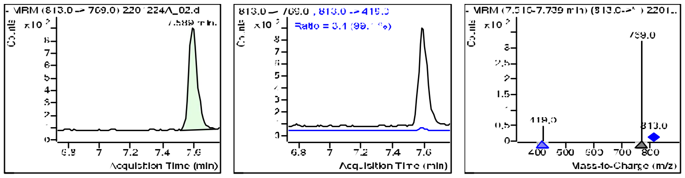

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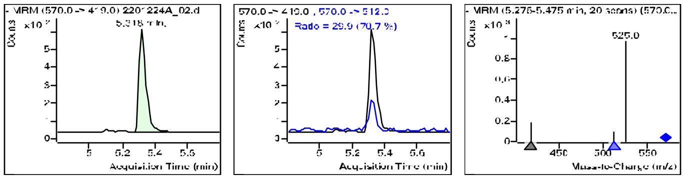

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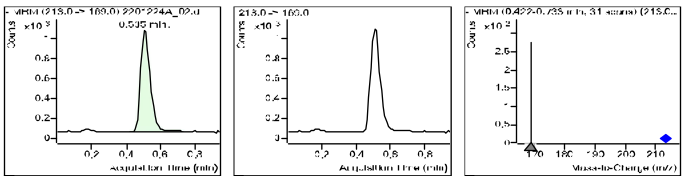

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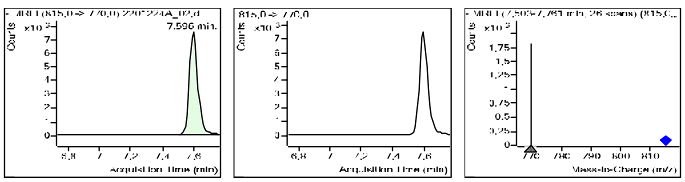

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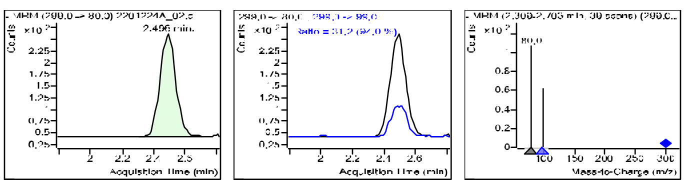

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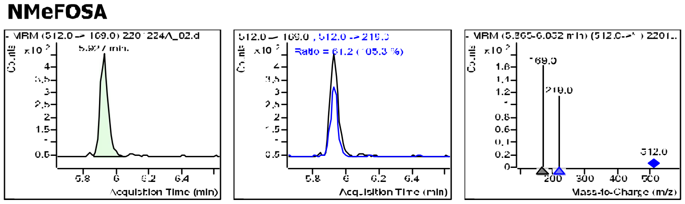

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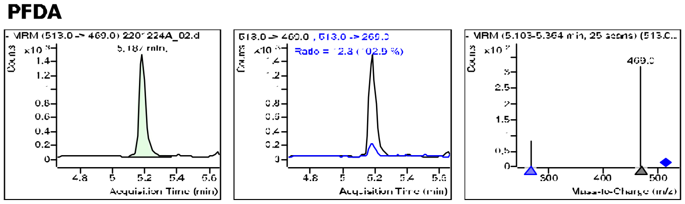

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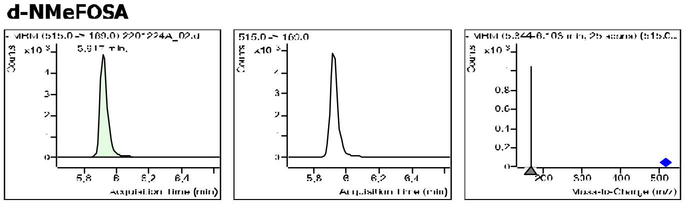

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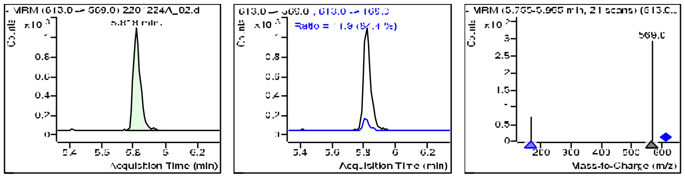

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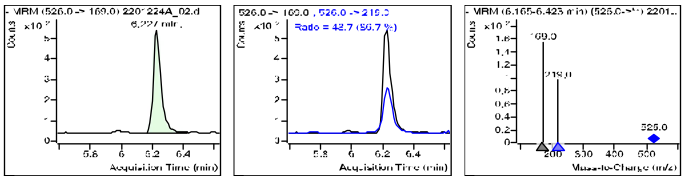

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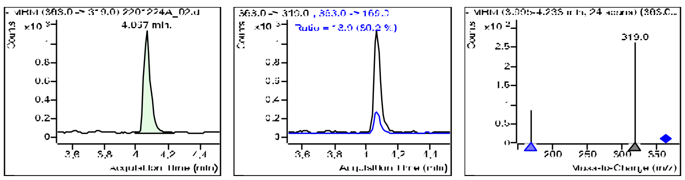

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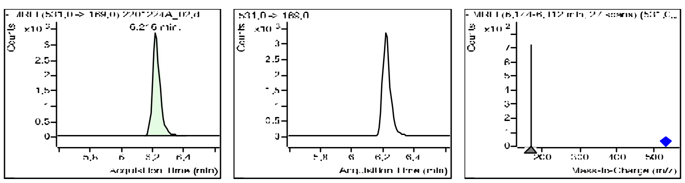

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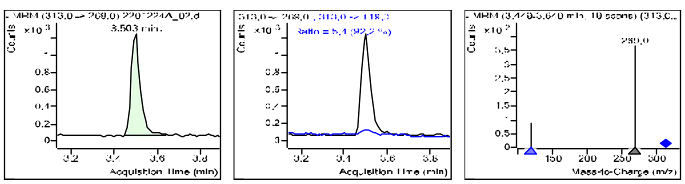

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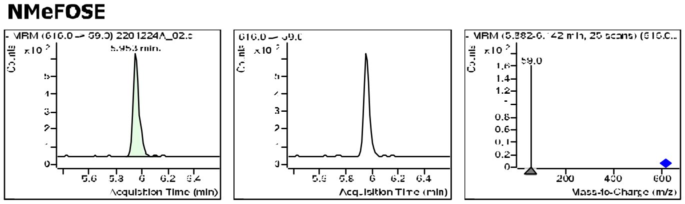

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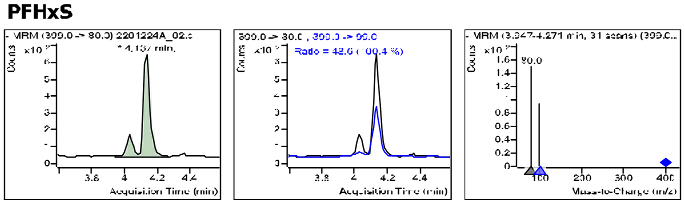

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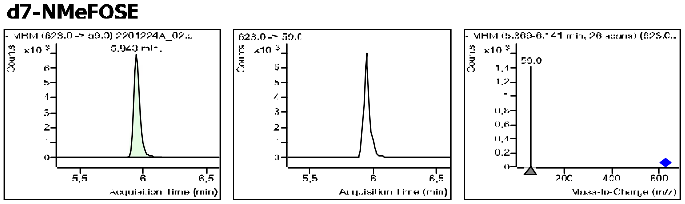

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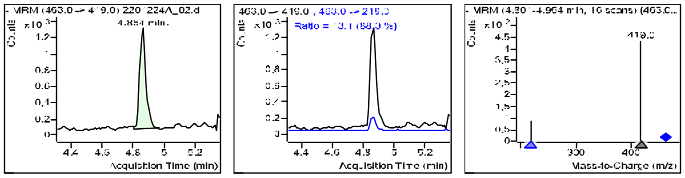

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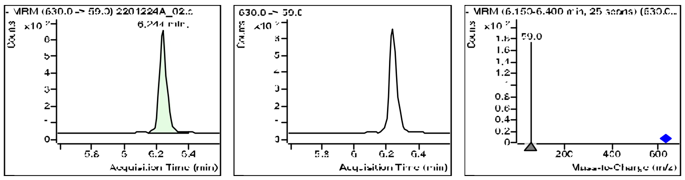

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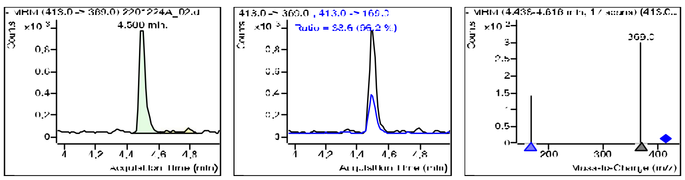

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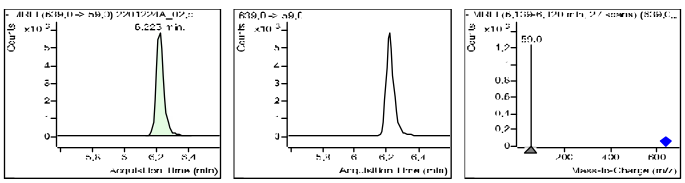

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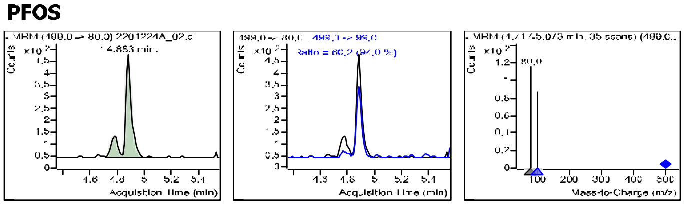

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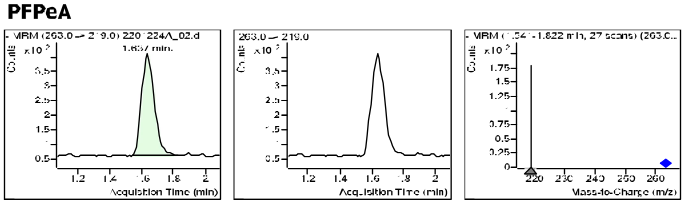

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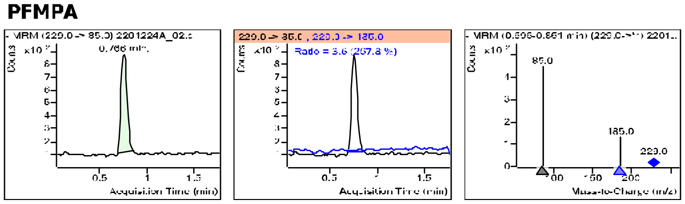

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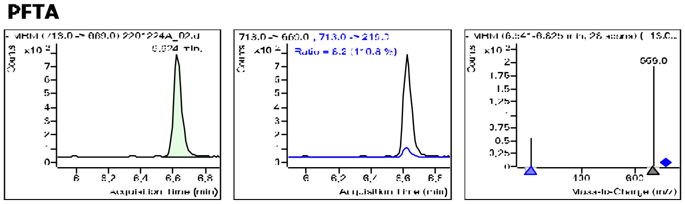

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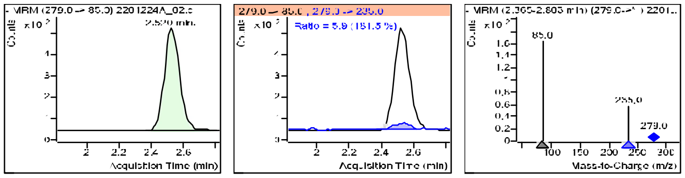

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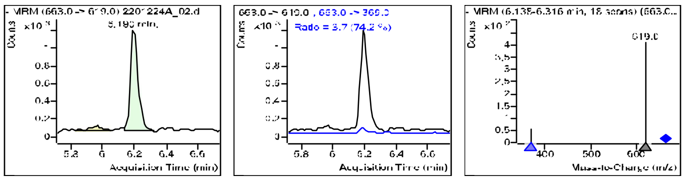

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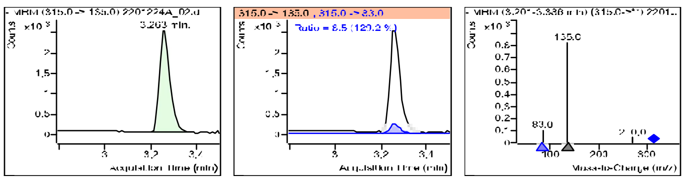

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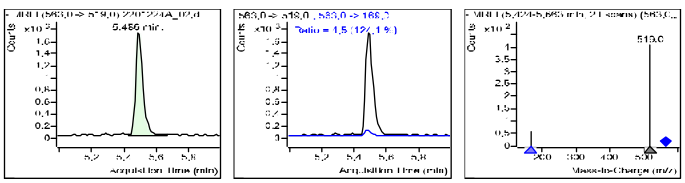

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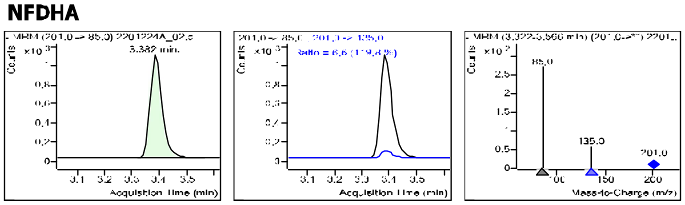

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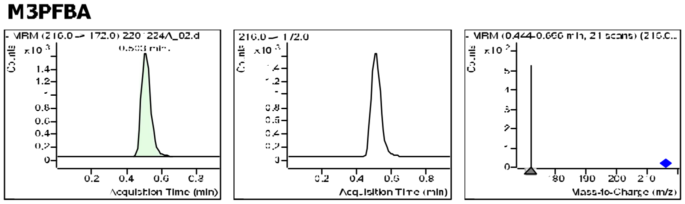
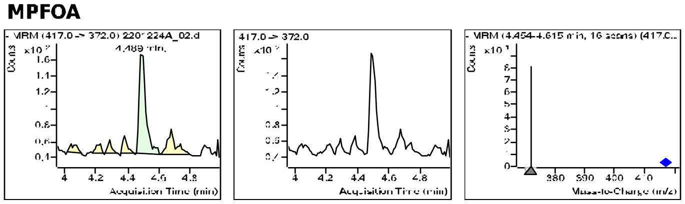


MPFOA

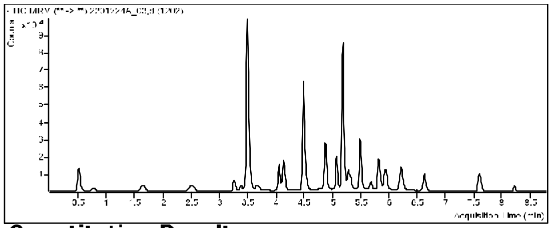


Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_03.d	**Position**	Vial 2	**Samp Name**	1202	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	Calibration	**Comment**	MRA,QQQ1;Cal
Acq Date	12/24/2020 10:32						

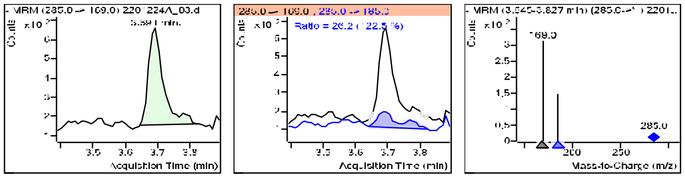
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	174153.525	5.186				101.78	20.3555	101.78	13487.39	1.35	
M2PFHxA	263974.499	3.491				99.02	39.6086	99.02	18994.66	1.98	
M2PFOA	124308.397	4.489				98.39	19.6774	98.39	8155.04	1.98	
M4PFOS	44662.050	4.883				91.77	18.3531	91.77	4997.23	1.48	
M3PFBA	6122.866	0.513				0.00	4.7648	95.30	296.59	1.18	
MPFOA	599.927	4.489				0.00	29.4453	117.78	25.79	1.91	
HFPO-DA	1612.749	3.694	M3HFPODA	2693	3.683	91.84	4.7033	125.42	8.99	1.66	
4:2 FTS	3999.827	3.458	M2 4:2 FTS	10921	3.458	98.62	0.9352	79.93	93.01	1.69	
6:2 FTS	8384.682	4.477	M2 6:2 FTS	20634	4.477	94.04	1.1753	98.77	416.76	1.39	
ADONA	20356.798	4.138	M8PFOA	21064	4.488	100.42	1.0977	87.82	1415.93	1.81	
8:2 FTS	7903.821	5.175	M2 8:2 FTS	10234	5.175	99.38	1.1666	97.22	598.91	1.80	
FOSA	10880.915	5.282	M8FOSA	20764	5.291	94.37	1.1256	90.05	1212.32	1.93	
9Cl-PF3ONS	50449.926	5.069	M8PFOS	4489	4.882	95.25	1.1592	92.74	2249.82	1.46	
PFDS	2136.978	5.494	M6PFDA	32345	5.186	104.65	1.2513	103.41	1220.64	1.65	
11Cl-PF3OUdS	10876.322	5.679	M8PFOS	4489	4.882	95.25	1.0906	87.25	8552.47	1.31	
PFHpS	3915.081	4.529	M8PFOA	21064	4.488	100.42	1.2236	102.83	331.46	1.99	
10:2 FTS	6089.752	5.827	M2 8:2 FTS	10234	5.175	99.38	1.8920	78.51	464.82	1.52	
PFNS	1970.034	5.194	M9PFNA	26182	4.863	98.32	1.3627	113.55	1199.39	1.61	
PFDoS	5043.358	6.189	M8PFOS	4489	4.882	95.25	2.2722	93.89	399.07	1.32	
PFPeS	3113.411	3.647	M5PFHxA	25248	3.501	93.99	1.1431	96.87	151.78	1.84	
PFODA	7857.319	8.216	M2PFHxDA	31530	7.596	93.19	2.2254	89.01	525.21	1.53	
NEtFOSAA	4015.133	5.484	d5-NEtFOSAA	12752	5.484	101.54	1.1230	89.84	3017.70	1.56	
PFHxDA	7059.644	7.599	M2PFHxDA	31530	7.596	93.19	2.2966	91.86	210.90	1.40	
NMeFOSAA	3552.545	5.329	d3-NMeFOSAA	7753	5.317	81.36	1.4156	113.25	545.18	1.40	
PFBA	9321.641	0.505	MPFBA	34626	0.511	97.99	1.0443	83.55	236.52	1.64	
PFBS	3314.613	2.485	M3PFBS	11497	2.494	97.46	0.9360	84.32	210.73	1.10	
NMeFOSA	3271.537	5.927	d-NMeFOSA	15530	5.927	92.37	2.2617	90.47	97.74	1.49	
PFDA	8850.318	5.187	M6PFDA	32345	5.186	104.65	0.9072	72.58	84.41	1.25	
PFDoA	8002.294	5.818	MPFDoA	34920	5.818	92.74	1.1074	88.59	812.57	1.57	
NEtFOSA	3334.393	6.227	d-NEtFOSA	11524	6.226	97.11	2.1000	84.00	375.23	1.82	
PFHpA	7704.454	4.057	M4PFHpA	34120	4.056	96.68	1.1053	88.42	183.02	2.01	
PFHxA	7412.827	3.493	M5PFHxA	25248	3.501	93.99	1.1127	89.01	70.22	1.81	
NMeFOSE	4738.338	5.953	d7-NMeFOSE	21911	5.943	94.17	2.0682	82.73	322.30	1.78	
PFHxS	4705.057	4.126	M3PFHxS	9440	4.126	94.54	1.1125	97.58	401.97	1.91	m
PFNA	8395.133	4.864	M9PFNA	26182	4.863	98.32	1.0298	82.38	97.67	1.30	
NEtFOSE	4425.516	6.244	d9-NEtFOSE	19255	6.223	92.62	2.0861	83.44	256.67	1.45	
PFOA	6145.505	4.490	M8PFOA	21064	4.488	100.42	1.0353	82.82	144.39	1.93	
PFOS	4831.039	4.883	M8PFOS	4489	4.882	95.25	1.1818	101.88	18665.21	1.29	m
PFPeA	4038.713	1.637	M5PFPeA	16485	1.645	98.04	1.0420	83.36	73.65	1.33	
PFMPA	7941.821	0.766	M5PFPeA	16485	1.645	98.04	2.1179	84.72	121.06	1.17	
PFTA	5769.141	6.624	M2PFTA	28391	6.623	89.33	1.1452	91.61	163.58	1.54	
PFMBA	7291.302	2.531	M5PFHxA	25248	3.501	93.99	2.1335	85.34	467.68	1.10	
PFTrDA	9207.209	6.201	MPFDoA	34920	5.818	92.74	1.2311	98.49	126.94	1.39	
PFEESA	18564.303	3.253	M3PFHxS	9440	4.126	94.54	2.1318	95.81	70.14	1.85	
PFUnA	10332.146	5.486	M7PFUnA	53105	5.485	101.20	0.9102	72.82	125.73	1.97	
NFDHA	7173.624	3.382	M4PFHpA	34120	4.056	96.68	2.1341	85.36	326.20	1.57	

HFPO-DA



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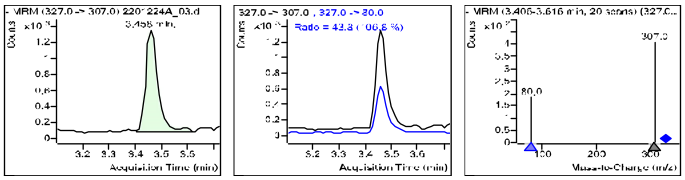

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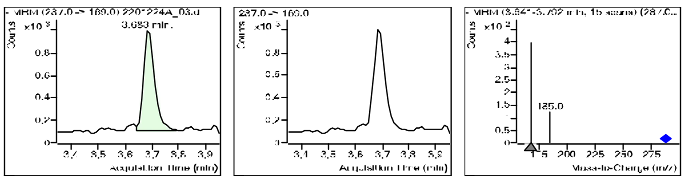

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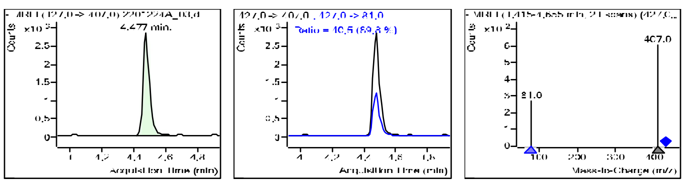
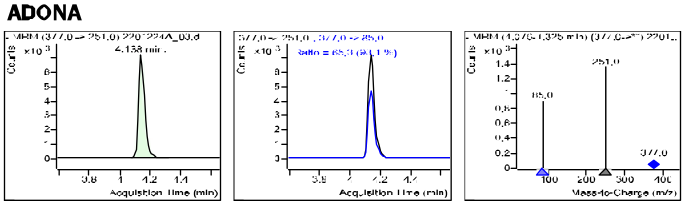
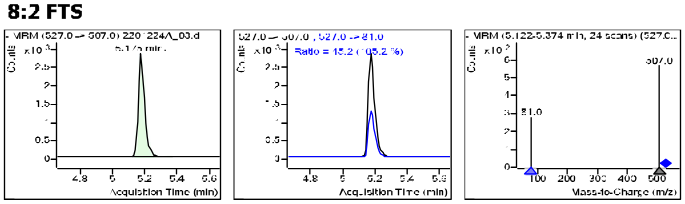


ADONA



8:2 FTS



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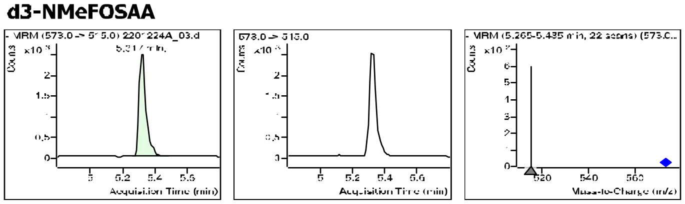

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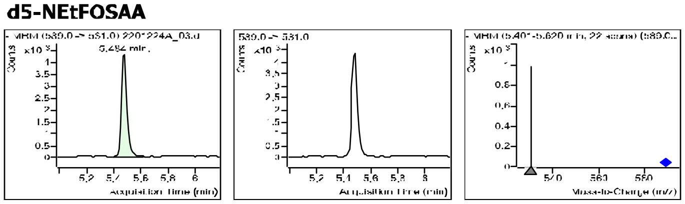

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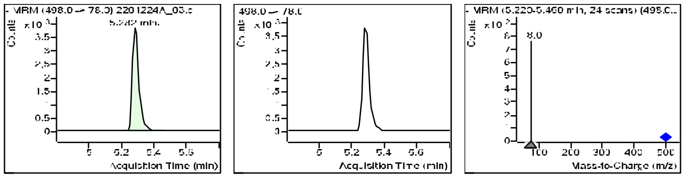

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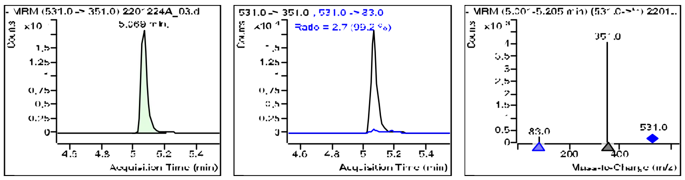

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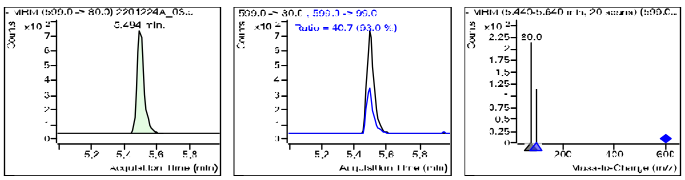

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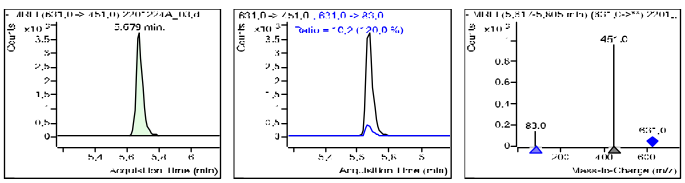

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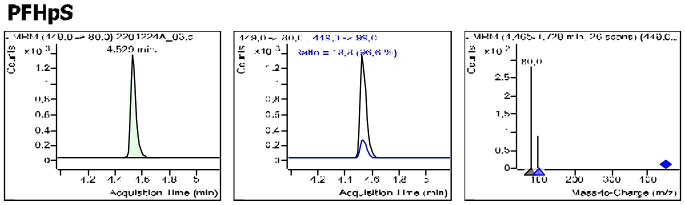

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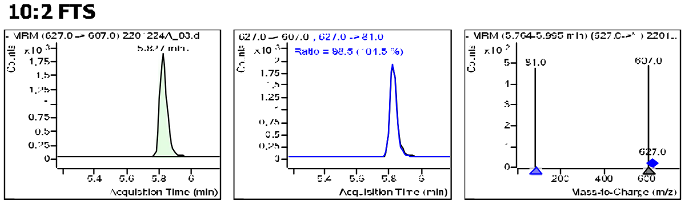

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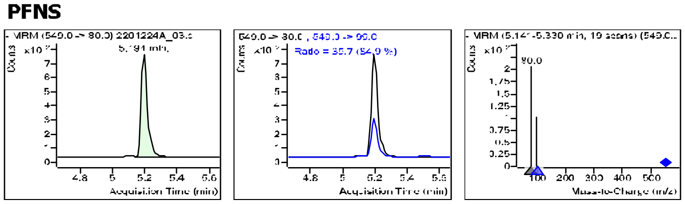

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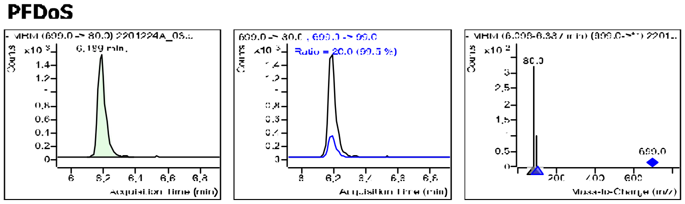

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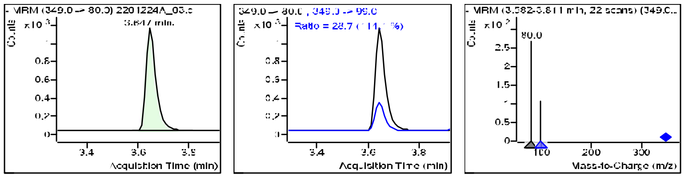

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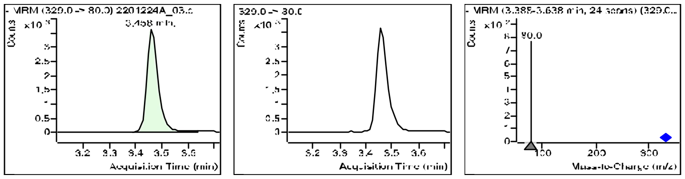
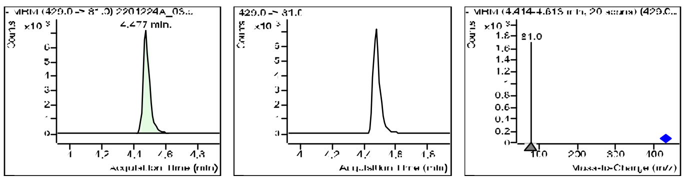


M2 6:2 FTS



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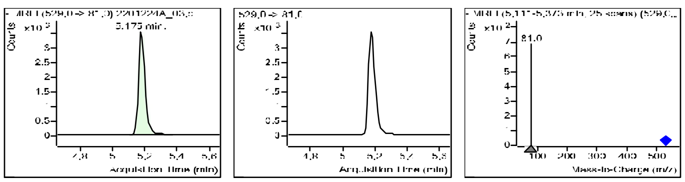

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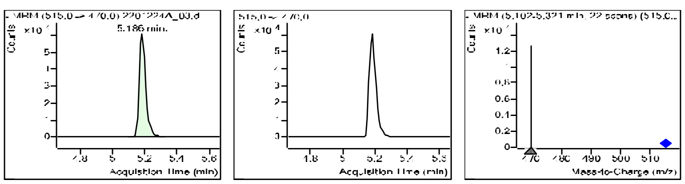

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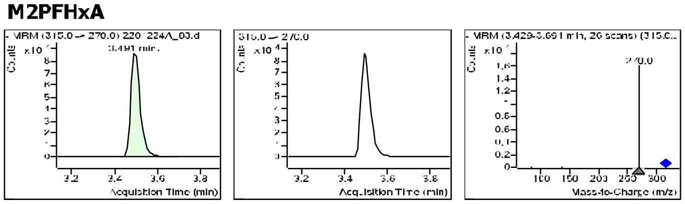

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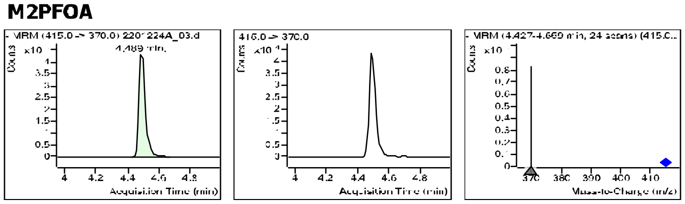

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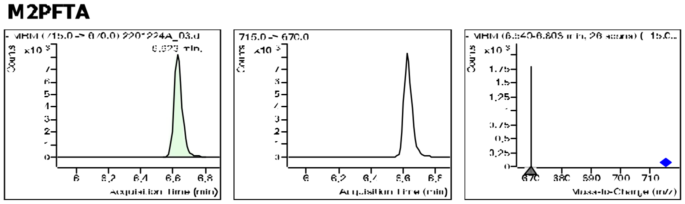

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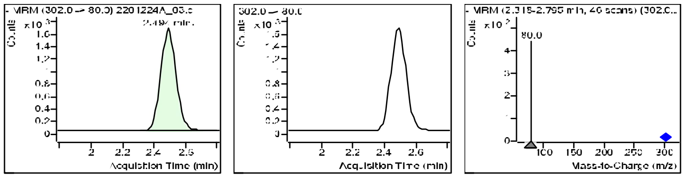

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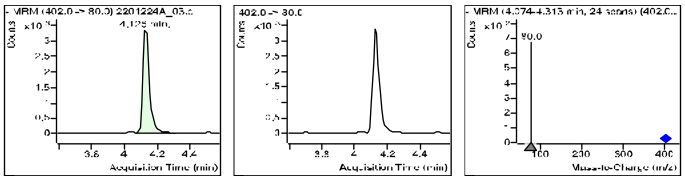

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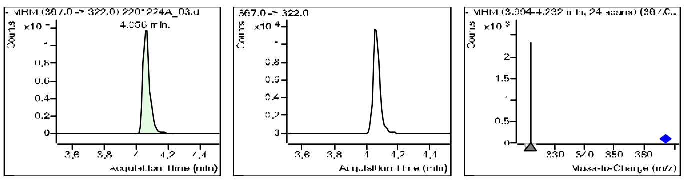

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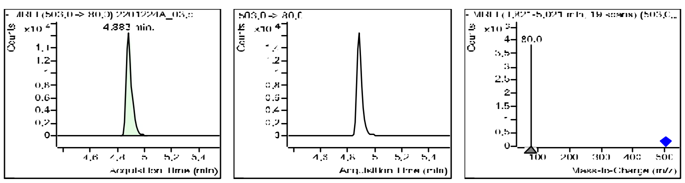

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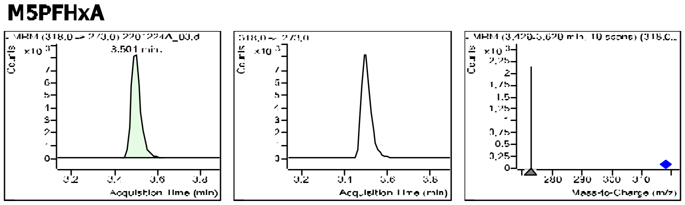

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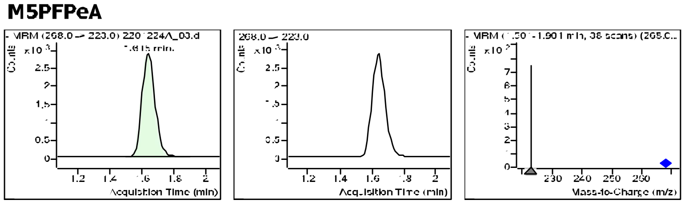

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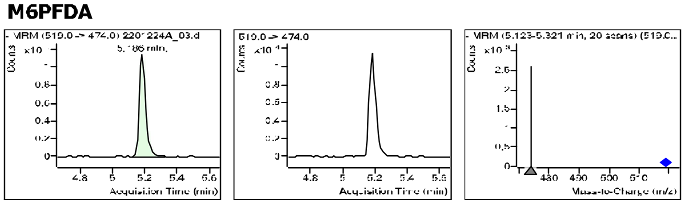

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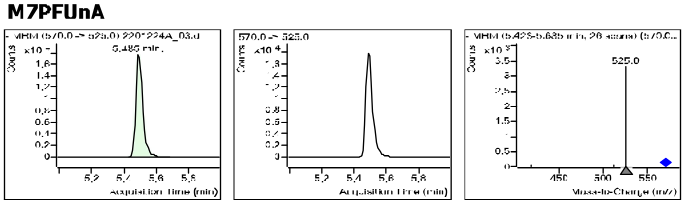

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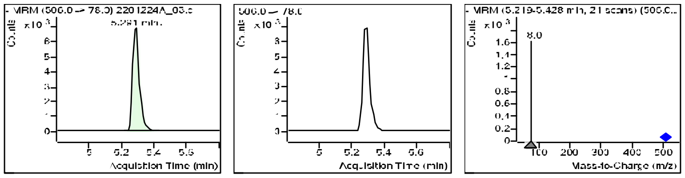

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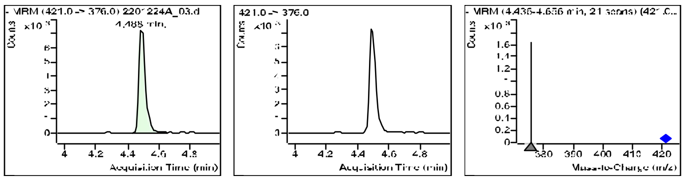

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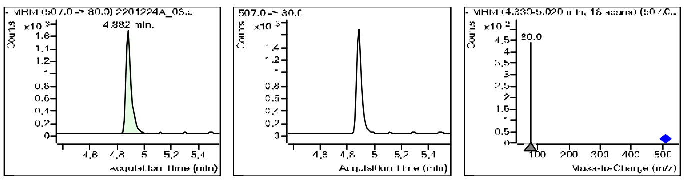

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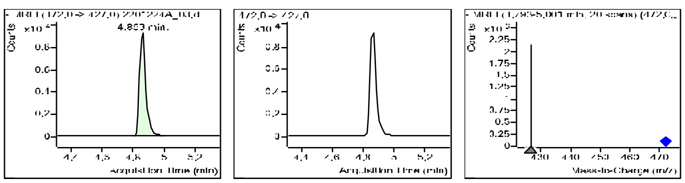

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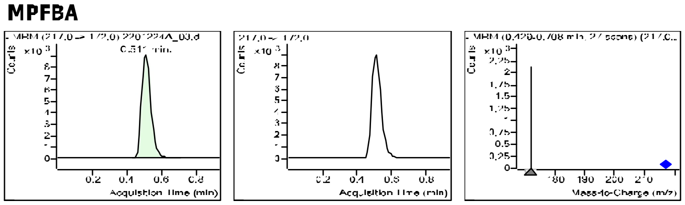

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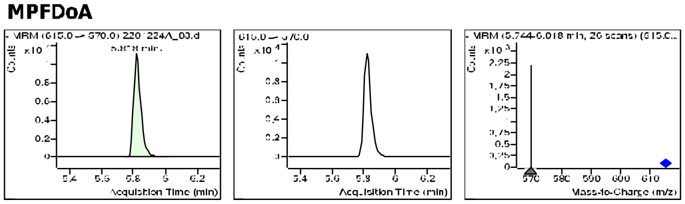

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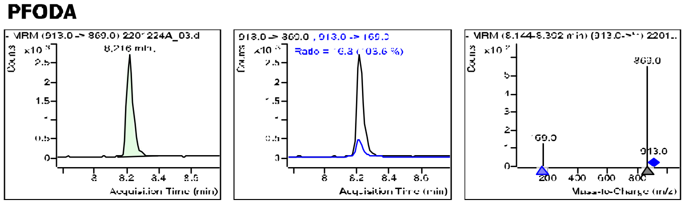

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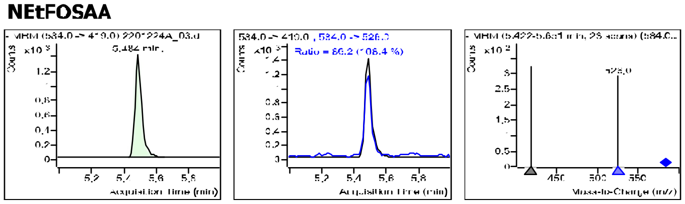
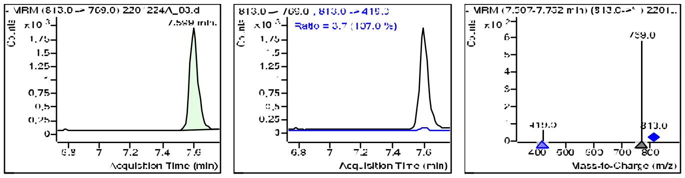


PFHxDA



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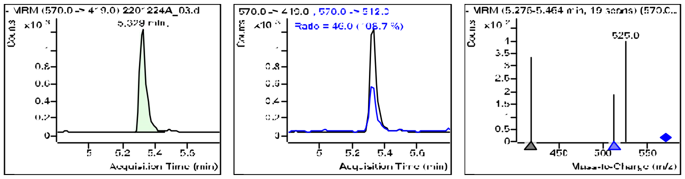

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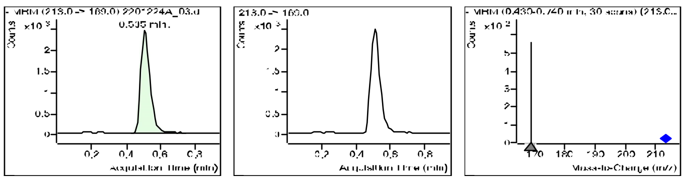

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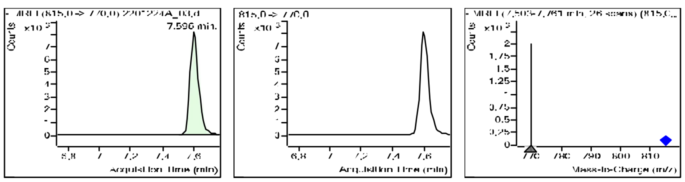

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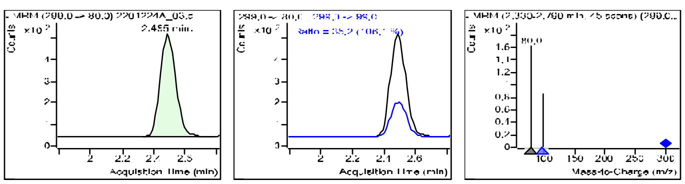

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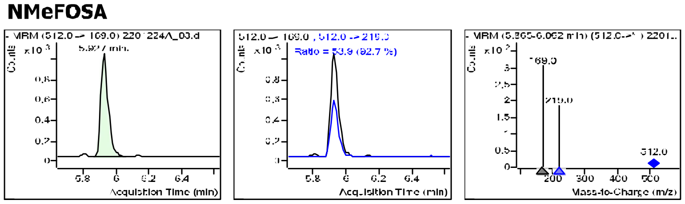

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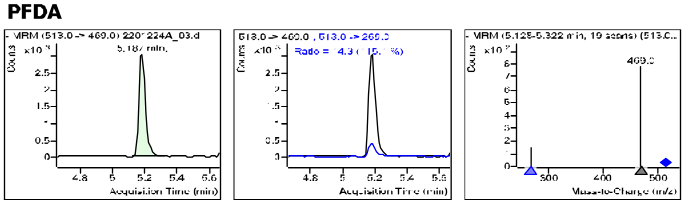

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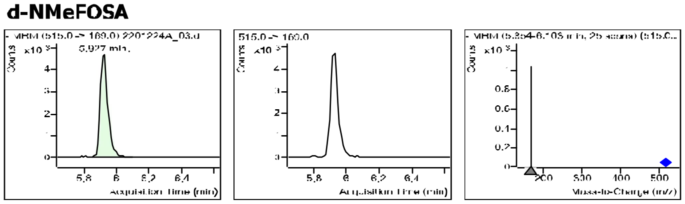

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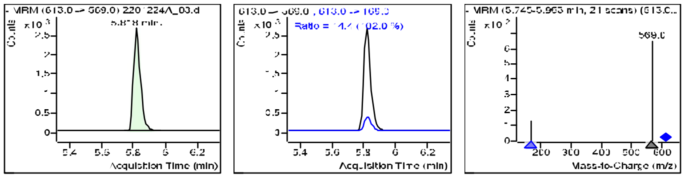

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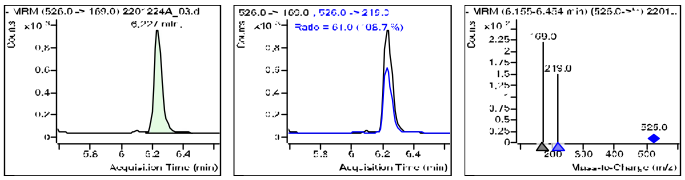

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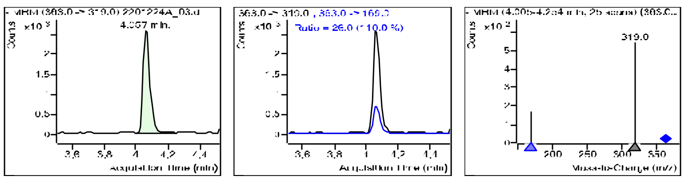

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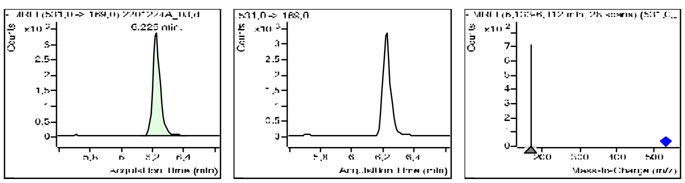

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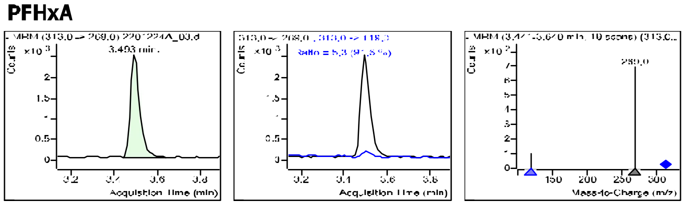

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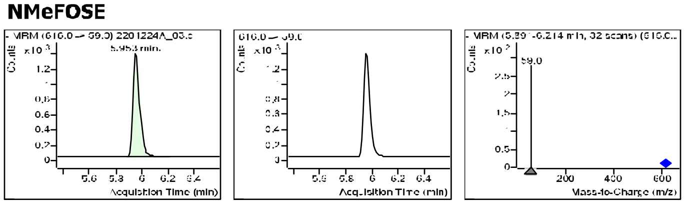

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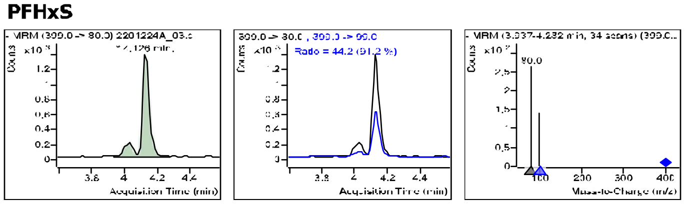

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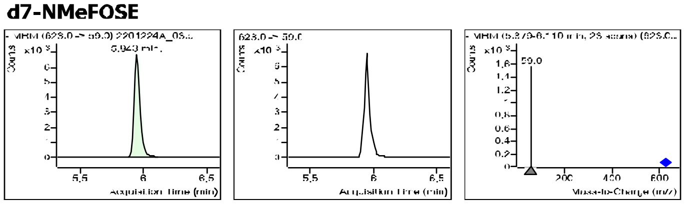

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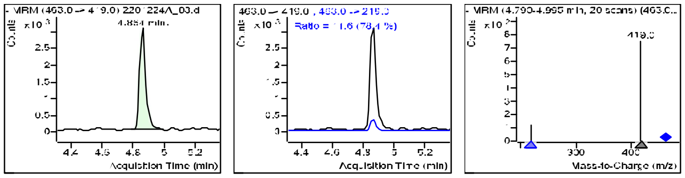

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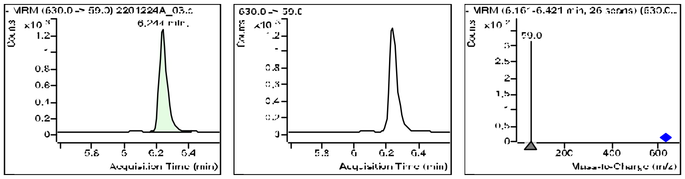

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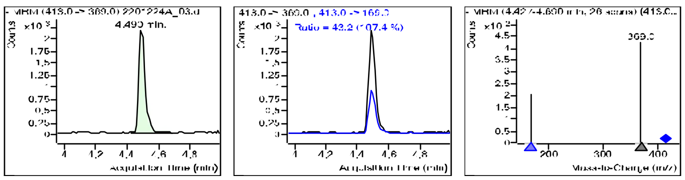

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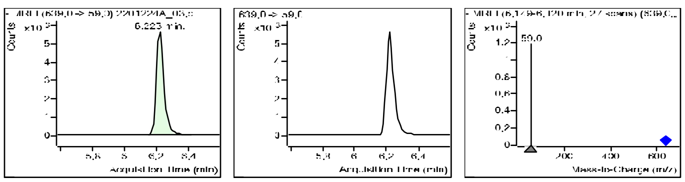

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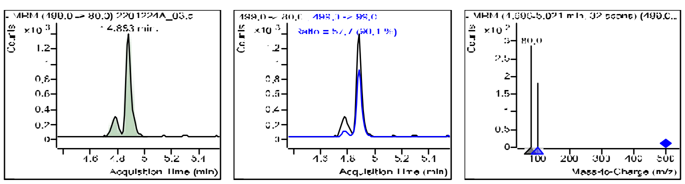

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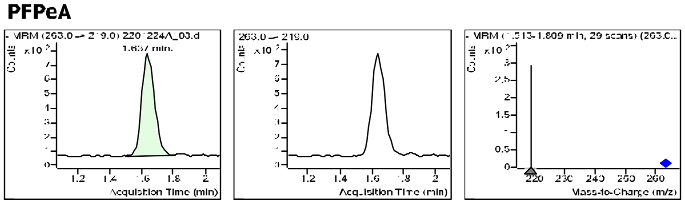

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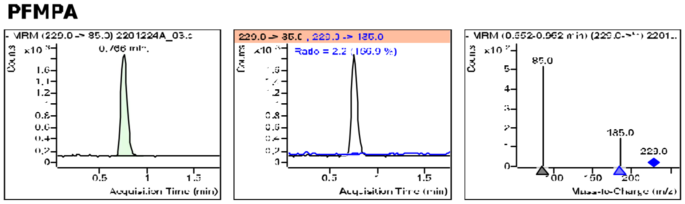

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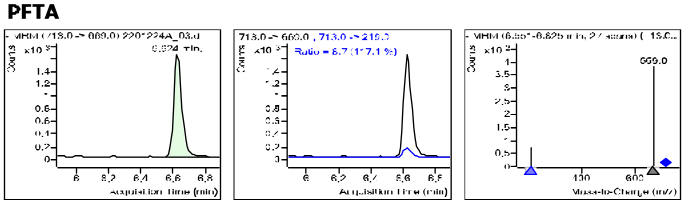

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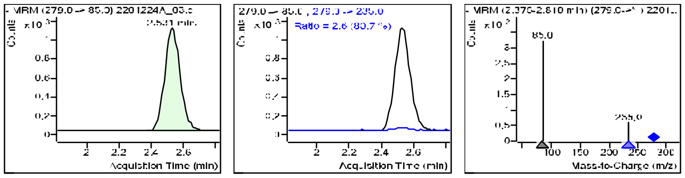

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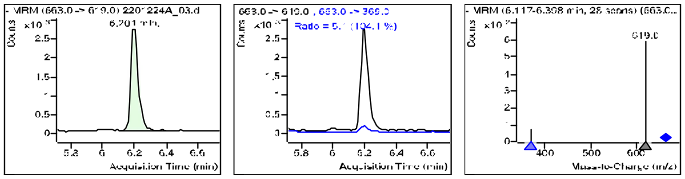

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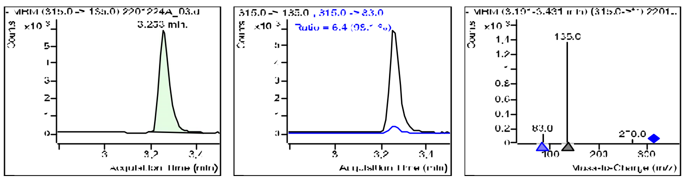

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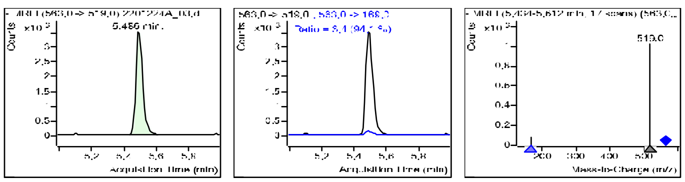

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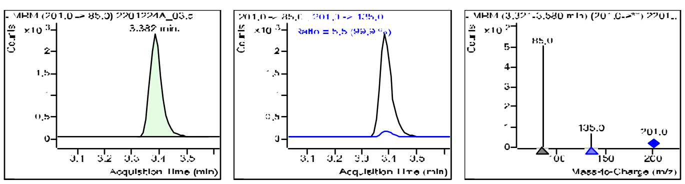

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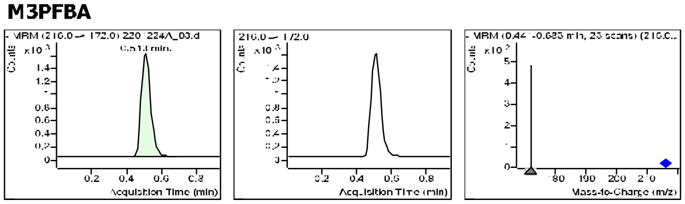

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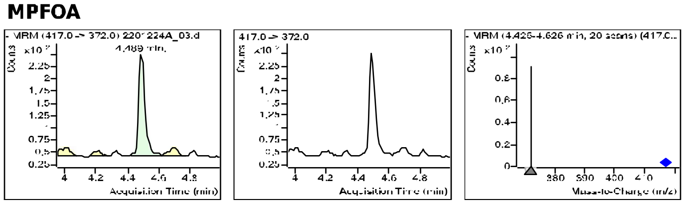
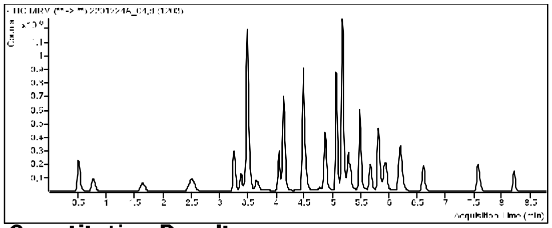


Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_04.d	**Position**	Vial 3	**Samp Name**	1203	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	Calibration	**Comment**	MRA,QQQ1;Cal
Acq Date	12/24/2020 10:46						

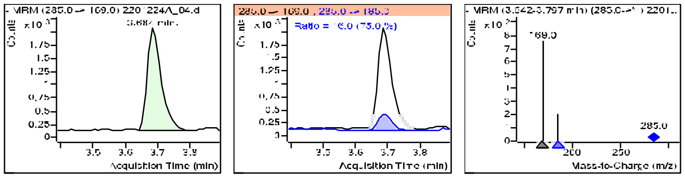
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	197085.599	5.176				115.18	23.0359	115.18	491433.61	1.82	
M2PFHxA	282277.193	3.491				105.89	42.3549	105.89	4525.63	1.99	
M2PFOA	132986.196	4.489				105.26	21.0510	105.26	1280.04	1.86	
M4PFOS	45467.279	4.883				93.42	18.6840	93.42	5838.48	1.25	
M3PFBA	6725.330	0.503				0.00	5.2336	104.67	286.96	1.72	
MPFOA	321.978	4.489				0.00	15.8032	63.21	5.56	1.77	
HFPO-DA	5798.106	3.684	M3HFPODA	2884	3.693	98.33	15.7930	105.29	347.93	2.04	
4:2 FTS	20087.030	3.458	M2 4:2 FTS	11036	3.458	99.66	4.6471	99.51	64.52	1.72	
6:2 FTS	40016.476	4.477	M2 6:2 FTS	22898	4.477	104.36	5.0546	106.41	365.68	1.29	
ADONA	99773.110	4.138	M8PFOA	21837	4.488	104.10	5.1897	103.79	18534.50	1.73	
8:2 FTS	40004.596	5.175	M2 8:2 FTS	10030	5.175	97.39	6.0253	125.53	3122.66	1.43	
FOSA	53818.024	5.282	M8FOSA	21519	5.281	97.81	5.3718	107.44	3957.90	1.49	
9Cl-PF3ONS	242741.184	5.059	M8PFOS	4439	4.882	94.20	5.6398	112.80	22705.37	2.05	
PFDS	8995.774	5.484	M6PFDA	34410	5.176	111.33	4.9512	102.62	902.43	2.00	
11Cl-PF3OUdS	51028.393	5.669	M8PFOS	4439	4.882	94.20	5.1738	103.48	3590.64	1.43	
PFHpS	17217.661	4.529	M8PFOA	21837	4.488	104.10	5.1908	109.28	1662.63	1.71	
10:2 FTS	30058.473	5.816	M2 8:2 FTS	10030	5.175	97.39	9.5293	98.85	2560.11	1.61	
PFNS	8142.279	5.184	M9PFNA	27867	4.853	104.65	5.2914	110.24	1145.16	1.90	
PFDoS	21717.089	6.179	M8PFOS	4439	4.882	94.20	9.8932	107.20	417.95	1.31	
PFPeS	15333.225	3.647	M5PFHxA	27253	3.490	101.45	5.2155	110.97	1240.73	1.68	
PFODA	38114.426	8.206	M2PFHxDA	35951	7.575	106.25	9.4673	94.67	1068.84	1.82	
NEtFOSAA	19691.615	5.474	d5-NEtFOSAA	12868	5.474	102.46	5.4576	109.15	1370.09	1.93	
PFHxDA	38038.572	7.579	M2PFHxDA	35951	7.575	106.25	10.8527	108.53	1417.83	1.39	
NMeFOSAA	17335.804	5.318	d3-NMeFOSAA	9182	5.317	96.36	5.8325	116.65	1701.82	1.74	
PFBA	43295.353	0.505	MPFBA	36315	0.511	102.77	4.6249	92.50	1533.48	1.61	
PFBS	15192.351	2.485	M3PFBS	11965	2.483	101.43	4.1221	93.16	763.79	1.10	
NMeFOSA	14997.488	5.917	d-NMeFOSA	17489	5.917	104.03	9.2065	92.07	1092.11	1.60	
PFDA	45688.176	5.176	M6PFDA	34410	5.176	111.33	4.4023	88.05	572.31	1.78	
PFDoA	36309.622	5.818	MPFDoA	39651	5.818	105.31	4.4252	88.50	1999.16	1.25	
NEtFOSA	15631.558	6.216	d-NEtFOSA	12321	6.205	103.82	9.2083	92.08	727.07	1.80	
PFHpA	35971.366	4.057	M4PFHpA	37129	4.056	105.21	4.7423	94.85	1859.77	1.90	
PFHxA	36118.606	3.493	M5PFHxA	27253	3.490	101.45	5.0225	100.45	696.93	1.82	
NMeFOSE	23477.606	5.953	d7-NMeFOSE	23879	5.943	102.63	9.4032	94.03	2337.66	1.43	
PFHxS	20936.543	4.126	M3PFHxS	9705	4.126	97.19	4.8150	105.59	1756.46	1.74	m
PFNA	37064.128	4.853	M9PFNA	27867	4.853	104.65	4.2715	85.43	257.66	1.94	
NEtFOSE	20872.914	6.233	d9-NEtFOSE	21385	6.212	102.87	8.8590	88.59	1546.96	1.35	
PFOA	30967.843	4.490	M8PFOA	21837	4.488	104.10	5.0321	100.64	1412.75	1.81	
PFOS	20615.581	4.883	M8PFOS	4439	4.882	94.20	5.0994	110.19	1583.63	1.22	m
PFPeA	18316.286	1.637	M5PFPeA	17421	1.635	103.60	4.4717	89.43	271.66	1.25	
PFMPA	36975.475	0.766	M5PFPeA	17421	1.635	103.60	9.3306	93.31	607.77	1.17	
PFTA	30316.174	6.603	M2PFTA	31970	6.613	100.59	5.3440	106.88	416.80	1.80	
PFMBA	33516.399	2.520	M5PFHxA	27253	3.490	101.45	9.0857	90.86	3078.36	1.26	
PFTrDA	43976.271	6.190	MPFDoA	39651	5.818	105.31	5.1784	103.57	806.30	1.22	
PFEESA	87185.849	3.253	M3PFHxS	9705	4.126	97.19	9.7384	109.42	818.18	1.79	
PFUnA	54106.294	5.486	M7PFUnA	57294	5.485	109.18	4.4179	88.36	531.29	1.40	
NFDHA	34808.906	3.382	M4PFHpA	37129	4.056	105.21	9.5160	95.16	1223.38	1.65	

HFPO-DA



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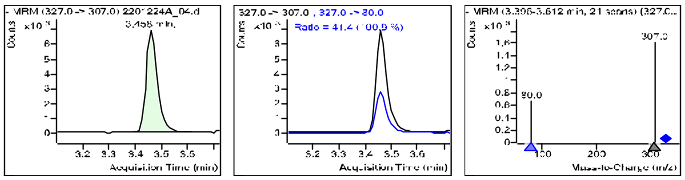

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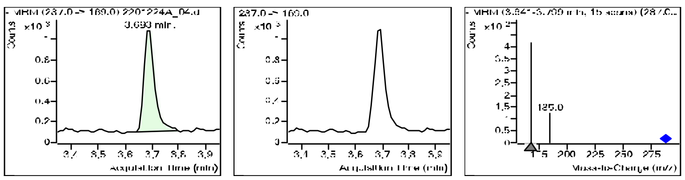

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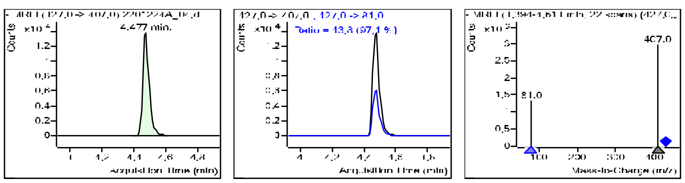

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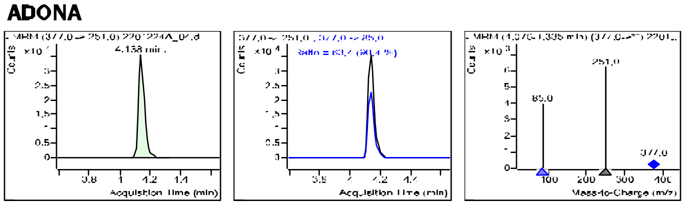

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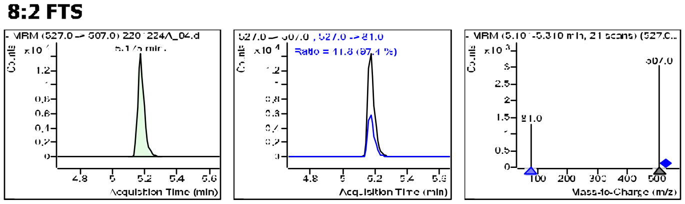

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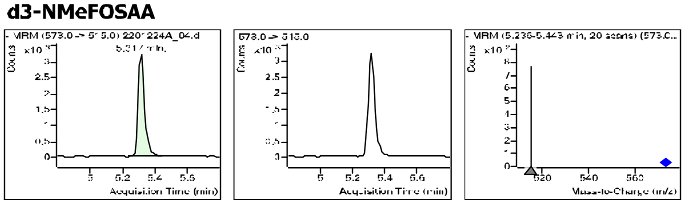

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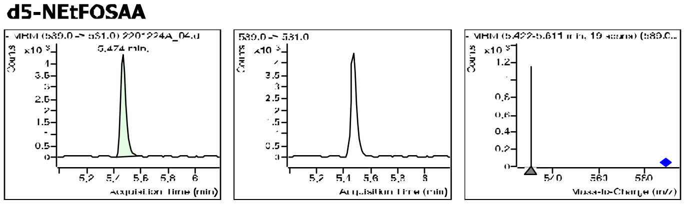

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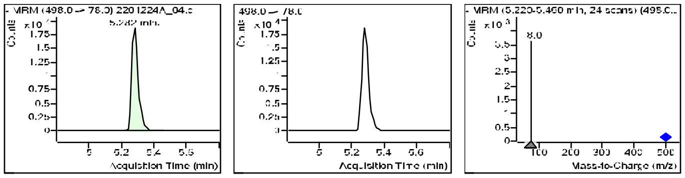

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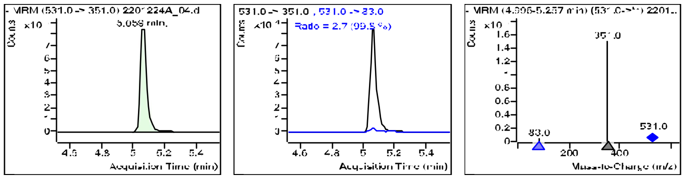

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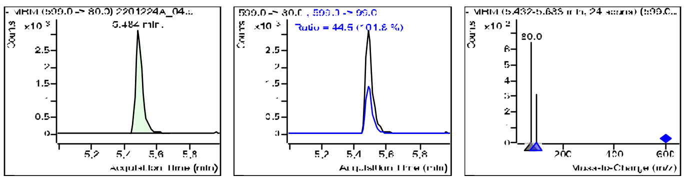

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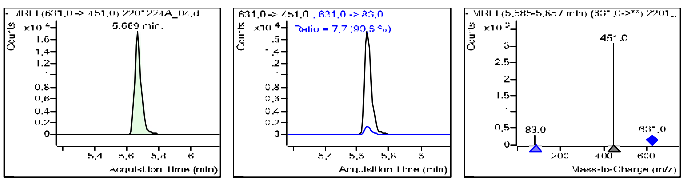

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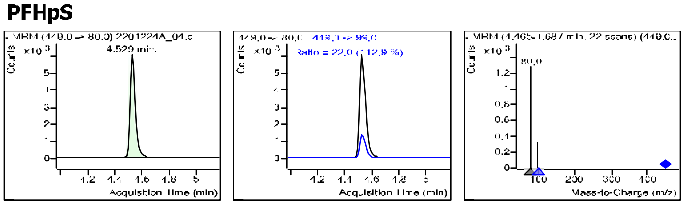
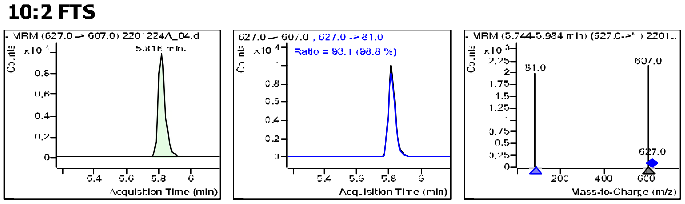


10:2 FTS



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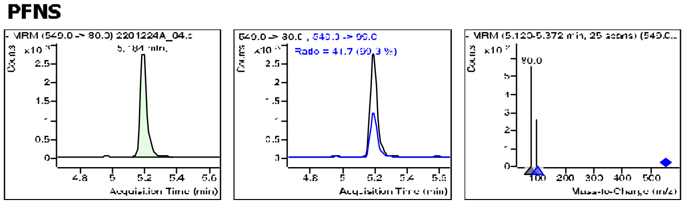

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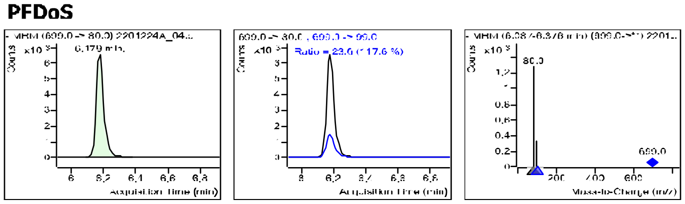

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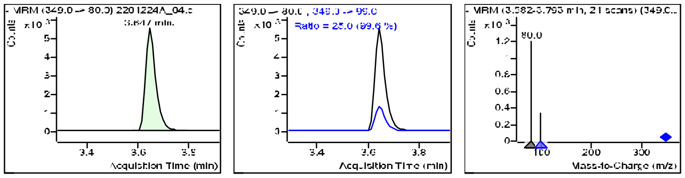

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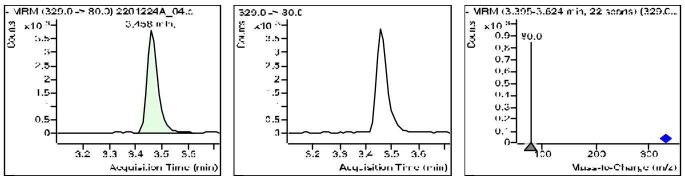
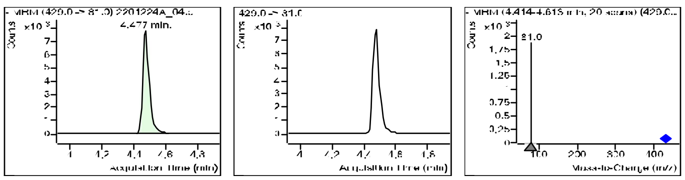
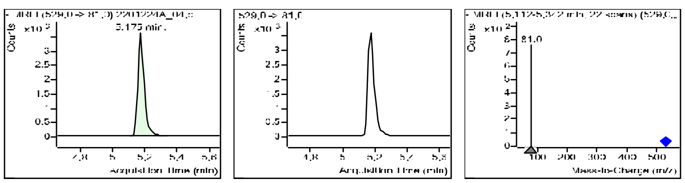


M2 6:2 FTS



M2 8:2 FTS



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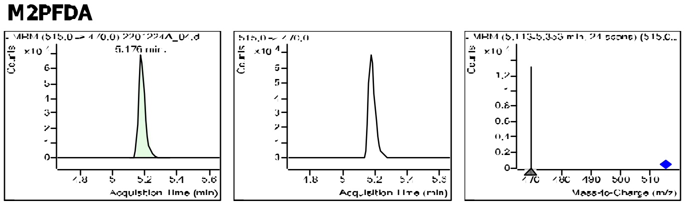

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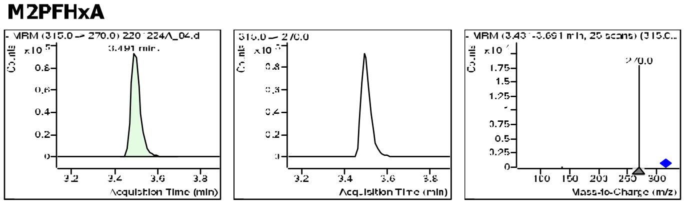

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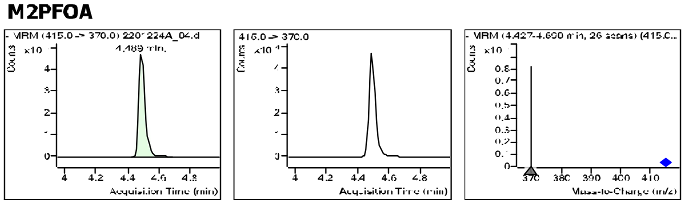

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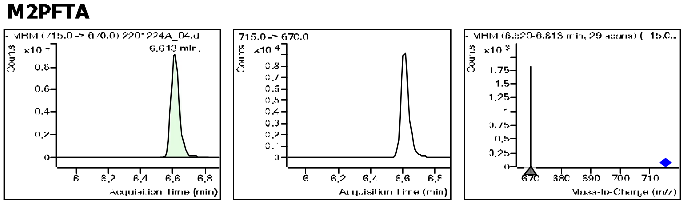

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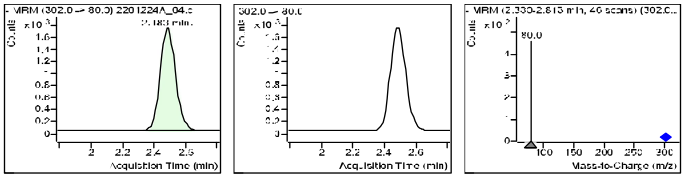

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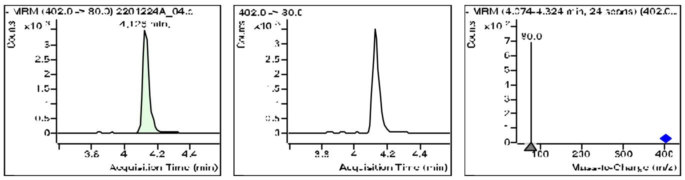

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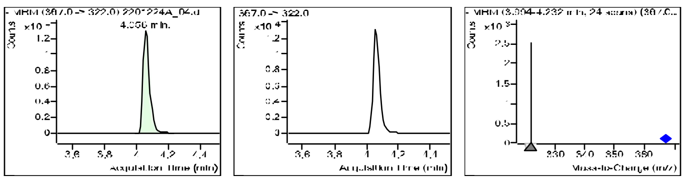

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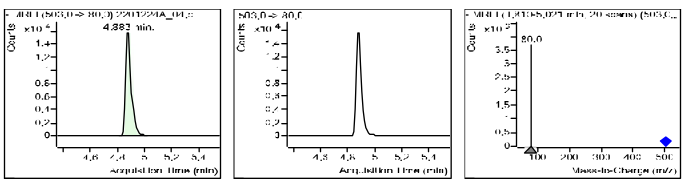

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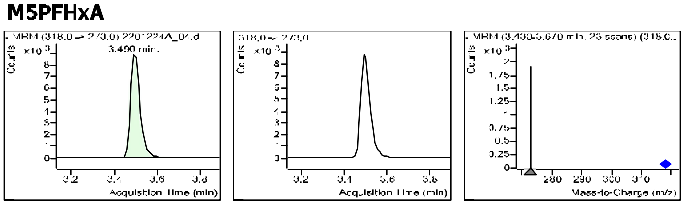

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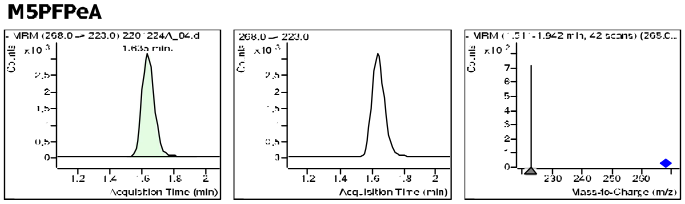

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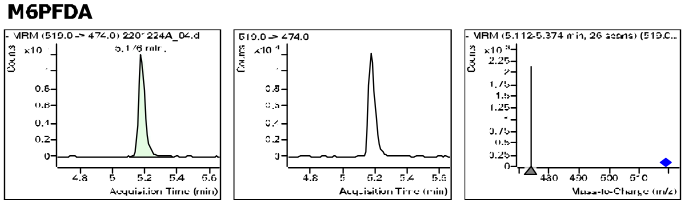

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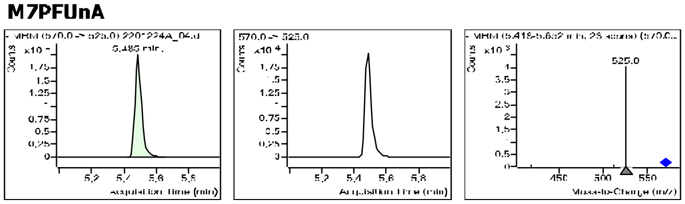

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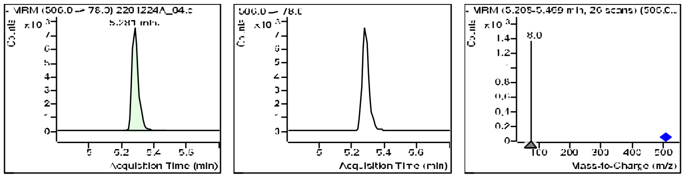

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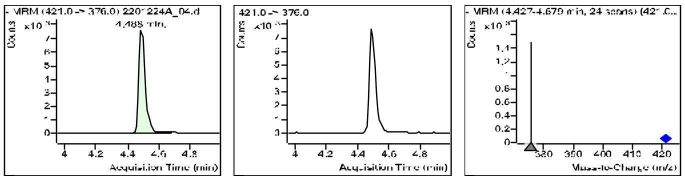

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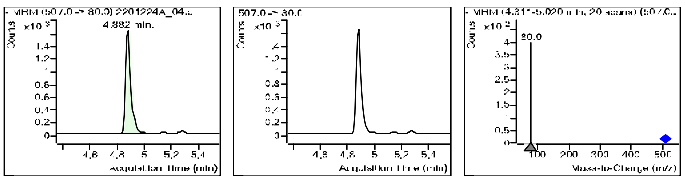

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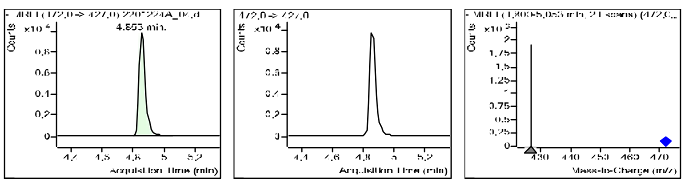

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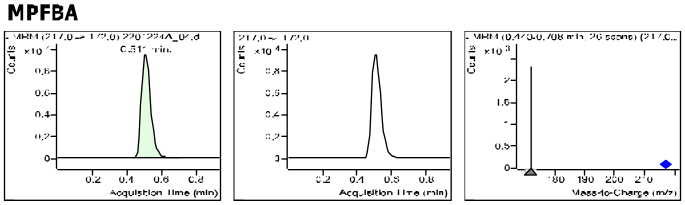

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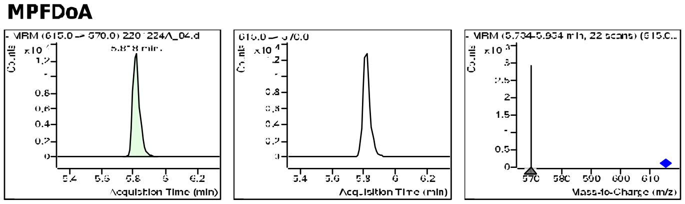

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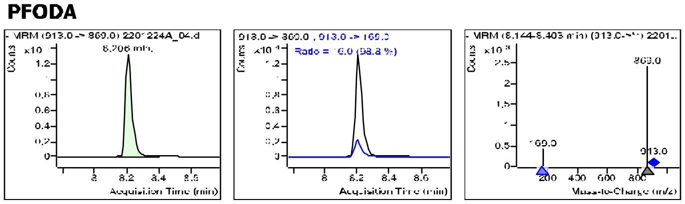

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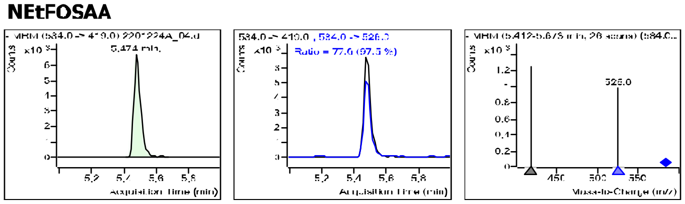

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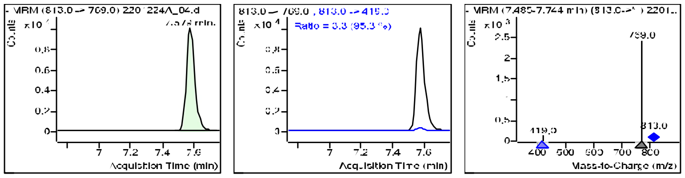

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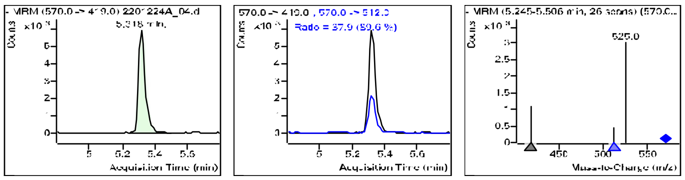

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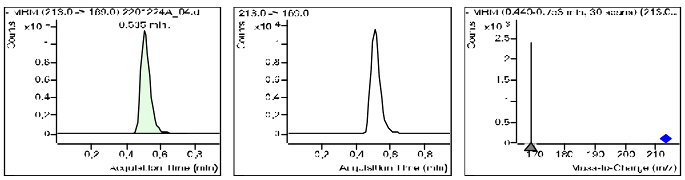

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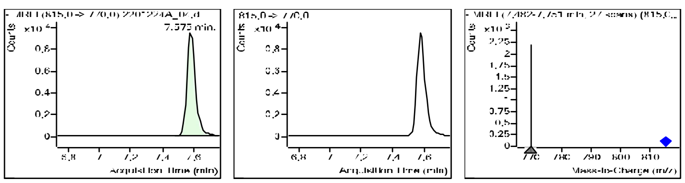

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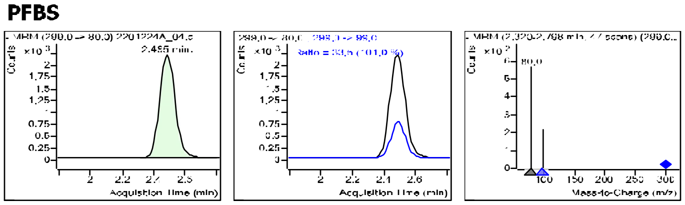

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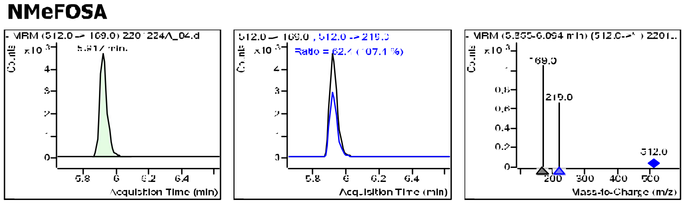

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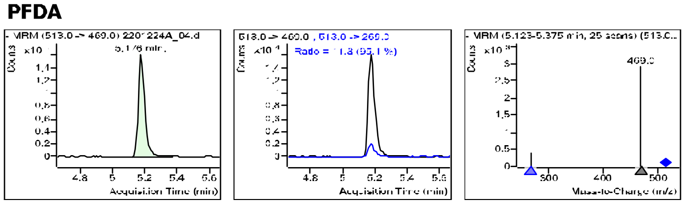

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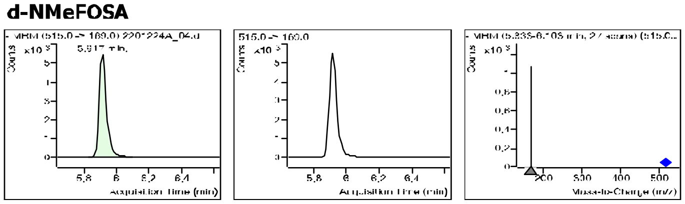

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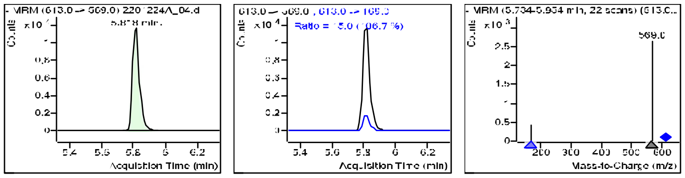

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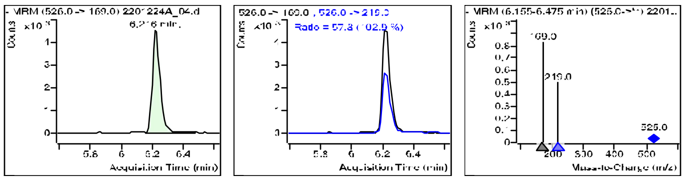

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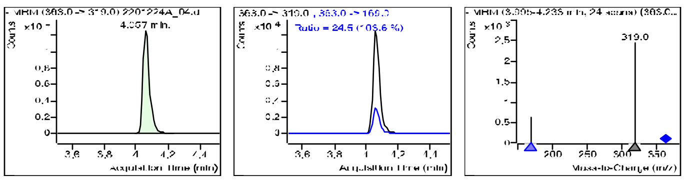

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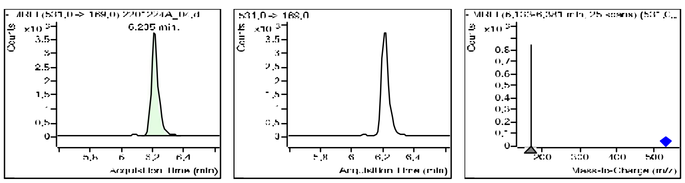

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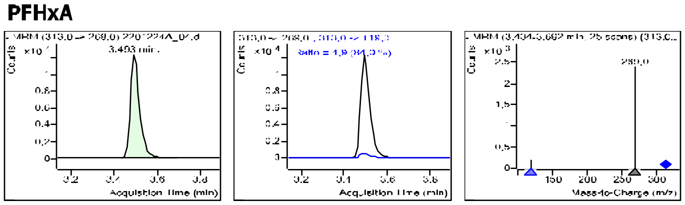

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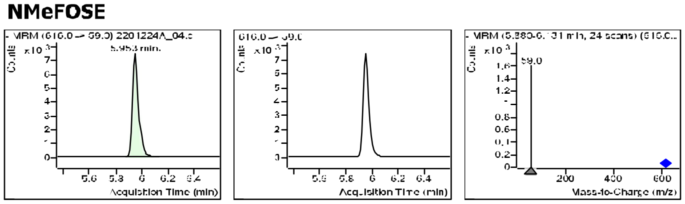

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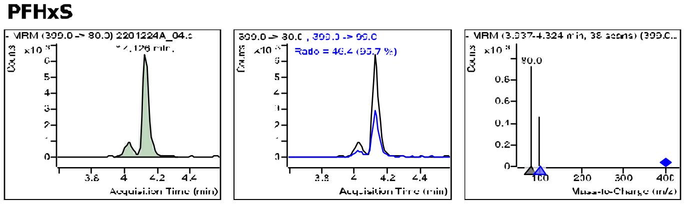

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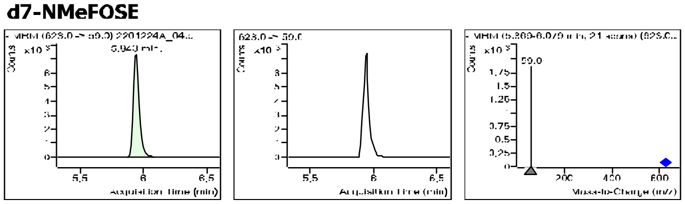

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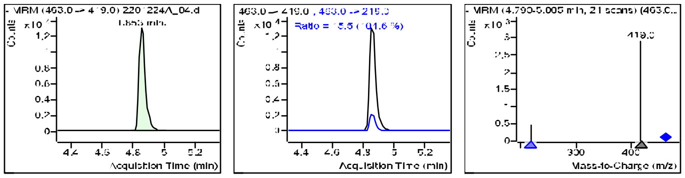

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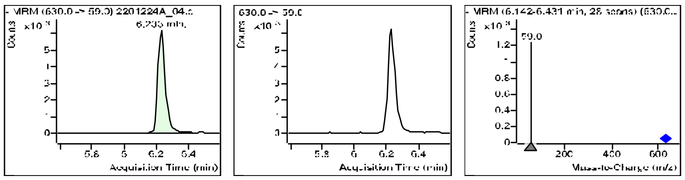

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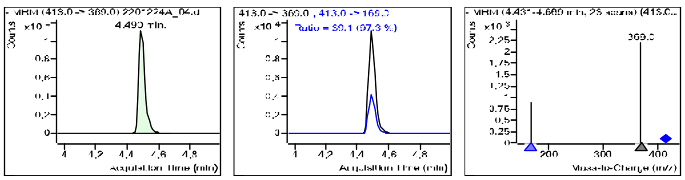

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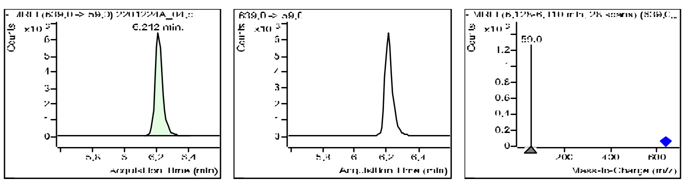

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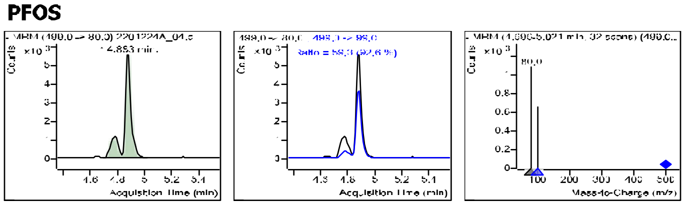

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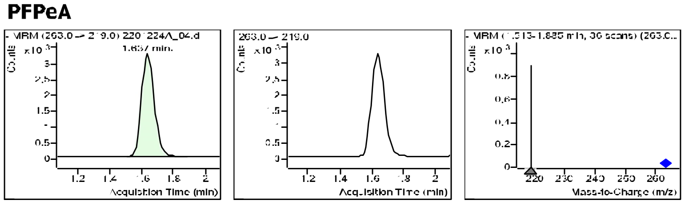

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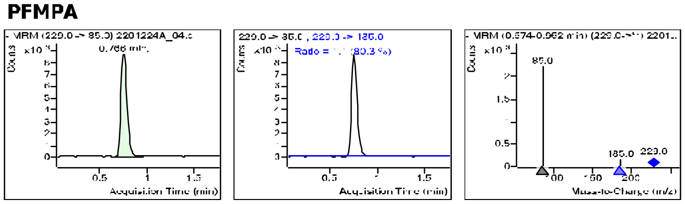

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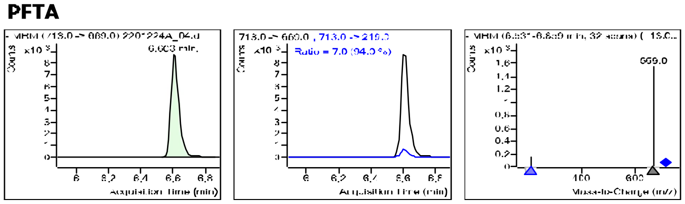

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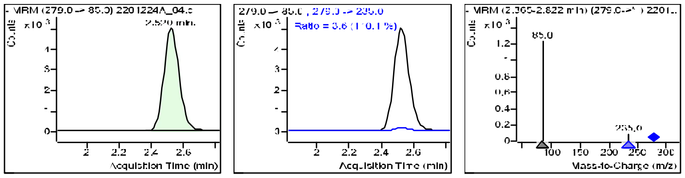

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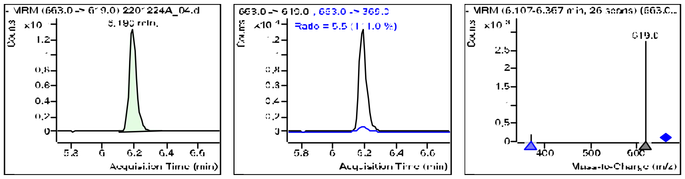

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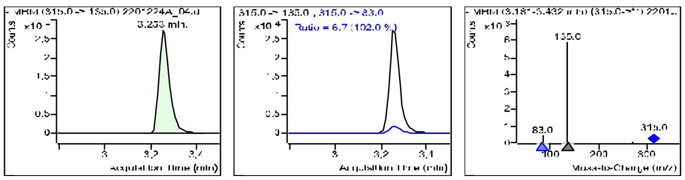

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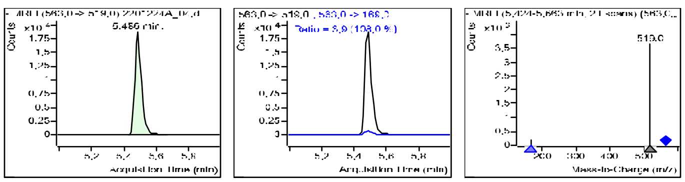

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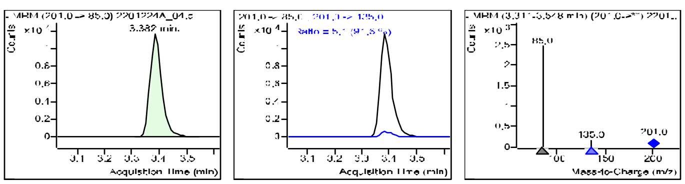

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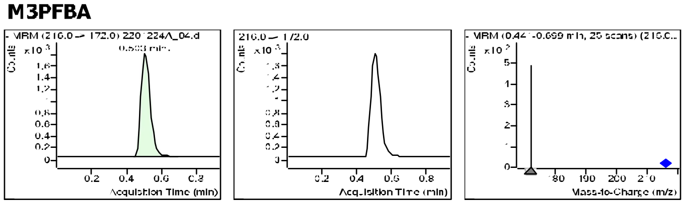

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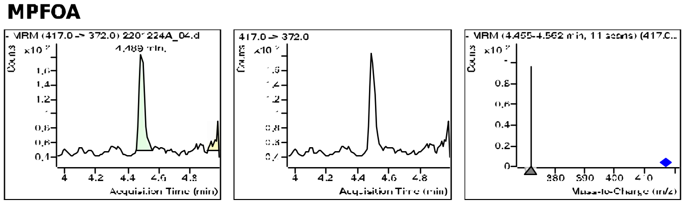
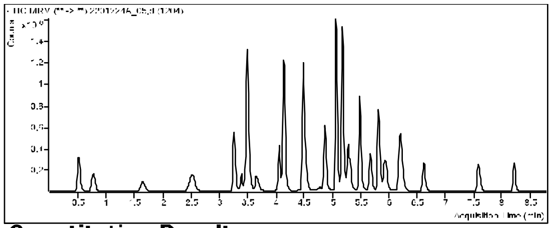


Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_05.d	**Position**	Vial 4	**Samp Name**	1204	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	Calibration	**Comment**	MRA,QQQ1;Cal
Acq Date	12/24/2020 11:00						

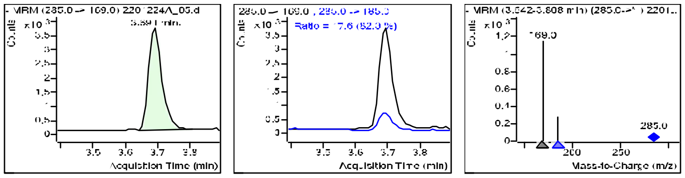
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	185659.403	5.176				108.50	21.7003	108.50	7078.17	1.80	
M2PFHxA	286983.753	3.491				107.65	43.0611	107.65	6898.56	2.05	
M2PFOA	139640.920	4.489				110.52	22.1044	110.52	270017.28	1.95	
M4PFOS	47312.441	4.873				97.21	19.4423	97.21	5363.24	1.97	
M3PFBA	6753.620	0.503				0.00	5.2557	105.11	284.35	1.75	
MPFOA	758.596	4.499				0.00	37.2330	148.93	24.72	1.33	
HFPO-DA	10461.153	3.694	M3HFPODA	3041	3.683	103.68	27.0225	90.08	76.74	1.29	
4:2 FTS	37904.549	3.458	M2 4:2 FTS	11657	3.458	105.27	8.3024	88.80	186.77	1.71	
6:2 FTS	73397.373	4.477	M2 6:2 FTS	21742	4.477	99.09	9.7643	102.78	2245.97	1.39	
ADONA	181913.698	4.148	M8PFOA	21728	4.488	103.58	9.5099	95.10	5313.58	1.25	
8:2 FTS	62497.915	5.175	M2 8:2 FTS	8941	5.175	86.82	10.5590	109.99	10521.63	1.42	
FOSA	97467.690	5.282	M8FOSA	20823	5.281	94.64	10.0539	100.54	89600.79	1.43	
9Cl-PF3ONS	441127.274	5.059	M8PFOS	4322	4.872	91.72	10.5266	105.27	41222.30	1.93	
PFDS	16419.222	5.484	M6PFDA	33380	5.176	108.00	9.3160	96.54	1799.41	1.86	
11Cl-PF3OUdS	93398.922	5.669	M8PFOS	4322	4.872	91.72	9.7263	97.26	11152.10	1.51	
PFHpS	33810.925	4.529	M8PFOA	21728	4.488	103.58	10.2446	107.84	2128.28	1.77	
10:2 FTS	58852.255	5.816	M2 8:2 FTS	8941	5.175	86.82	20.9291	108.55	5628.58	1.70	
PFNS	13231.758	5.184	M9PFNA	27263	4.853	102.38	8.7895	91.56	925.25	1.94	
PFDoS	41199.537	6.179	M8PFOS	4322	4.872	91.72	19.2769	99.57	2338.27	1.53	
PFPeS	28590.845	3.647	M5PFHxA	27970	3.490	104.13	9.4755	100.80	2779.85	1.84	
PFODA	69951.794	8.206	M2PFHxDA	32497	7.586	96.04	19.2223	96.11	5398.33	2.07	
NEtFOSAA	35286.799	5.474	d5-NEtFOSAA	12554	5.474	99.96	10.0244	100.24	4550.42	1.92	
PFHxDA	63254.761	7.589	M2PFHxDA	32497	7.586	96.04	19.9654	99.83	1094.43	1.24	
NMeFOSAA	30245.104	5.318	d3-NMeFOSAA	8909	5.317	93.49	10.4880	104.88	697.21	1.57	
PFBA	81450.039	0.505	MPFBA	36260	0.511	102.61	8.7138	87.14	1314.41	1.67	
PFBS	28732.109	2.485	M3PFBS	11783	2.494	99.89	7.9161	89.45	1694.43	1.15	
NMeFOSA	28939.995	5.917	d-NMeFOSA	16633	5.917	98.93	18.6803	93.40	674.41	1.76	
PFDA	84076.498	5.176	M6PFDA	33380	5.176	108.00	8.3513	83.51	4781.97	1.77	
PFDoA	70437.586	5.818	MPFDoA	39039	5.818	103.68	8.7193	87.19	2754.61	1.28	
NEtFOSA	29656.287	6.227	d-NEtFOSA	11653	6.216	98.20	18.4706	92.35	616.12	1.43	
PFHpA	66346.257	4.067	M4PFHpA	35500	4.067	100.60	9.1483	91.48	1012.86	1.36	
PFHxA	63464.729	3.493	M5PFHxA	27970	3.490	104.13	8.5986	85.99	420.34	1.89	
NMeFOSE	40687.871	5.954	d7-NMeFOSE	24166	5.943	103.86	16.1027	80.51	1580.24	1.59	
PFHxS	39081.732	4.137	M3PFHxS	9093	4.136	91.06	9.5932	105.19	555.36	1.29	m
PFNA	72045.013	4.853	M9PFNA	27263	4.853	102.38	8.4870	84.87	1611.02	1.90	
NEtFOSE	39785.193	6.233	d9-NEtFOSE	21735	6.212	104.55	16.6141	83.07	2342.82	1.65	
PFOA	58940.632	4.490	M8PFOA	21728	4.488	103.58	9.6257	96.26	1581.05	1.93	
PFOS	37896.434	4.873	M8PFOS	4322	4.872	91.72	9.6279	104.03	2020.24	1.91	m
PFPeA	33740.661	1.637	M5PFPeA	17150	1.635	101.99	8.3673	83.67	191.66	1.38	
PFMPA	68183.412	0.766	M5PFPeA	17150	1.635	101.99	17.4771	87.39	1105.44	1.17	
PFTA	57506.646	6.614	M2PFTA	31248	6.613	98.32	10.3714	103.71	2731.49	1.61	
PFMBA	62043.056	2.531	M5PFHxA	27970	3.490	104.13	16.3872	81.94	2723.67	1.07	
PFTrDA	82491.336	6.190	MPFDoA	39039	5.818	103.68	9.8662	98.66	956.43	1.49	
PFEESA	165136.501	3.253	M3PFHxS	9093	4.136	91.06	19.6873	110.60	4621.97	1.72	
PFUnA	101717.648	5.486	M7PFUnA	55933	5.485	106.59	8.5076	85.08	INF	1.37	
NFDHA	38493.504	3.393	M4PFHpA	35500	4.067	100.60	11.0062	55.03	6720.67	1.60	

HFPO-DA



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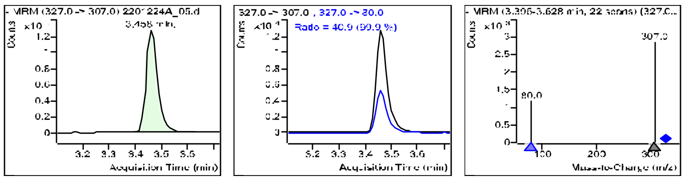

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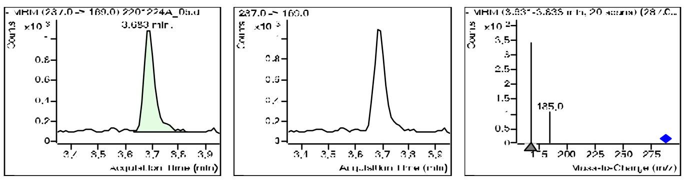

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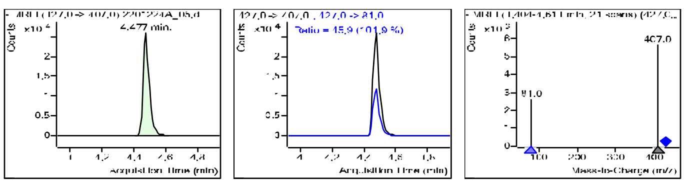
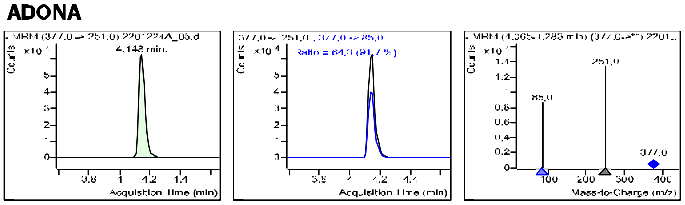


ADONA



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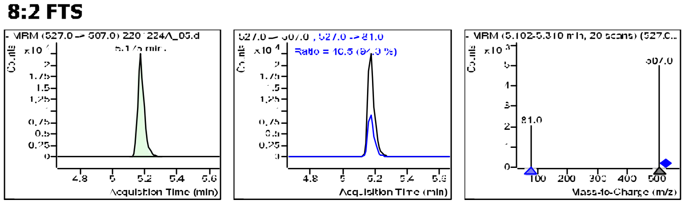

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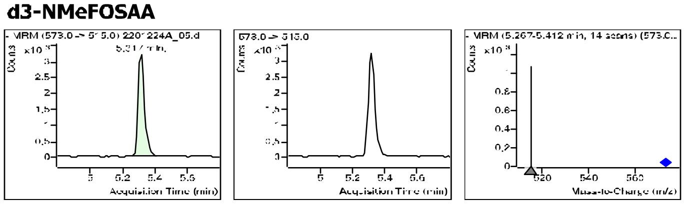

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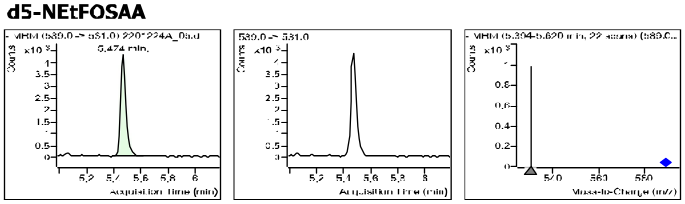

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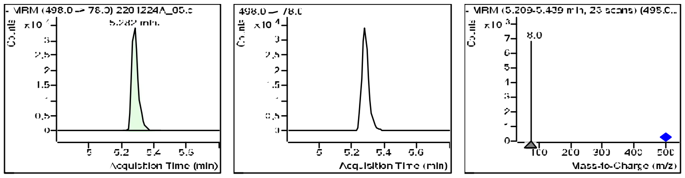

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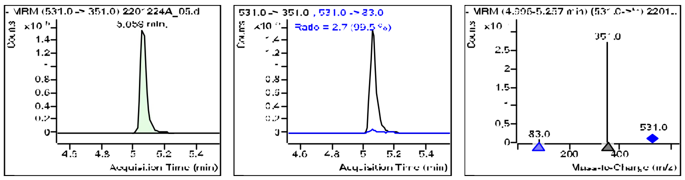

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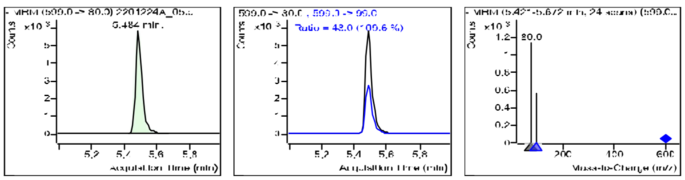

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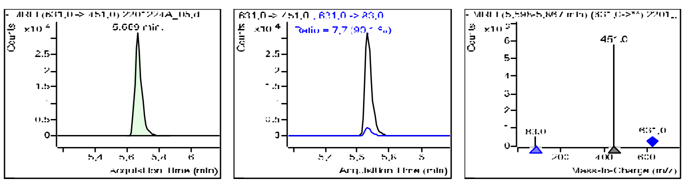

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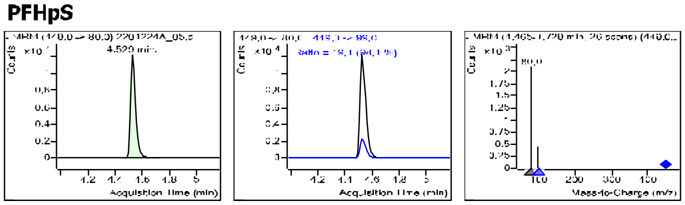

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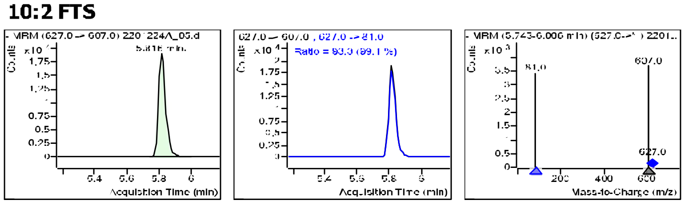

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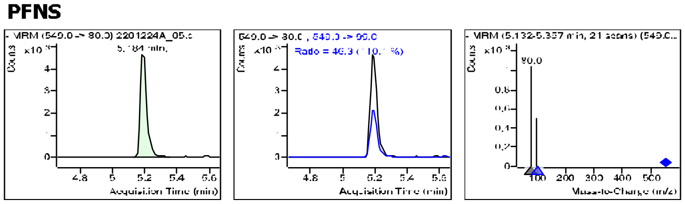

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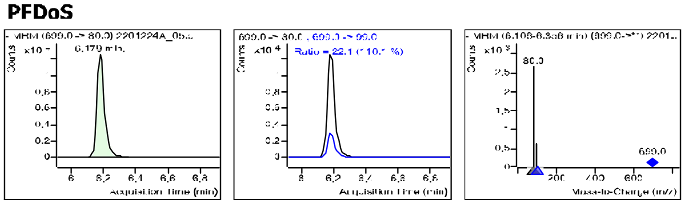

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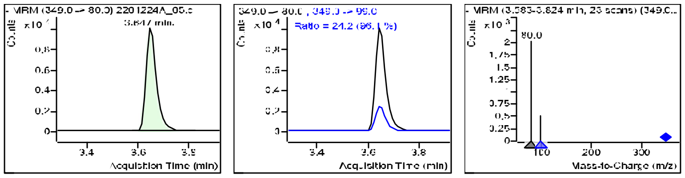

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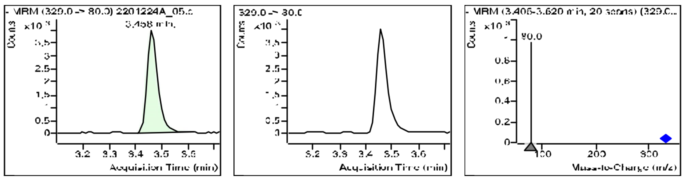

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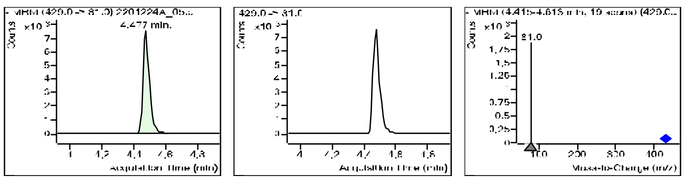

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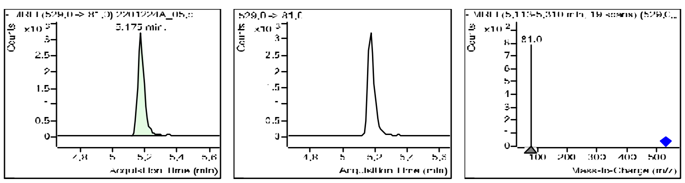

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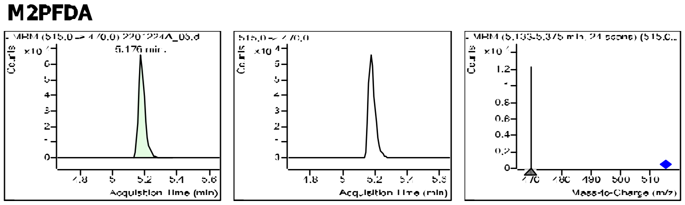

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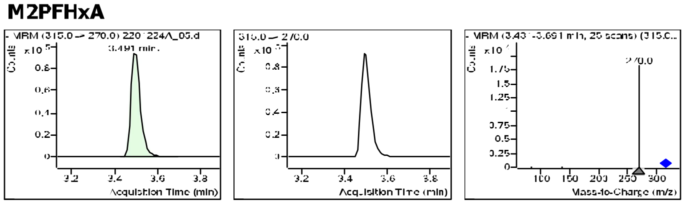

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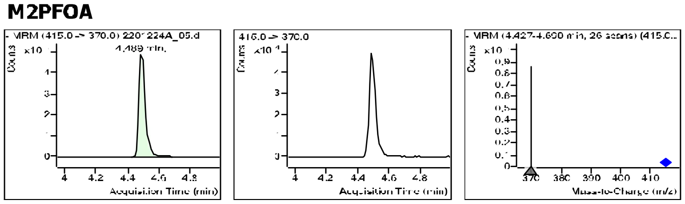

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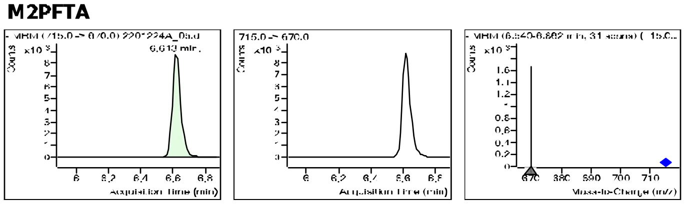

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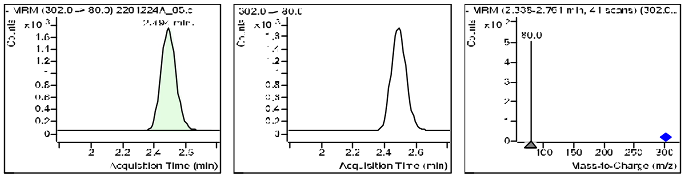

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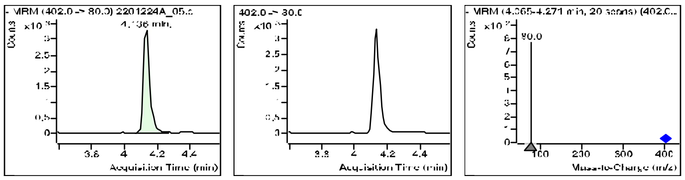

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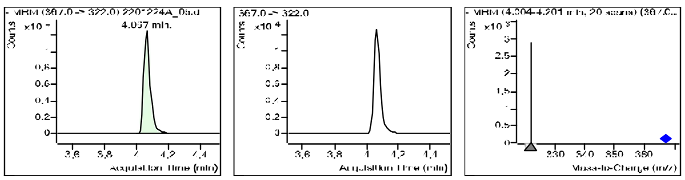

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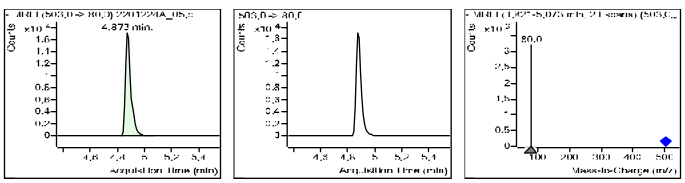

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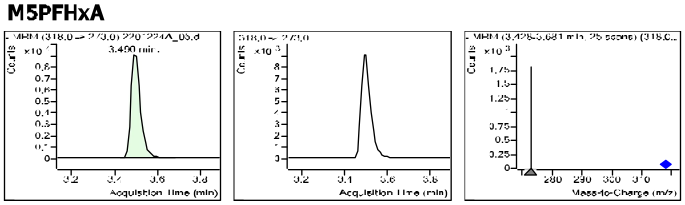

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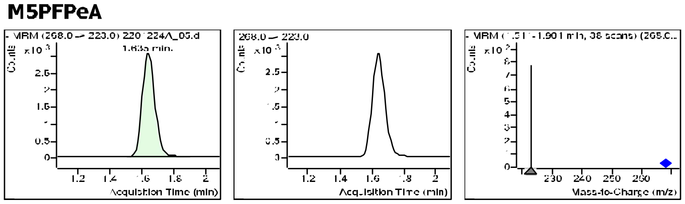

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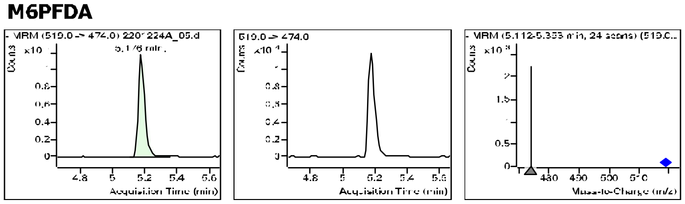

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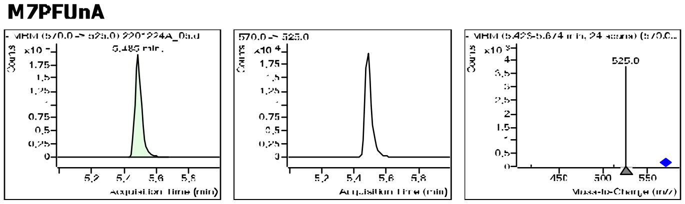

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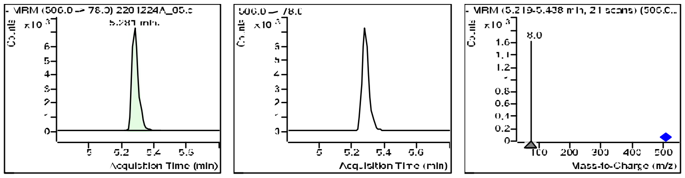

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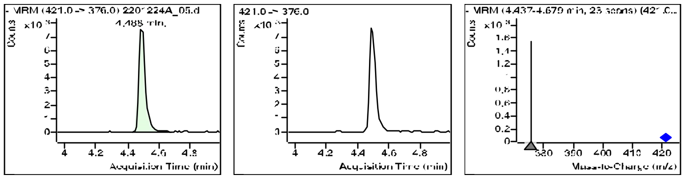

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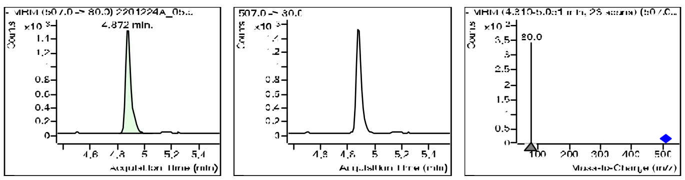

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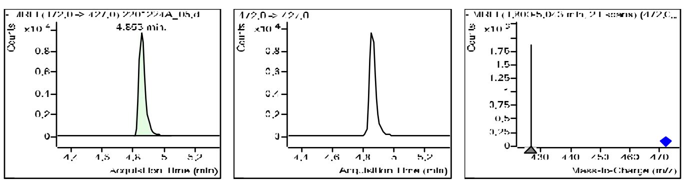

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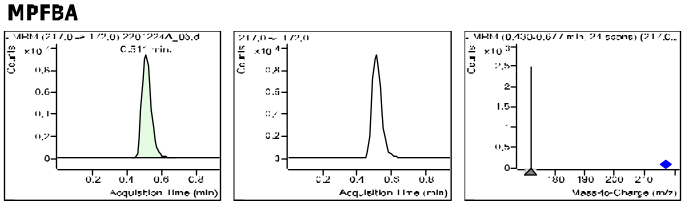

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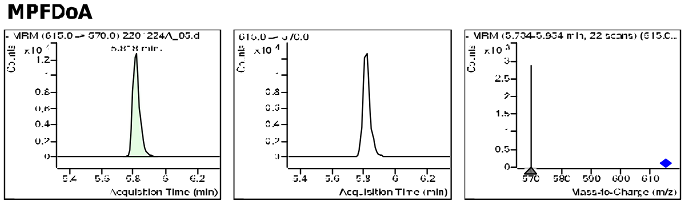

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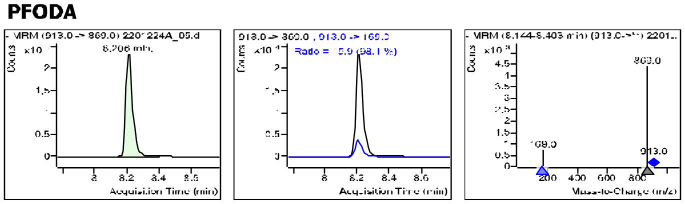

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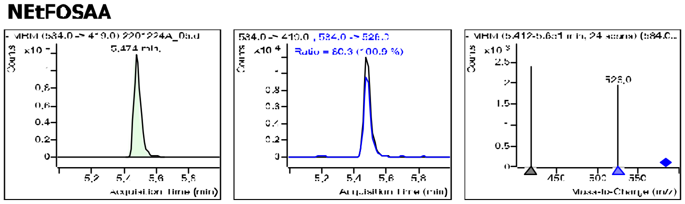

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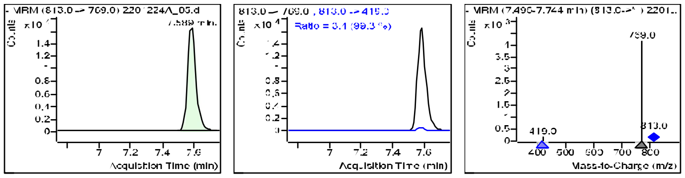

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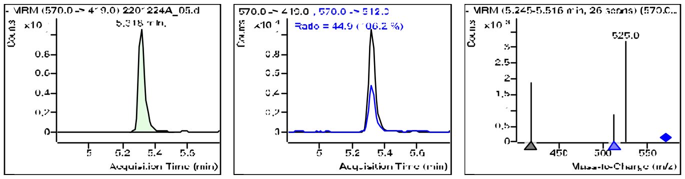

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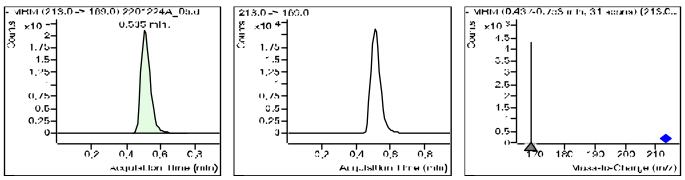

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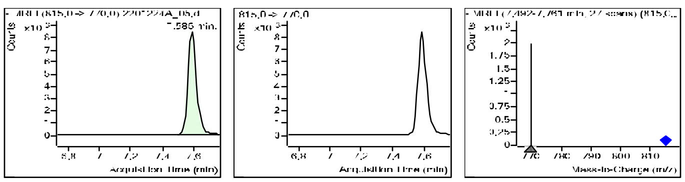

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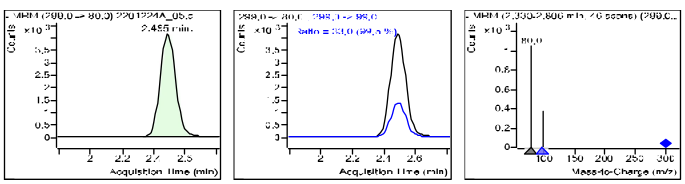

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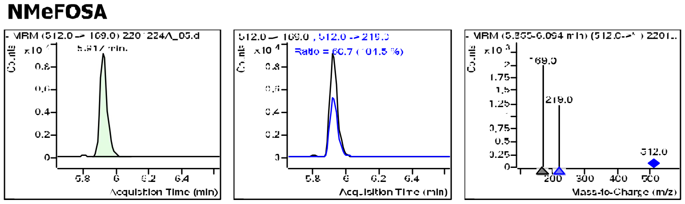

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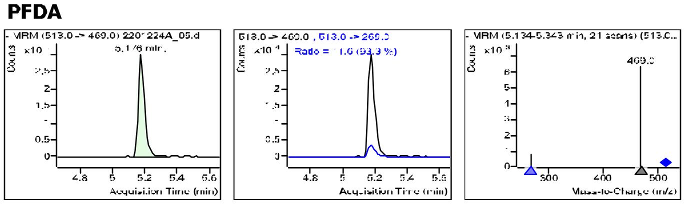

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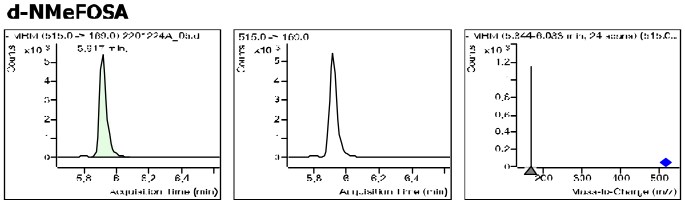

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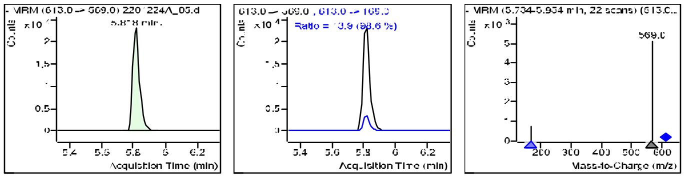

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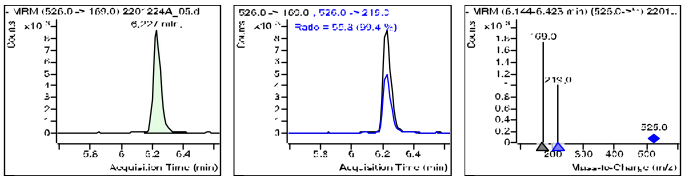

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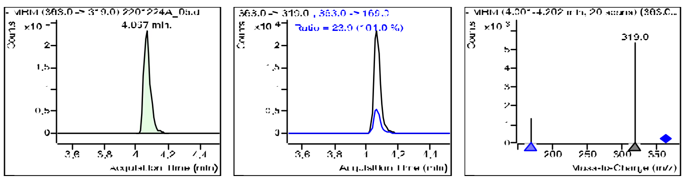

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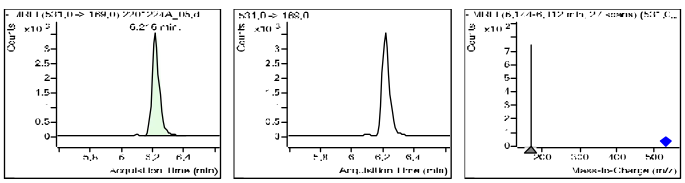

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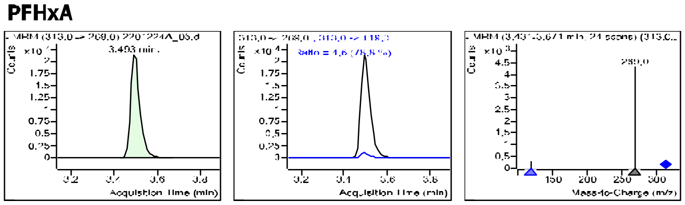

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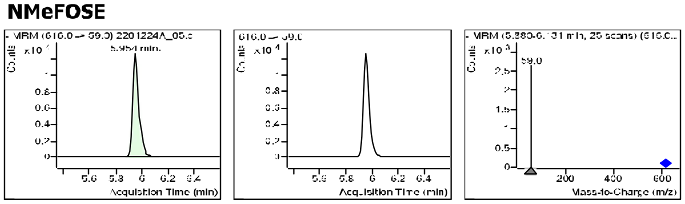

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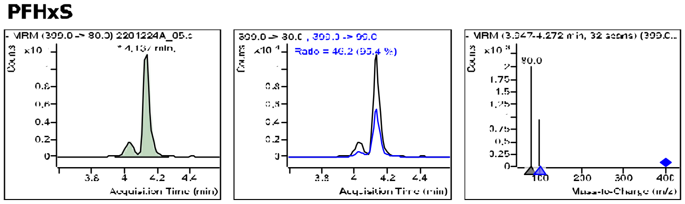

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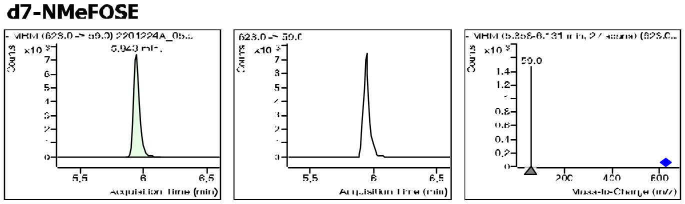

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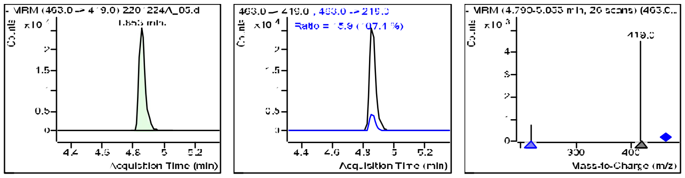

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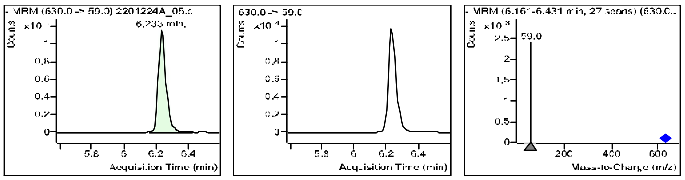

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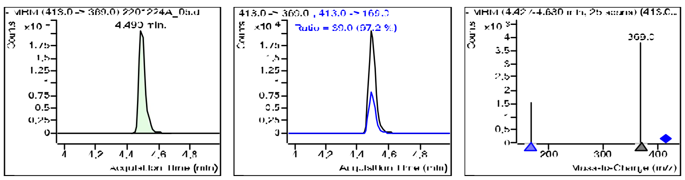

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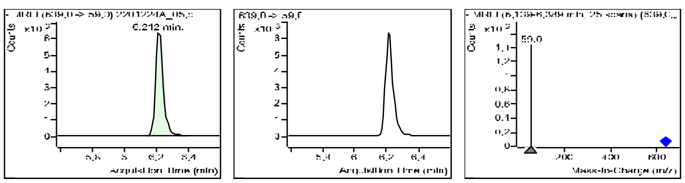

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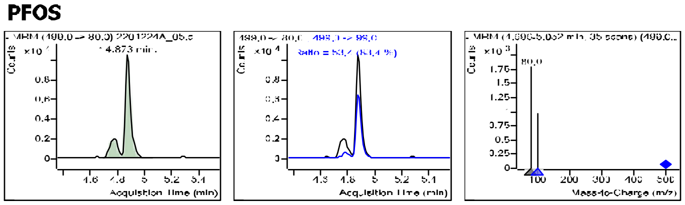

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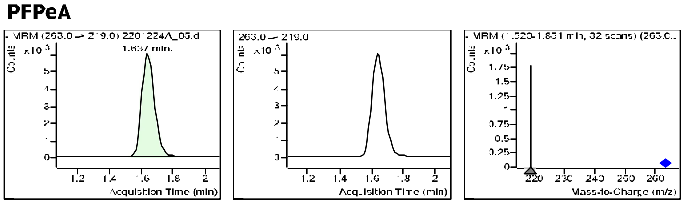

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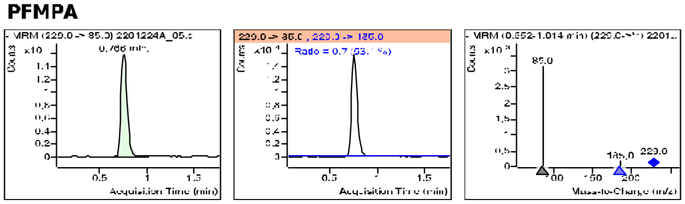

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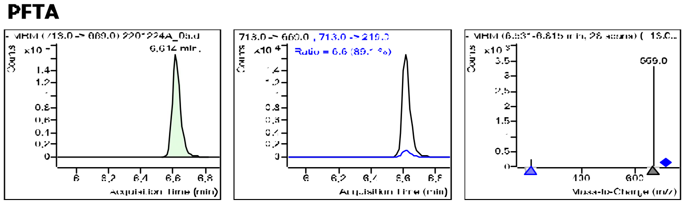

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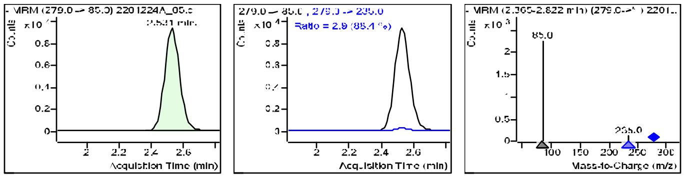

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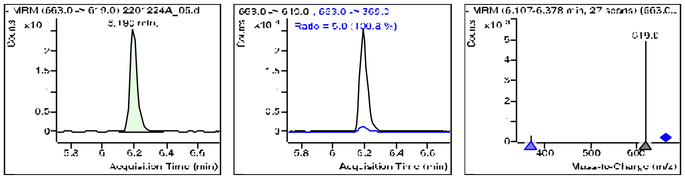

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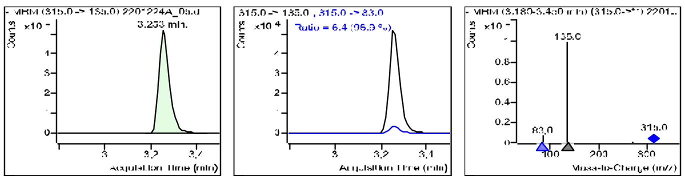

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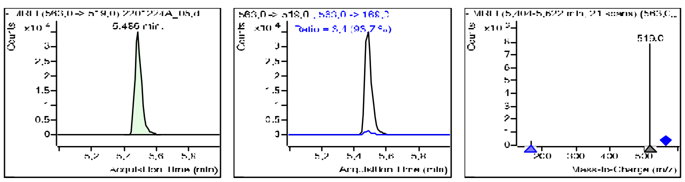

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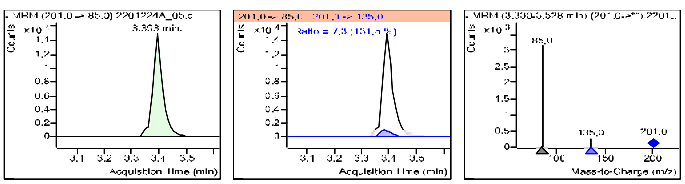

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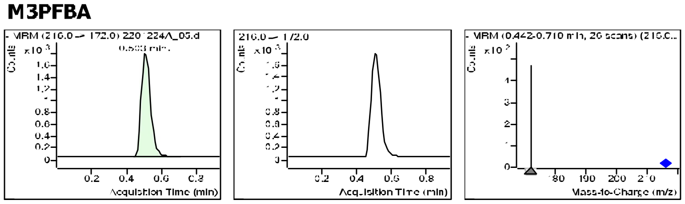

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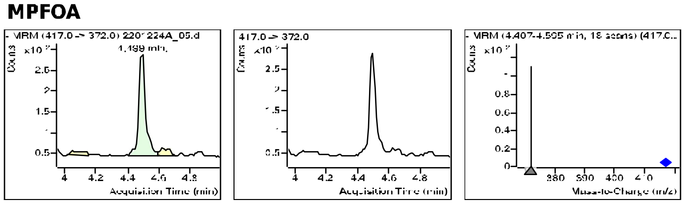
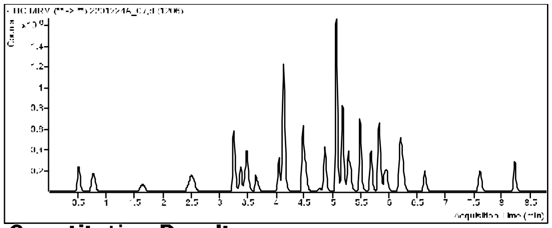


Quantitative Analysis Sample Report

Batch Data Path	D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update	12/24/2020 15:17

Data File	2201224A_07.d	**Position**	Vial 6	**Samp Name**	1206	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	Calibration	**Comment**	MRA,QQQ1;Cal
Acq Date	12/24/2020 11:29						

Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	163894.129	5.176				95.78	19.1564	95.78	15479.90	2.00	
M2PFHxA	274715.837	3.491				103.05	41.2203	103.05	2712.19	1.46	
M2PFOA	129923.406	4.489				102.83	20.5662	102.83	9449.56	1.64	
M4PFOS	55367.287	4.873				113.76	22.7523	113.76	9830.06	2.00	
M3PFBA	6563.410	0.513				0.00	5.1076	102.15	133.09	1.25	
MPFOA	538.433	4.489				0.00	26.4271	105.71	52.14	2.85	
HFPO-DA	119289.330	3.684	M3HFPODA	3118	3.683	106.31	300.5248	100.17	1610.38	1.49	
4:2 FTS	376140.347	3.458	M2 4:2 FTS	10638	3.458	96.07	90.2752	96.55	6671.68	1.33	
6:2 FTS	693553.464	4.467	M2 6:2 FTS	21132	4.466	96.31	94.9250	99.92	7781.23	1.94	
ADONA	1796086.156	4.138	M8PFOA	20319	4.488	96.87	100.4052	100.41	127259.11	1.52	
8:2 FTS	714215.176	5.175	M2 8:2 FTS	11282	5.175	109.55	95.6307	99.62	407349.55	1.58	
FOSA	1089937.587	5.282	M8FOSA	24116	5.281	109.61	97.0775	97.08	10931.81	1.84	
9Cl-PF3ONS	4649179.683	5.069	M8PFOS	4797	4.872	101.80	99.9551	99.96	100066.87	1.29	
PFDS	263995.863	5.494	M6PFDA	27852	5.186	90.11	179.5145	186.03	284359.69	1.39	
11Cl-PF3OUdS	1068781.090	5.679	M8PFOS	4797	4.872	101.80	100.2759	100.28	64210.23	1.32	
PFHpS	409017.238	4.529	M8PFOA	20319	4.488	96.87	132.5252	139.50	33645.84	1.52	
10:2 FTS	593767.736	5.827	M2 8:2 FTS	11282	5.175	109.55	167.3456	86.80	90629.11	1.57	
PFNS	237234.038	5.194	M9PFNA	24794	4.853	93.11	173.2813	180.50	344790.21	1.22	
PFDoS	586827.026	6.189	M8PFOS	4797	4.872	101.80	247.3761	177.78	15570.58	1.62	
PFPeS	333326.049	3.647	M5PFHxA	27313	3.490	101.68	113.1313	120.35	2867.58	1.29	
PFODA	742848.613	8.216	M2PFHxDA	34622	7.617	102.33	191.5975	95.80	6822.86	1.94	
NEtFOSAA	347583.836	5.484	d5-NEtFOSAA	11903	5.474	94.78	104.1480	104.15	1549.62	1.42	
PFHxDA	673808.888	7.610	M2PFHxDA	34622	7.617	102.33	199.6205	99.81	23006.21	1.44	
NMeFOSAA	350052.230	5.318	d3-NMeFOSAA	10740	5.317	112.72	100.6867	100.69	37489.71	2.01	
PFBA	883327.486	0.505	MPFBA	36075	0.511	102.09	94.9856	94.99	27480.12	1.69	
PFBS	317752.574	2.475	M3PFBS	11878	2.473	100.70	86.8429	98.13	15583.32	1.10	
NMeFOSA	327338.974	5.928	d-NMeFOSA	17910	5.927	106.53	196.2208	98.11	554039.66	1.60	
PFDA	846495.230	5.176	M6PFDA	27852	5.186	90.11	100.7694	100.77	2998.05	2.00	
PFDoA	767232.742	5.818	MPFDoA	38062	5.828	101.09	97.4112	97.41	85357.25	1.87	
NEtFOSA	329129.876	6.237	d-NEtFOSA	12486	6.226	105.22	191.3110	95.66	1396.25	1.37	
PFHpA	701900.526	4.057	M4PFHpA	35748	4.056	101.30	96.1097	96.11	21328.86	1.72	
PFHxA	678881.772	3.493	M5PFHxA	27313	3.490	101.68	94.1953	94.20	37399.63	1.36	
NMeFOSE	470680.566	5.964	d7-NMeFOSE	23530	5.953	101.13	191.3130	95.66	12614.68	1.43	
PFHxS	429403.475	4.126	M3PFHxS	10536	4.126	105.51	90.9629	99.74	13095.09	1.58	m
PFNA	727157.778	4.853	M9PFNA	24794	4.853	93.11	94.1901	94.19	21623.67	1.85	
NEtFOSE	446219.235	6.244	d9-NEtFOSE	21064	6.223	101.32	192.2743	96.14	237160.12	1.63	
PFOA	634692.290	4.490	M8PFOA	20319	4.488	96.87	110.8409	110.84	34897.69	1.58	
PFOS	443085.729	4.873	M8PFOS	4797	4.872	101.80	101.4197	109.58	18126.14	1.94	m
PFPeA	385328.190	1.637	M5PFPeA	17046	1.635	101.37	96.1417	96.14	2104.63	1.23	
PFMPA	742898.114	0.766	M5PFPeA	17046	1.635	101.37	191.5895	95.79	12754.16	1.17	
PFTA	630685.250	6.635	M2PFTA	33697	6.634	106.02	105.4770	105.48	59776.11	1.26	
PFMBA	687525.863	2.520	M5PFHxA	27313	3.490	101.68	185.9688	92.98	46271.05	1.08	
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PFEESA	1721105.007	3.253	M3PFHxS	10536	4.126	105.51	177.0761	99.48	72282.80	1.42	
PFUnA	1014718.009	5.486	M7PFUnA	50272	5.485	95.80	94.4271	94.43	24766.76	1.94	
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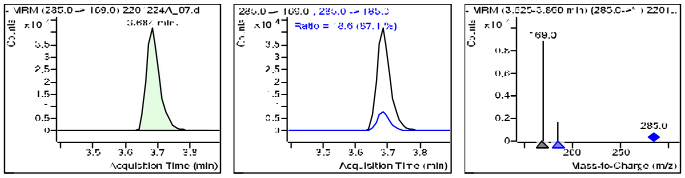
HFPO-DA



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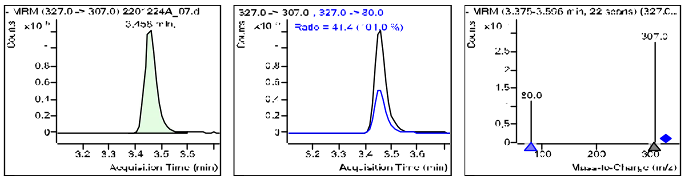

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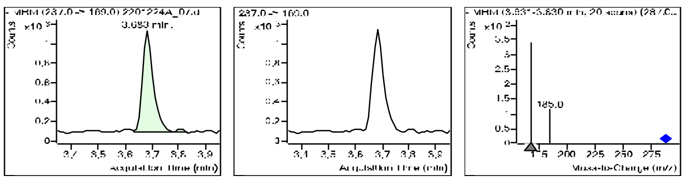

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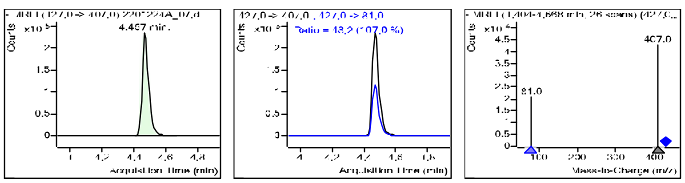

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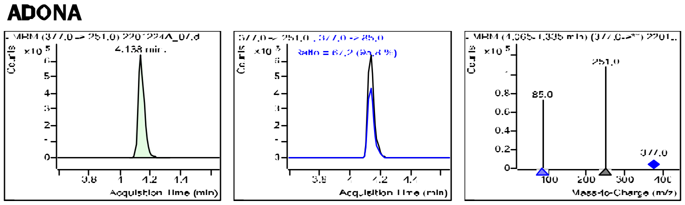

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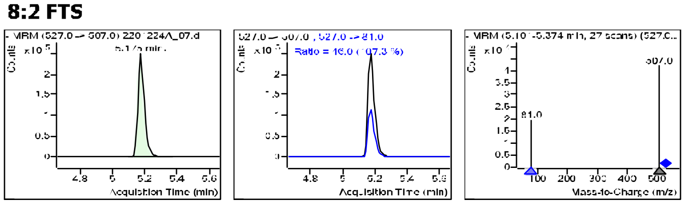

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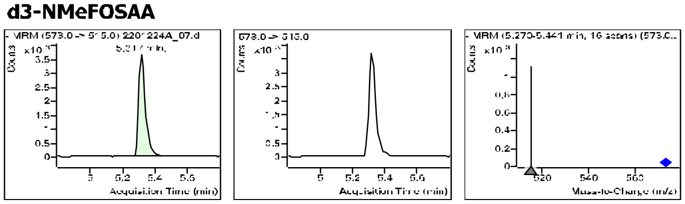

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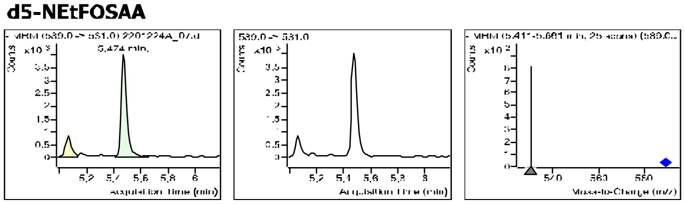

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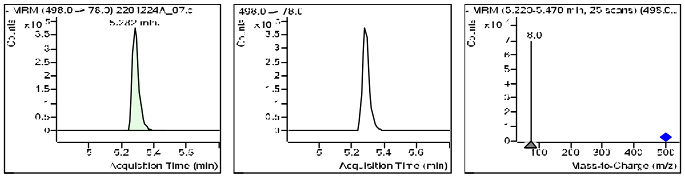

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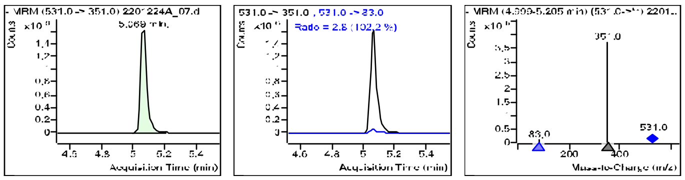

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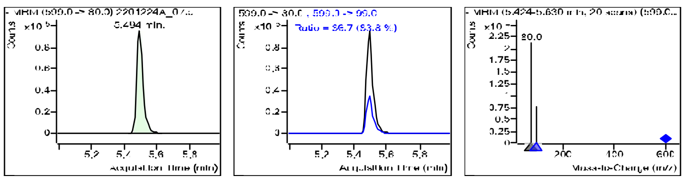

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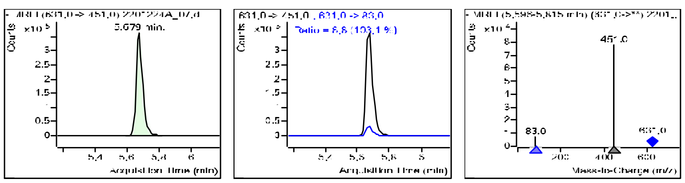

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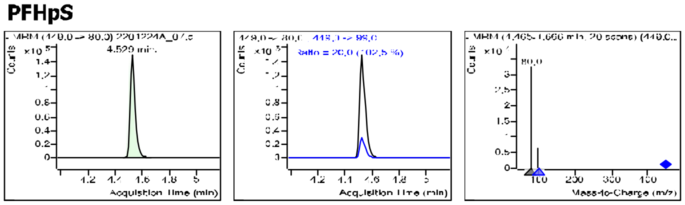

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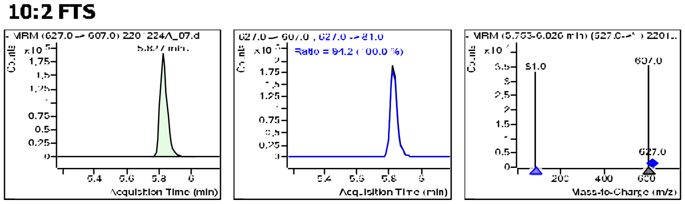

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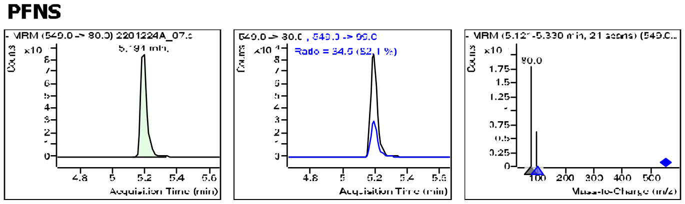

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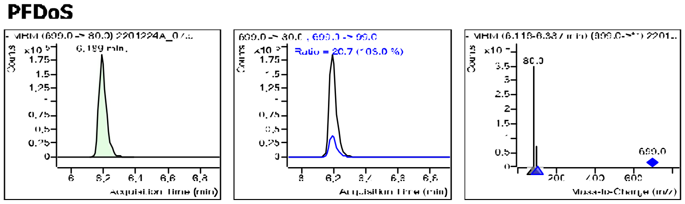

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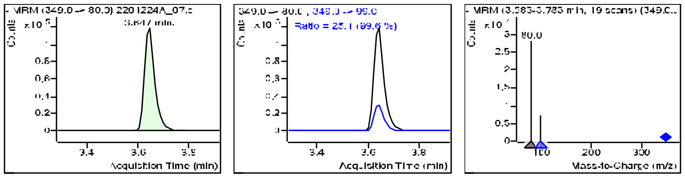

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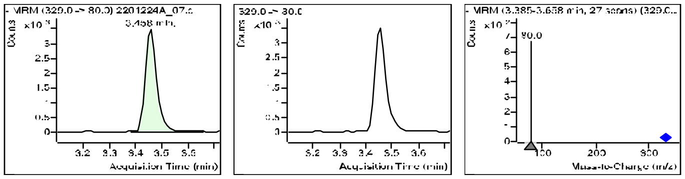

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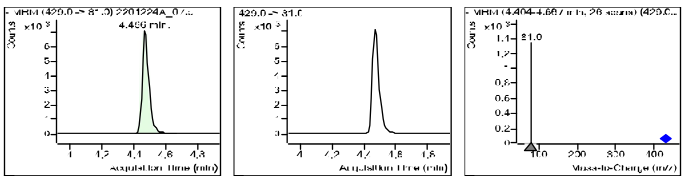

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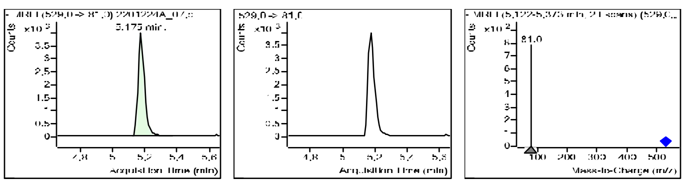

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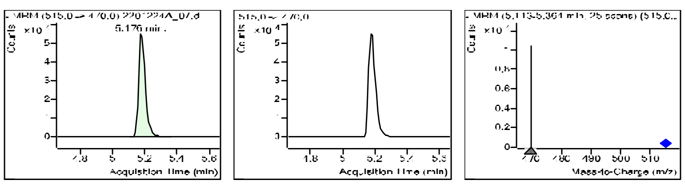

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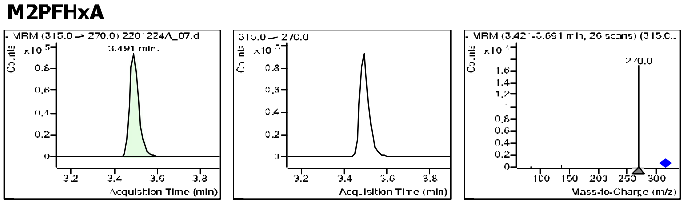

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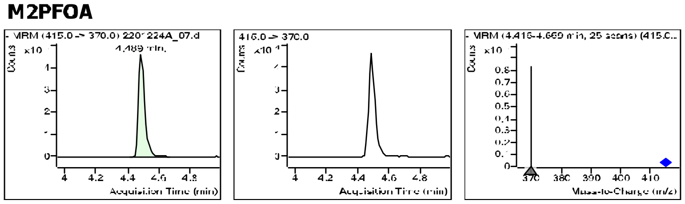

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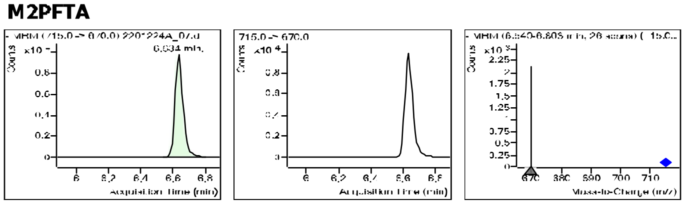

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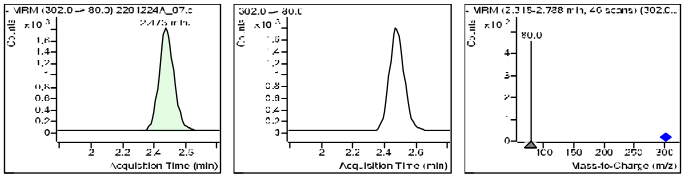

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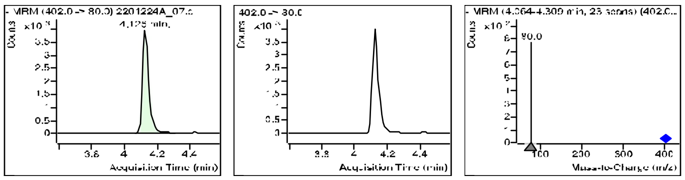

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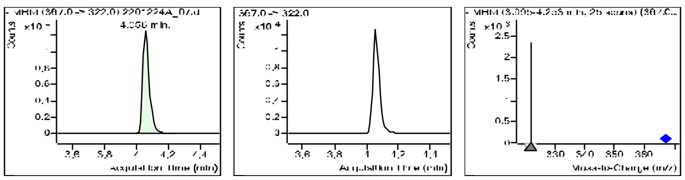

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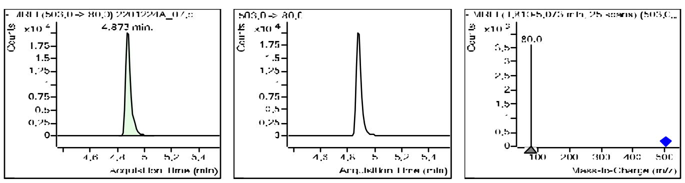

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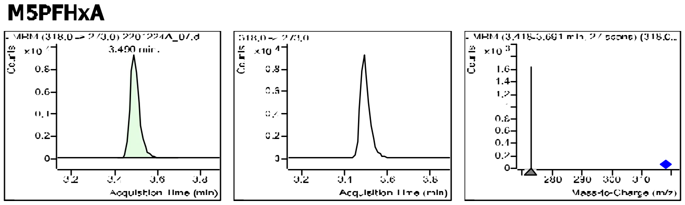

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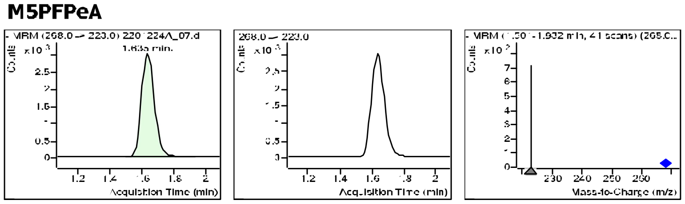

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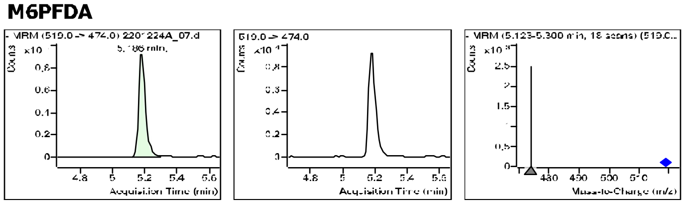

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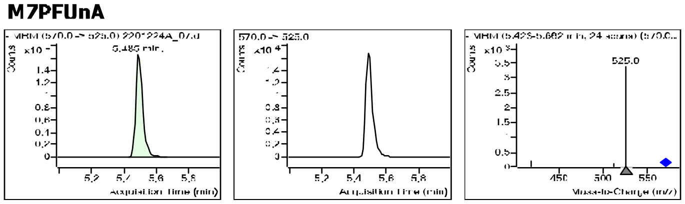

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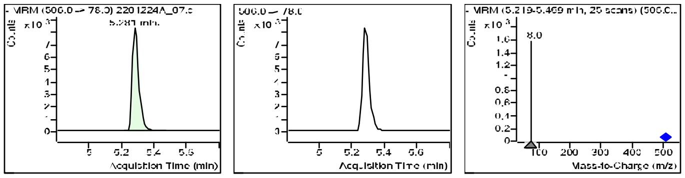

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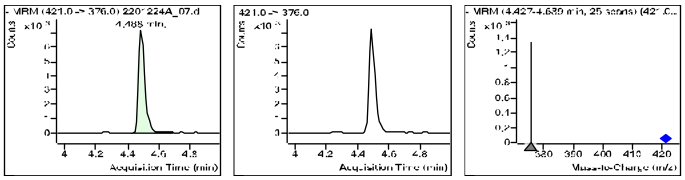

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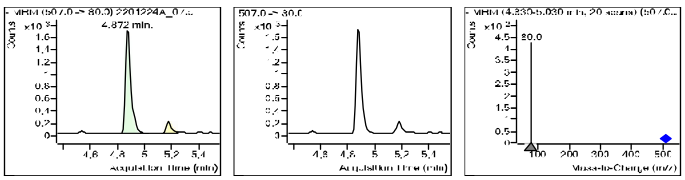

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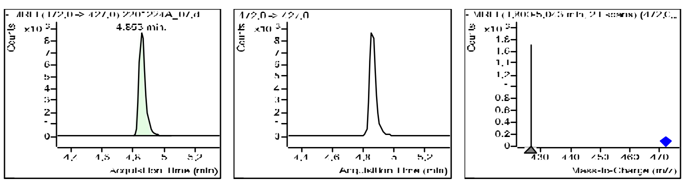

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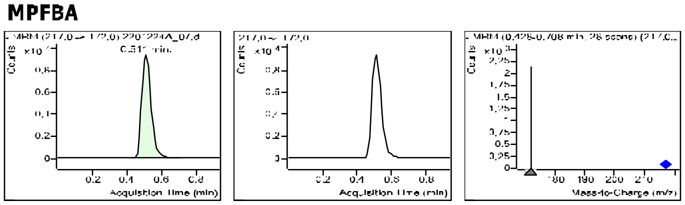

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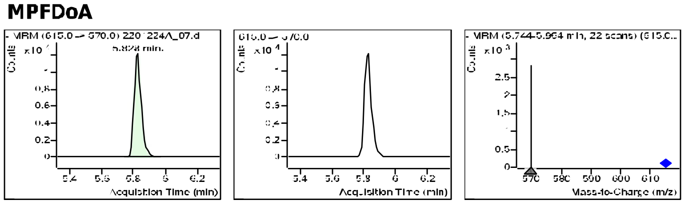

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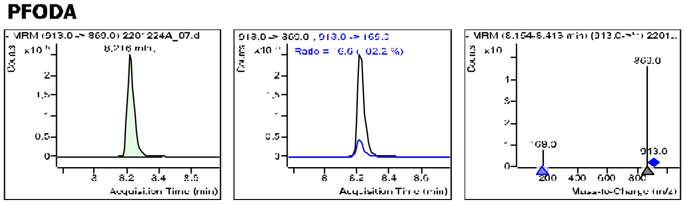

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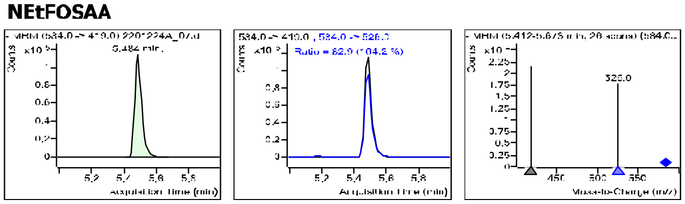

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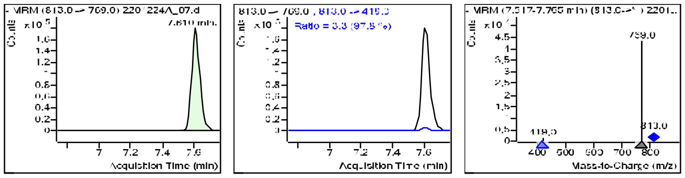

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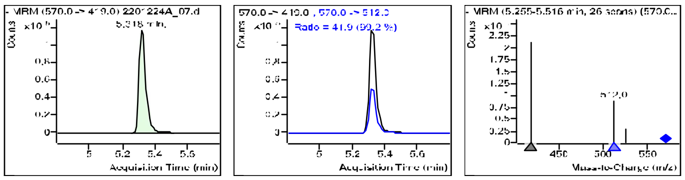

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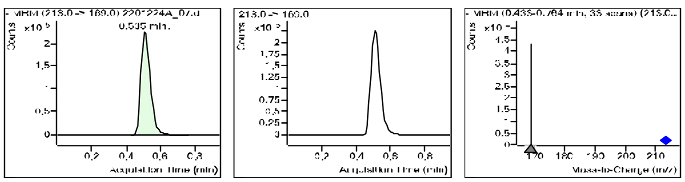

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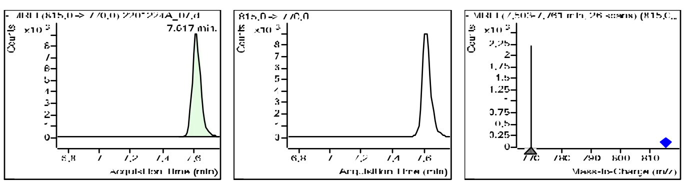

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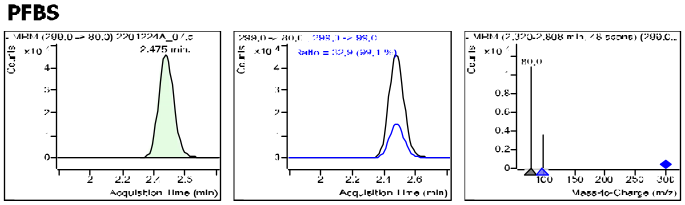

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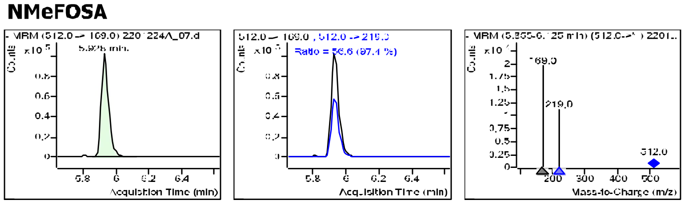

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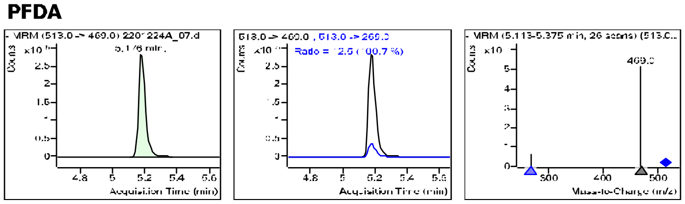

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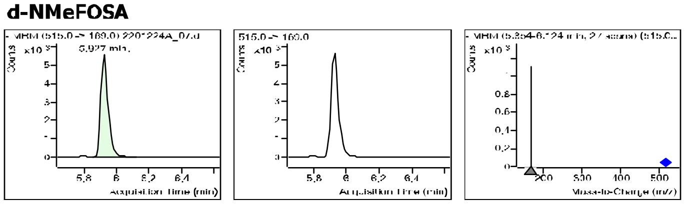

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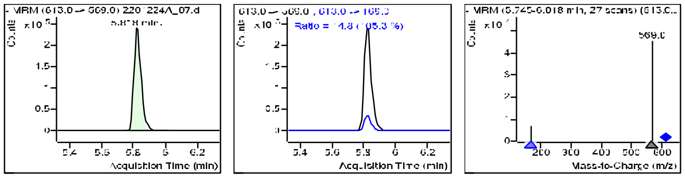

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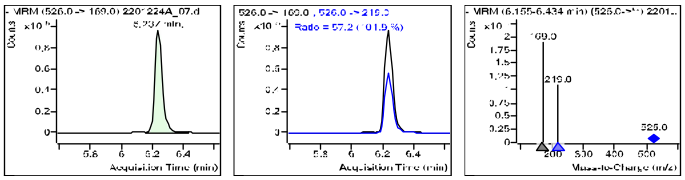

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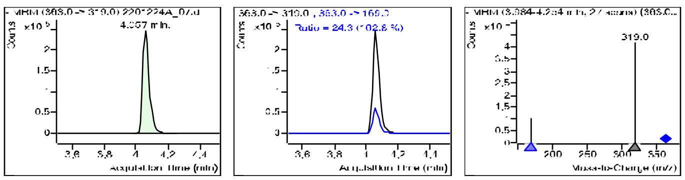

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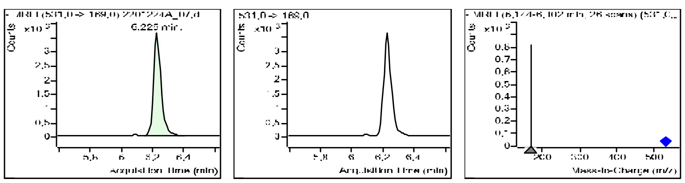

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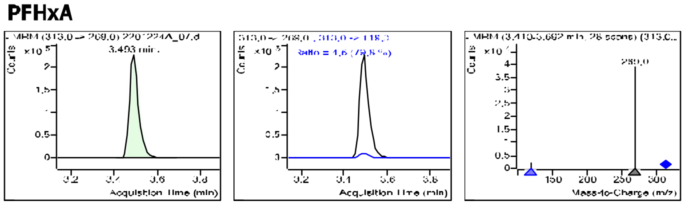

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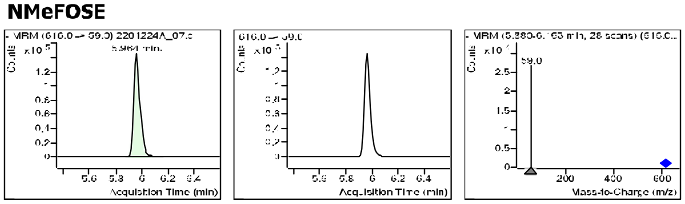

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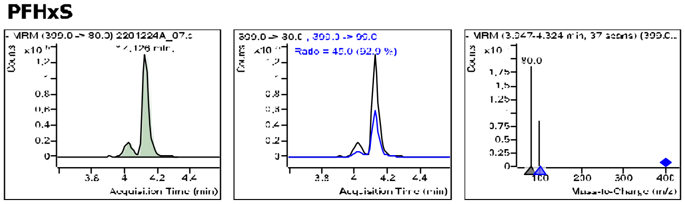

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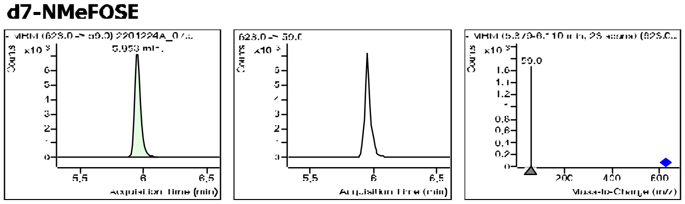

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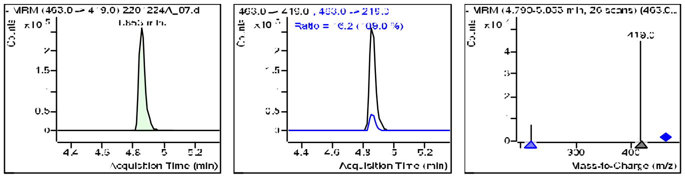

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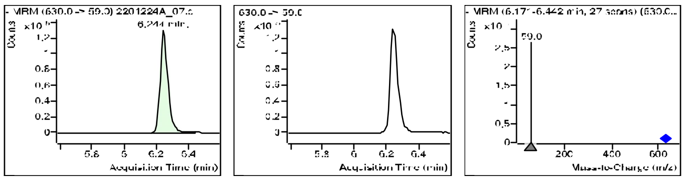

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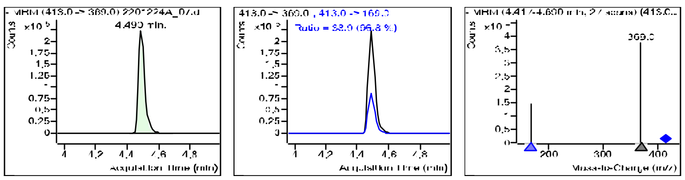

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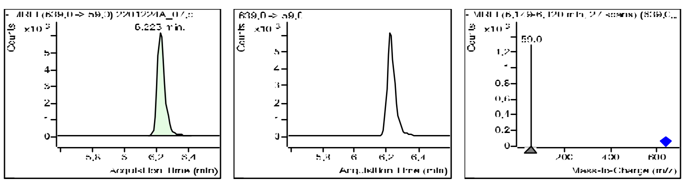

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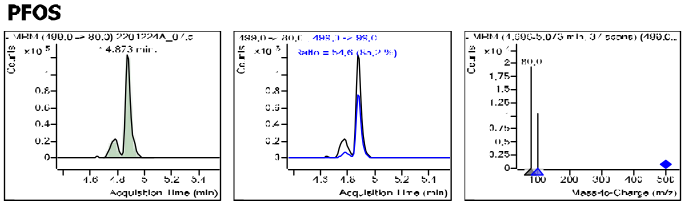

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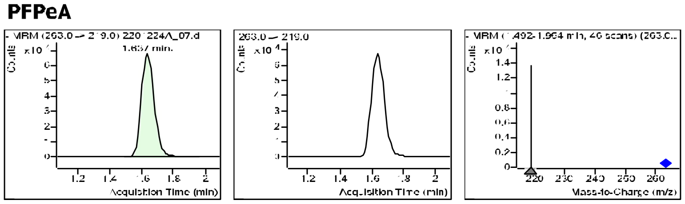

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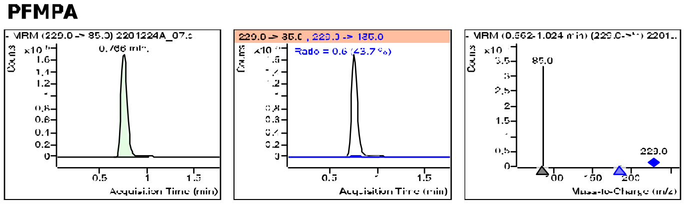

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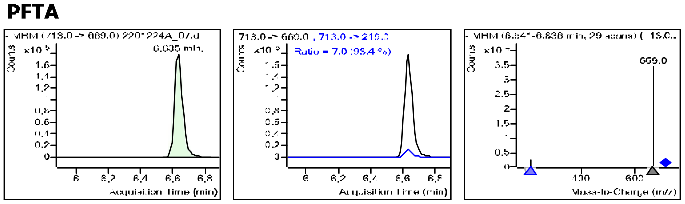

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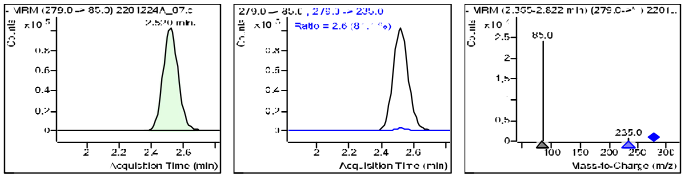

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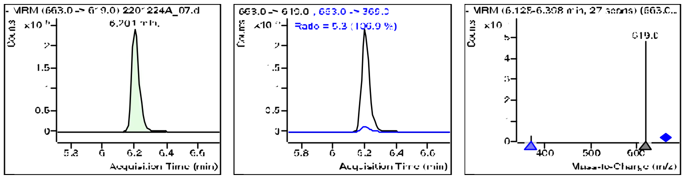

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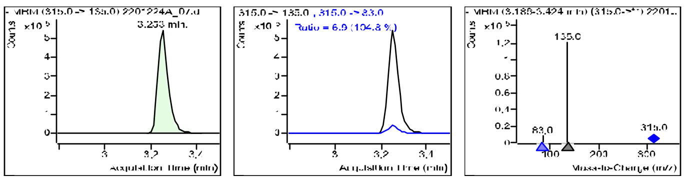

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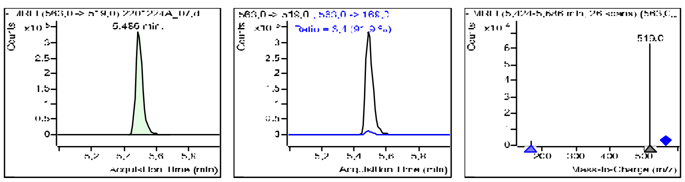

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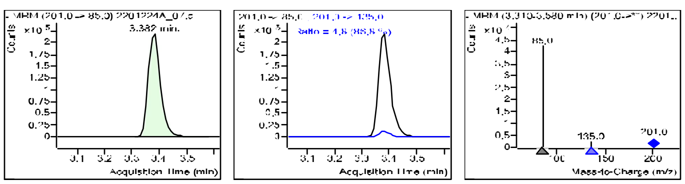

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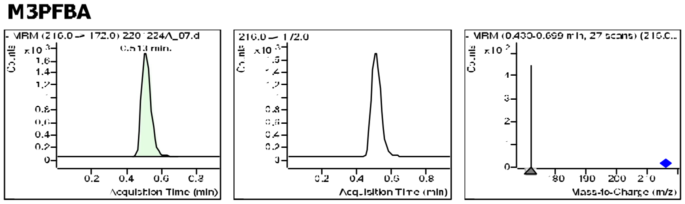

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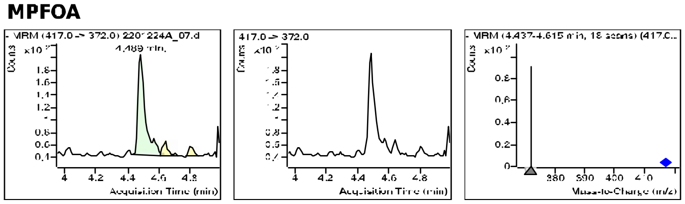
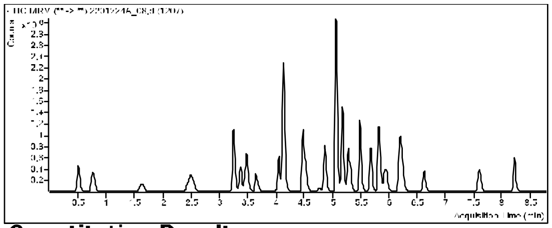


Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_08.d	**Position**	Vial 7	**Samp Name**	1207	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	Calibration	**Comment**	MRA,QQQ1;Cal
Acq Date	12/24/2020 11:43						

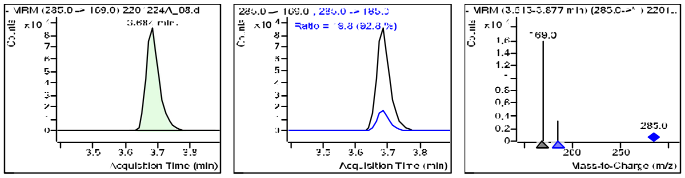
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	144209.311	5.176				84.28	16.8556	84.28	6603.43	1.85	
M2PFHxA	257494.076	3.491				96.59	38.6362	96.59	22415.82	1.43	
M2PFOA	119630.674	4.489				94.68	18.9369	94.68	6969.93	1.60	
M4PFOS	60758.135	4.873				124.84	24.9676	124.84	5087.11	1.94	
M3PFBA	6268.494	0.503				0.00	4.8781	97.56	235.73	1.50	
MPFOA	366.494	4.489				0.00	17.9881	71.95	18.36	1.77	
HFPO-DA	244642.805	3.684	M3HFPODA	3257	3.683	111.05	590.0167	98.34	INF	1.42	
4:2 FTS	690741.474	3.458	M2 4:2 FTS	9337	3.458	84.31	188.8961	101.01	INF	1.29	
6:2 FTS	1203653.539	4.467	M2 6:2 FTS	21080	4.466	96.07	165.1474	86.92	11351.37	1.91	
ADONA	3428204.724	4.138	M8PFOA	16815	4.488	80.16	231.5784	115.79	34437.63	1.40	
8:2 FTS	1255666.109	5.175	M2 8:2 FTS	10712	5.175	104.02	177.0708	92.22	156052.56	1.43	
FOSA	2153765.492	5.282	M8FOSA	22972	5.281	104.41	201.3796	100.69	34948.67	1.62	
9Cl-PF3ONS	8749125.353	5.059	M8PFOS	5535	4.872	117.46	163.0257	81.51	178673.51	2.03	
PFDS	619520.637	5.494	M6PFDA	22810	5.176	73.80	514.3875	266.52	32448.06	1.23	
11Cl-PF3OUdS	2163719.429	5.669	M8PFOS	5535	4.872	117.46	175.9428	87.97	7959.91	1.98	
PFHpS	861141.737	4.529	M8PFOA	16815	4.488	80.16	338.3328	178.07	37977.06	1.48	
10:2 FTS	1104779.737	5.827	M2 8:2 FTS	10712	5.175	104.02	327.9278	85.04	108421.65	1.41	
PFNS	587312.808	5.184	M9PFNA	22008	4.853	82.65	483.2840	251.71	72674.70	1.83	
PFDoS	1229478.197	6.189	M8PFOS	5535	4.872	117.46	449.1911	116.01	10941.41	1.24	
PFPeS	696240.080	3.647	M5PFHxA	24498	3.490	91.20	263.4563	140.14	40003.54	1.24	
PFODA	1524511.751	8.216	M2PFHxDA	38621	7.596	114.15	352.4914	88.12	65775.12	1.64	
NEtFOSAA	600113.440	5.474	d5-NEtFOSAA	11417	5.474	90.91	187.4669	93.73	2925.92	2.13	
PFHxDA	1428247.134	7.599	M2PFHxDA	38621	7.596	114.15	379.3150	94.83	16411.43	1.42	
NMeFOSAA	681512.447	5.318	d3-NMeFOSAA	10546	5.317	110.68	199.6326	99.82	46404.22	1.88	
PFBA	1692680.580	0.505	MPFBA	32375	0.501	91.62	202.8180	101.41	47159.99	1.38	
PFBS	586216.162	2.475	M3PFBS	10684	2.452	90.58	178.1195	100.63	552.29	0.96	
NMeFOSA	640458.902	5.928	d-NMeFOSA	17097	5.927	101.69	402.1936	100.55	3070.71	1.41	
PFDA	1542792.741	5.176	M6PFDA	22810	5.176	73.80	224.2560	112.13	55815.37	1.84	
PFDoA	1465098.246	5.818	MPFDoA	35127	5.818	93.29	201.5549	100.78	44158.70	1.59	
NEtFOSA	655477.012	6.227	d-NEtFOSA	11753	6.216	99.04	404.7605	101.19	5850.96	1.63	
PFHpA	1389123.925	4.057	M4PFHpA	33629	4.056	95.29	202.1969	101.10	3387.40	1.51	
PFHxA	1313898.674	3.493	M5PFHxA	24498	3.490	91.20	203.2512	101.63	20784.88	1.33	
NMeFOSE	902409.365	5.964	d7-NMeFOSE	21294	5.943	91.52	405.3132	101.33	INF	1.25	
PFHxS	853053.364	4.126	M3PFHxS	11701	4.126	117.18	162.7163	89.21	342171.63	1.40	m
PFNA	1393233.233	4.853	M9PFNA	22008	4.853	82.65	203.3100	101.65	17889.08	1.84	
NEtFOSE	874560.065	6.244	d9-NEtFOSE	19623	6.223	94.39	404.5150	101.13	77044.72	1.27	
PFOA	1184441.681	4.490	M8PFOA	16815	4.488	80.16	249.9497	124.97	5940.99	1.56	
PFOS	910615.064	4.873	M8PFOS	5535	4.872	117.46	180.6475	97.59	6130.21	1.91	m
PFPeA	746852.098	1.627	M5PFPeA	15700	1.624	93.37	202.3119	101.16	5564.92	1.18	
PFMPA	1445519.861	0.755	M5PFPeA	15700	1.624	93.37	404.7363	101.18	6728.58	1.30	
PFTA	1207135.881	6.624	M2PFTA	34498	6.623	108.54	197.1997	98.60	82948.51	1.27	
PFMBA	1352794.610	2.500	M5PFHxA	24498	3.490	91.20	407.9613	101.99	41964.94	1.24	
PFTrDA	1416994.519	6.201	MPFDoA	35127	5.818	93.29	188.3464	94.17	3428.71	1.21	
PFEESA	3366210.725	3.253	M3PFHxS	11701	4.126	117.18	311.8532	87.60	154592.25	1.25	
PFUnA	1798824.837	5.486	M7PFUnA	41440	5.485	78.97	203.0686	101.53	64880.57	1.66	
NFDHA	1338181.204	3.372	M4PFHpA	33629	4.056	95.29	403.9028	100.98	122605.70	1.88	

HFPO-DA



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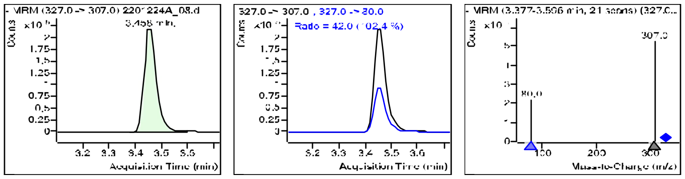

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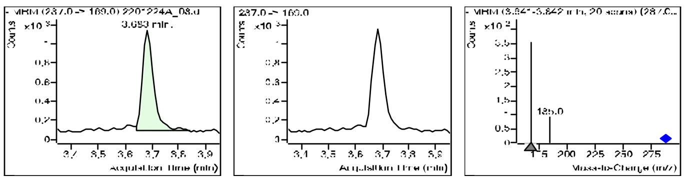

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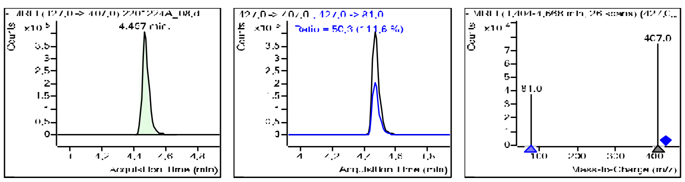

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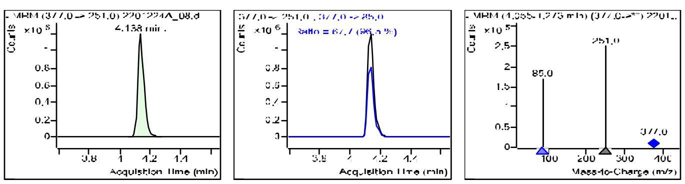

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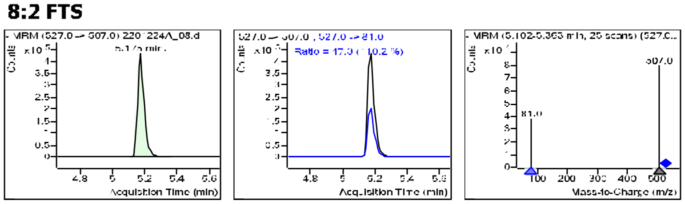

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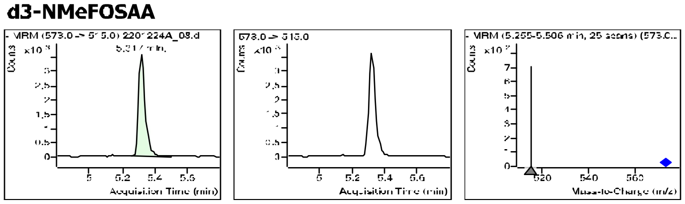

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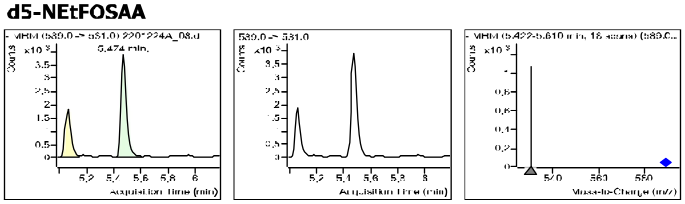

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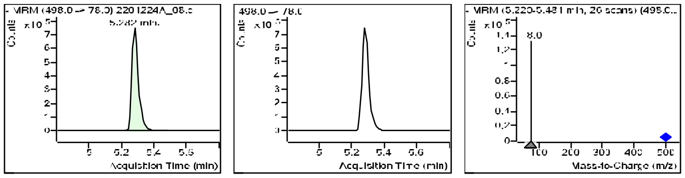

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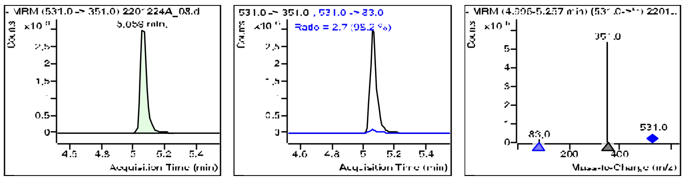

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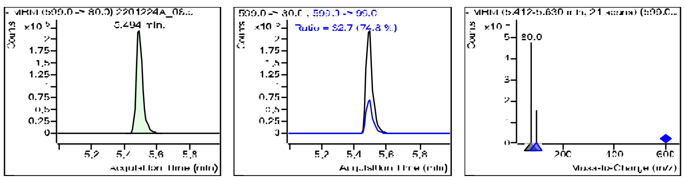

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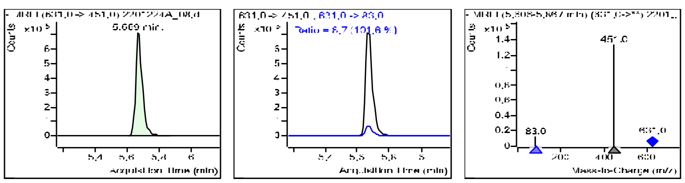

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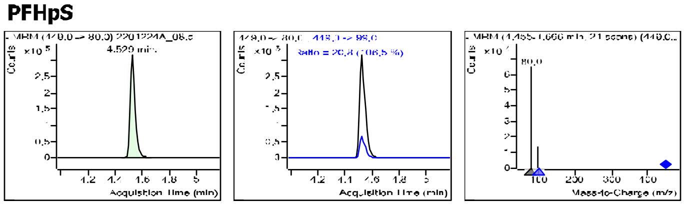

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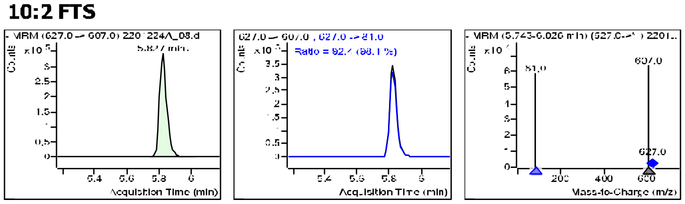

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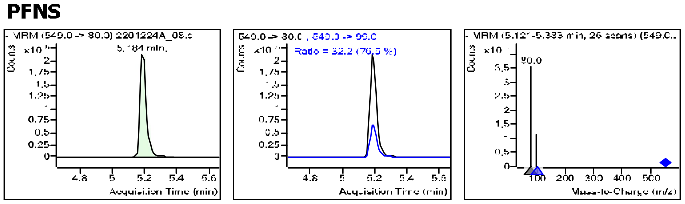

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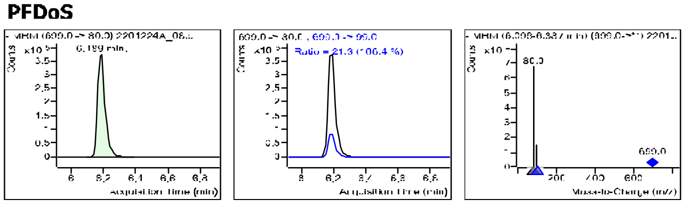

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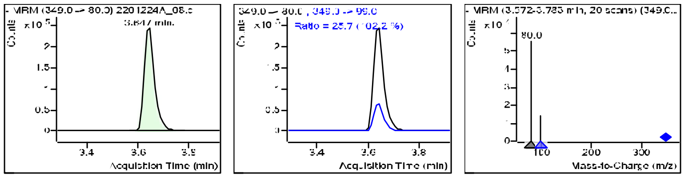

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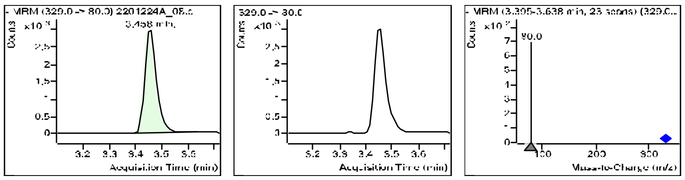

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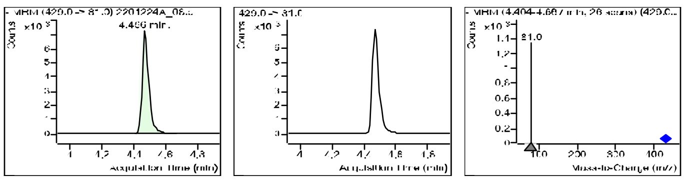

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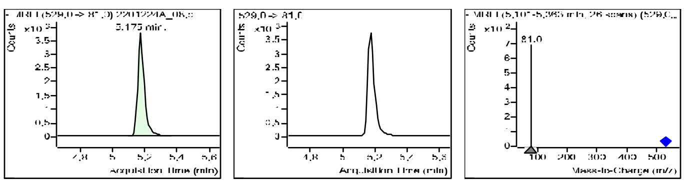

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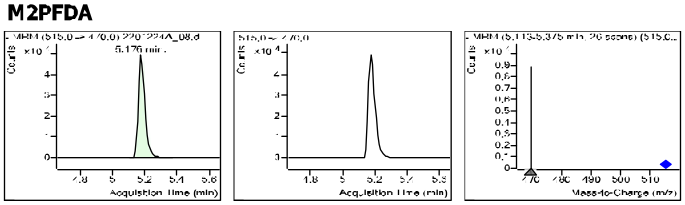

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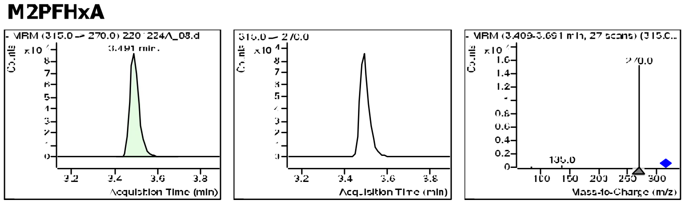

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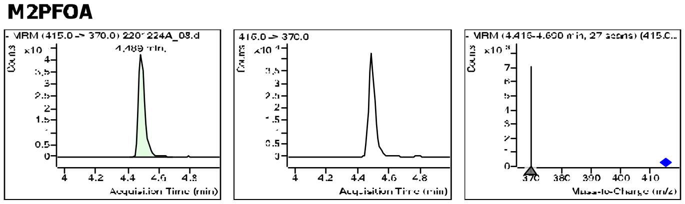

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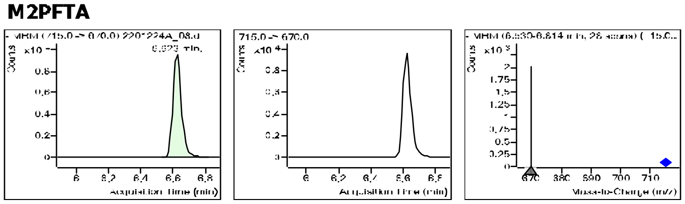

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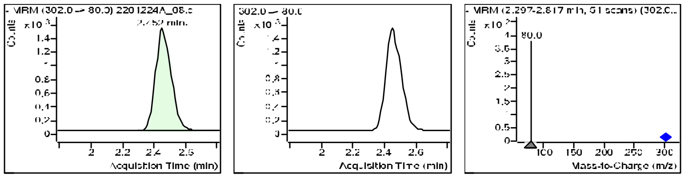

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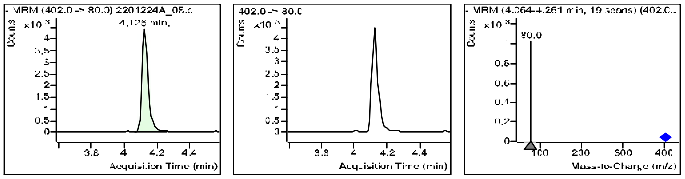

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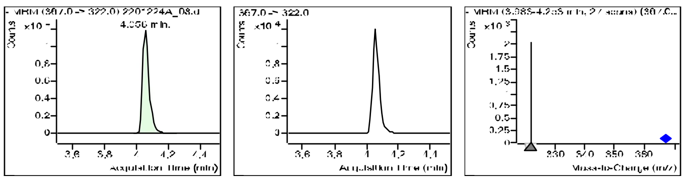

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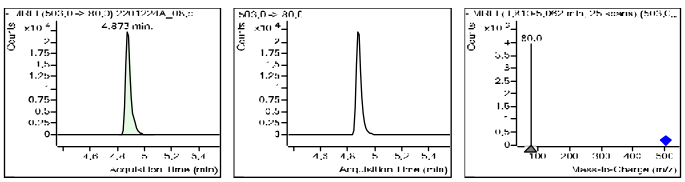

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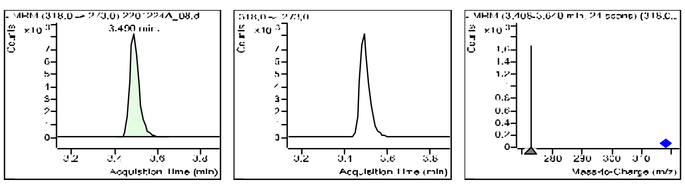

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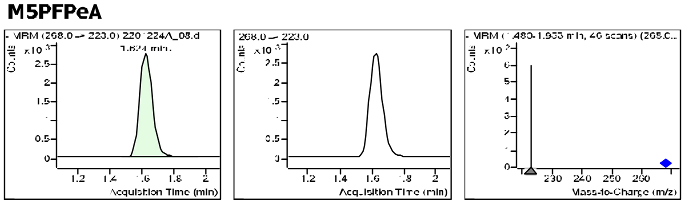

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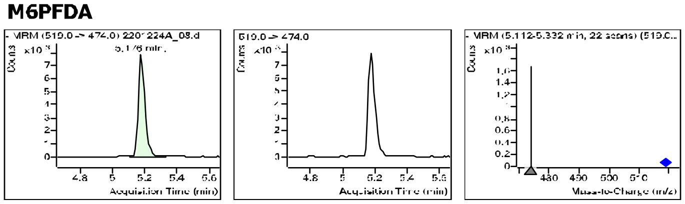

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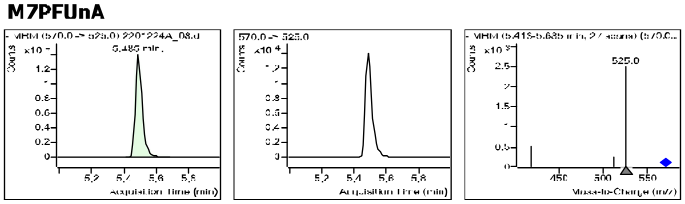

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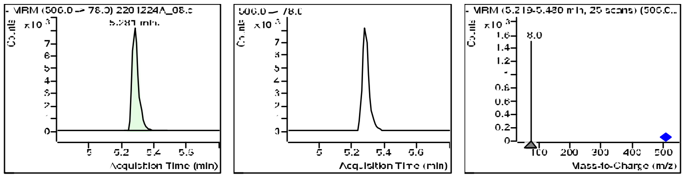

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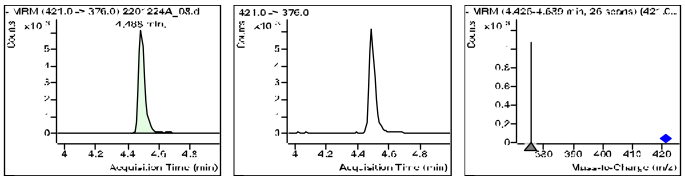

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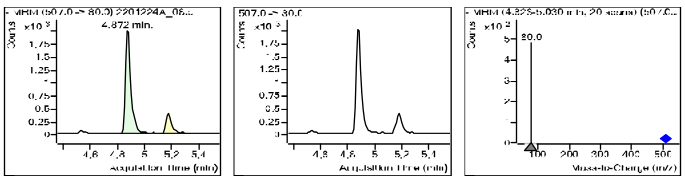

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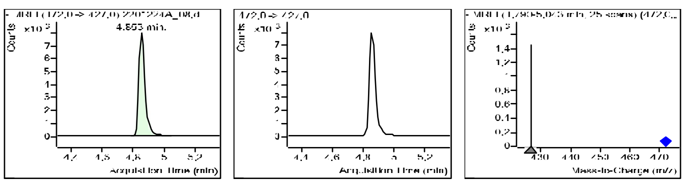

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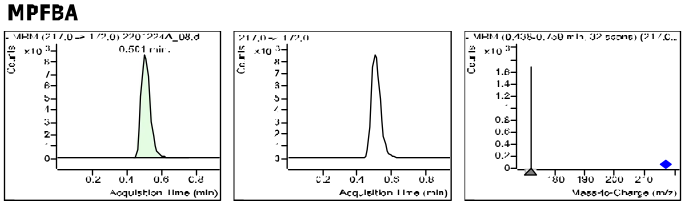

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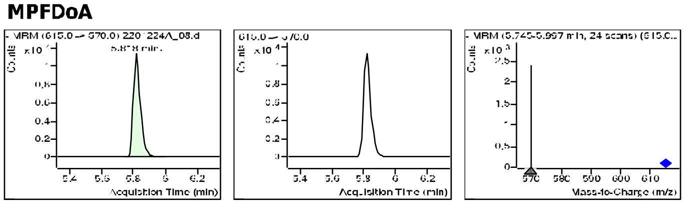

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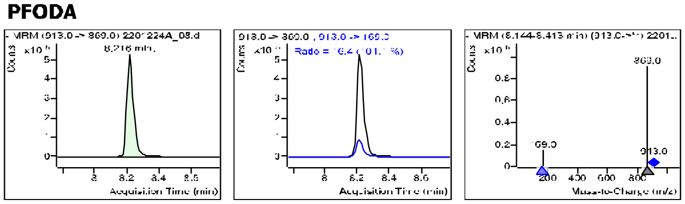

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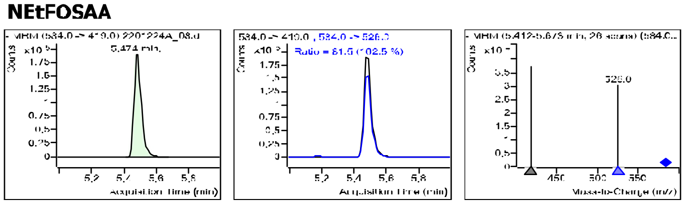

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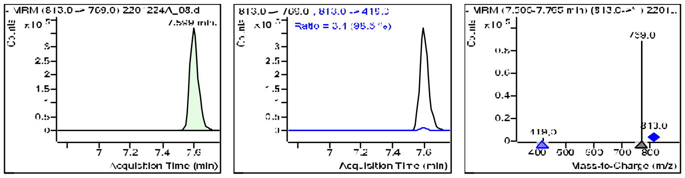

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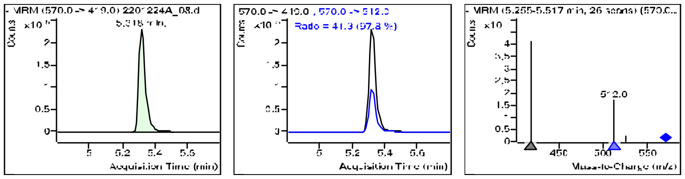

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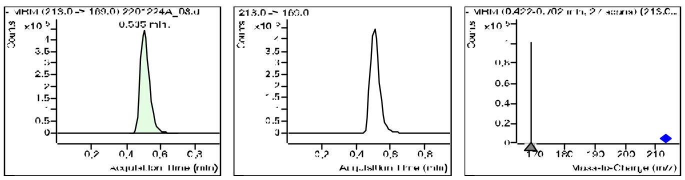

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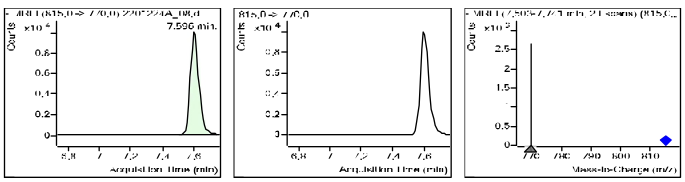

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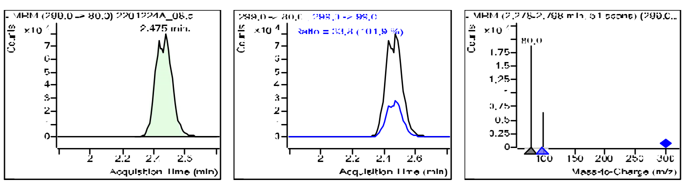

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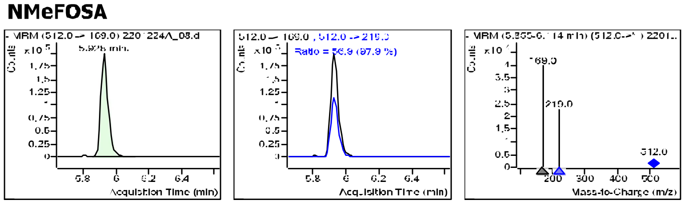

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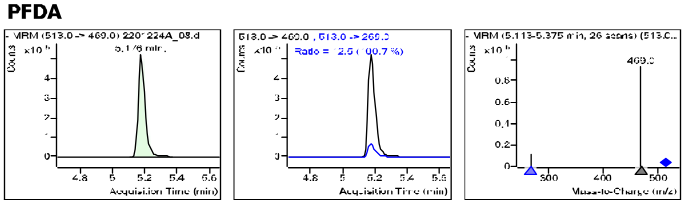

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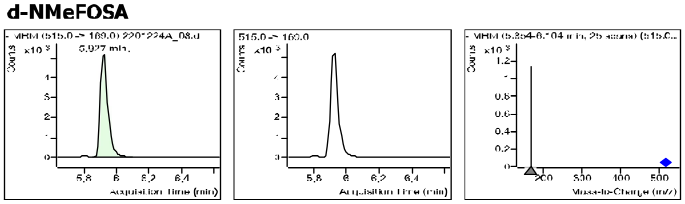

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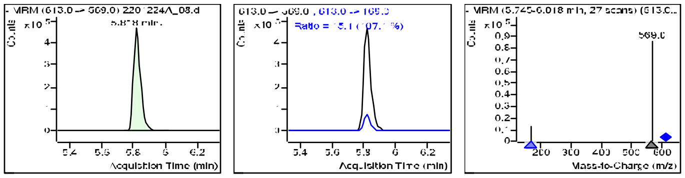

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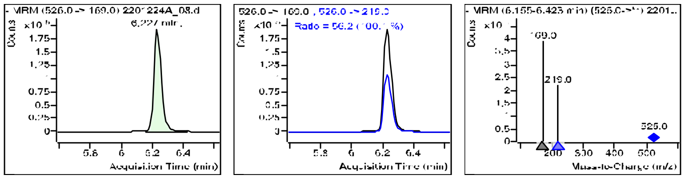

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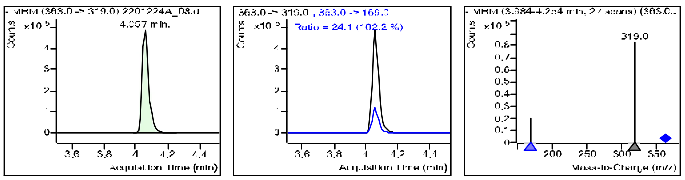

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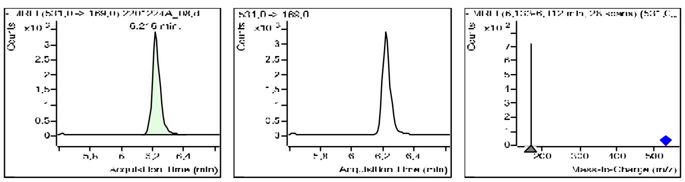

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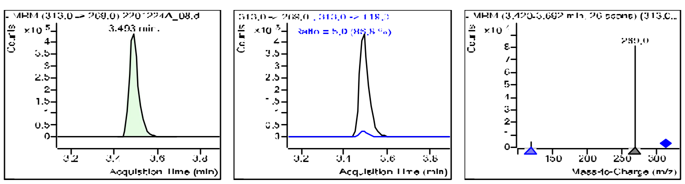

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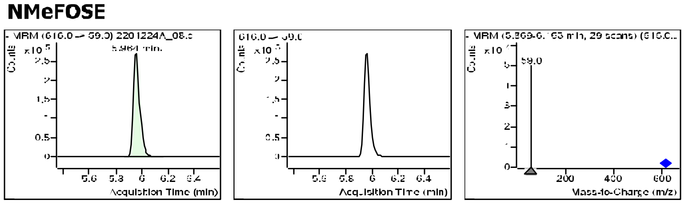

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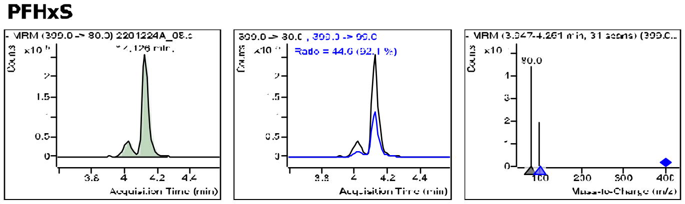

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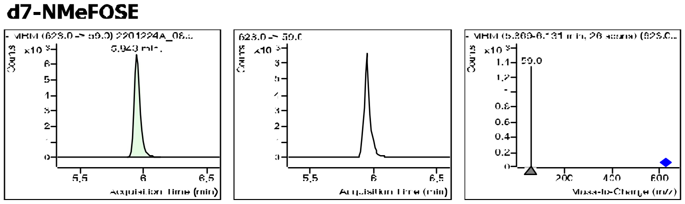

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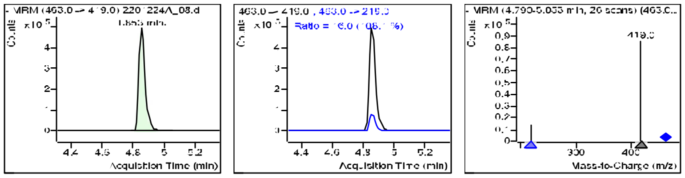

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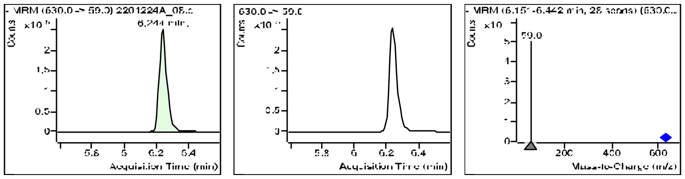

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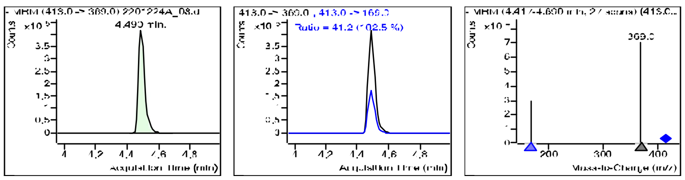

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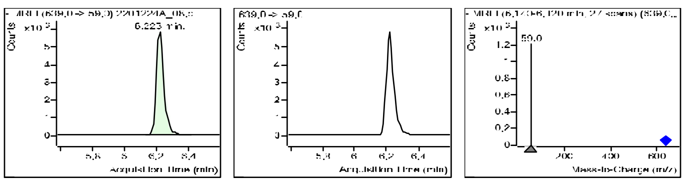

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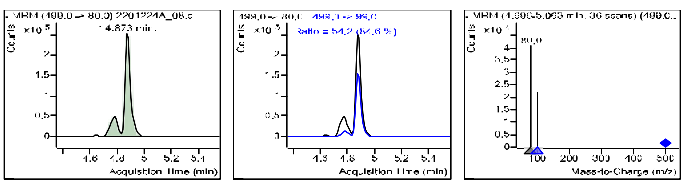

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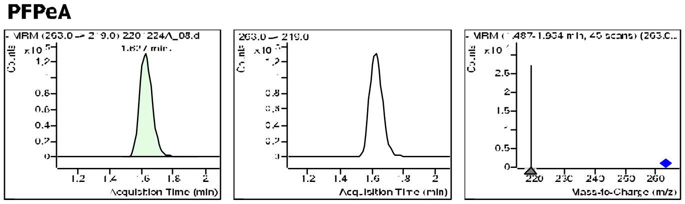

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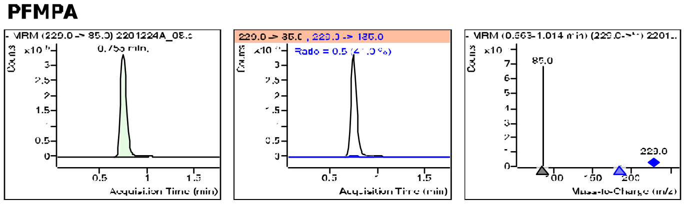

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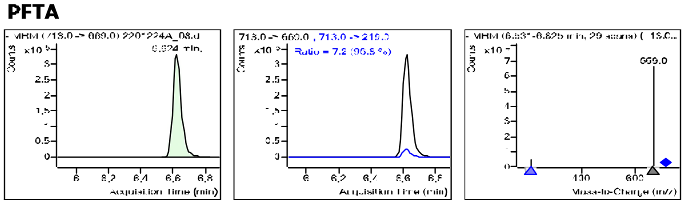

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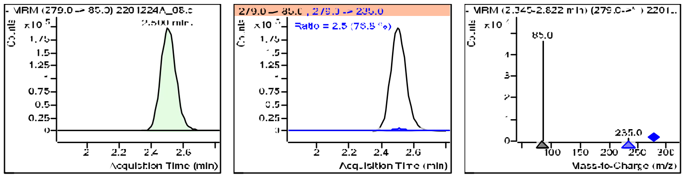

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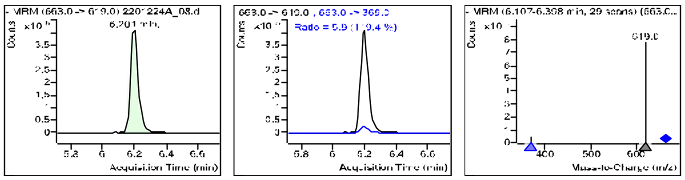

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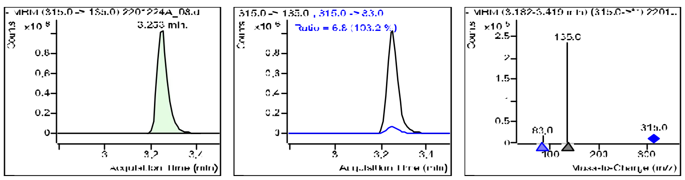

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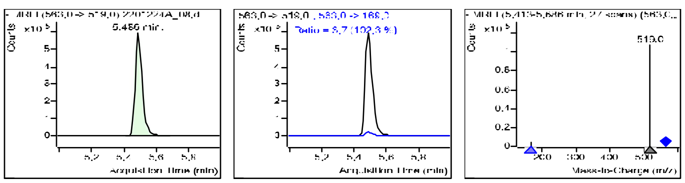

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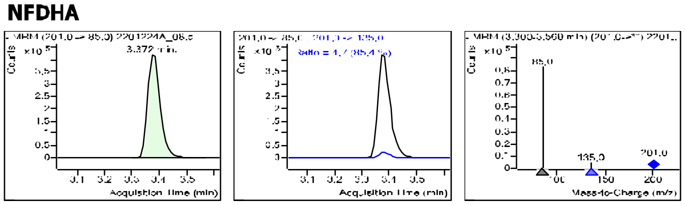

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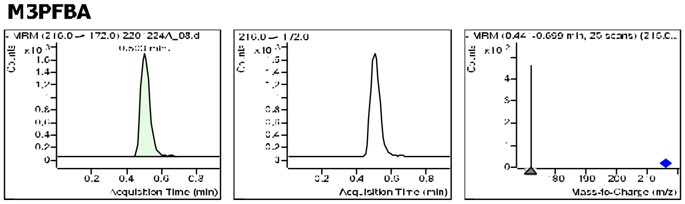

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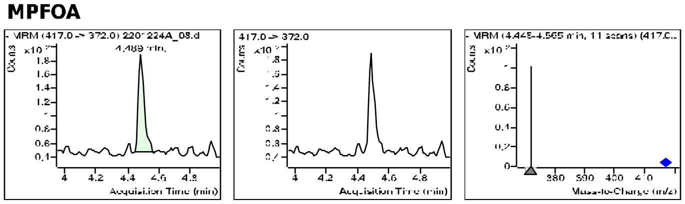

Quantitative Analysis Sample Report

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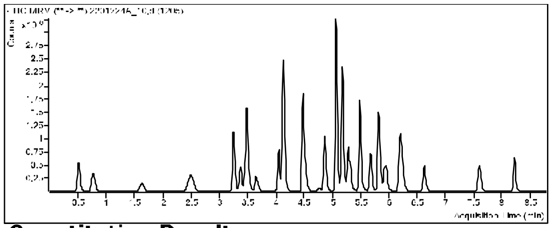
Last Calib Update 12/24/2020 15:17

Data File	2201224A_10.d	**Position**	Vial 5	**Samp Name**	1205	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	Calibration	**Comment**	MRA,QQQ1;Cal
Acq Date	12/24/2020 12:22						

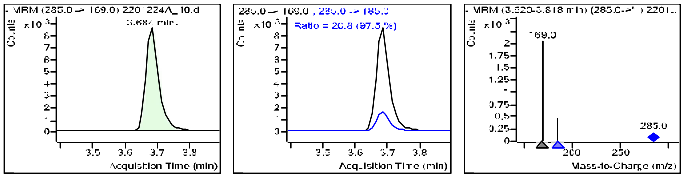
Sample Chromatogram



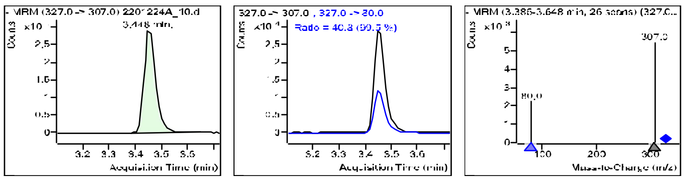
Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	173420.229	5.176				101.35	20.2698	101.35	2397.05	1.77	
M2PFHxA	265102.435	3.491				99.44	39.7779	99.44	4016.47	1.38	
M2PFOA	125808.965	4.489				99.57	19.9149	99.57	12809.95	1.39	
M4PFOS	42115.399	4.873				86.53	17.3066	86.53	3204.70	1.78	
M3PFBA	6386.260	0.513				0.00	4.9698	99.40	214.63	1.16	
MPFOA	614.048	4.489				0.00	30.1384	120.55	67.19	1.43	
HFPO-DA	24194.377	3.684	M3HFPODA	3243	3.683	110.58	58.5964	97.66	INF	1.40	
4:2 FTS	86974.133	3.448	M2 4:2 FTS	13263	3.458	119.77	16.7431	88.12	204.12	2.00	
6:2 FTS	160224.343	4.467	M2 6:2 FTS	24177	4.466	110.19	19.1676	100.88	4751.42	1.68	
ADONA	366936.220	4.138	M8PFOA	22924	4.488	109.29	18.1813	90.91	18562.63	1.27	
8:2 FTS	144147.125	5.175	M2 8:2 FTS	10748	5.175	104.36	20.2599	105.52	16708.75	1.36	
FOSA	209221.881	5.282	M8FOSA	21704	5.281	98.65	20.7054	103.53	200773.44	1.52	
9Cl-PF3ONS	894234.049	5.059	M8PFOS	4656	4.872	98.81	19.8070	99.03	18158.28	1.91	
PFDS	36075.803	5.484	M6PFDA	35160	5.176	113.76	19.4324	100.69	548.00	2.04	
11Cl-PF3OUdS	193707.899	5.669	M8PFOS	4656	4.872	98.81	18.7238	93.62	12996.13	1.85	
PFHpS	64158.751	4.529	M8PFOA	22924	4.488	109.29	18.5116	97.43	2331.20	1.30	
10:2 FTS	127760.358	5.827	M2 8:2 FTS	10748	5.175	104.36	37.7970	98.02	26864.33	1.27	
PFNS	31420.839	5.184	M9PFNA	29221	4.853	109.73	19.4732	101.42	2325.74	1.83	
PFDoS	89139.834	6.189	M8PFOS	4656	4.872	98.81	38.7131	99.98	3441.86	1.25	
PFPeS	59714.694	3.637	M5PFHxA	29707	3.490	110.59	18.6334	99.11	1555.02	2.05	
PFODA	158887.410	8.216	M2PFHxDA	34999	7.596	103.44	40.5394	101.35	8259.07	1.62	
NEtFOSAA	77292.466	5.474	d5-NEtFOSAA	13866	5.474	110.41	19.8795	99.40	6084.87	2.06	
PFHxDA	142337.192	7.599	M2PFHxDA	34999	7.596	103.44	41.7143	104.29	3283.40	1.46	
NMeFOSAA	69827.229	5.318	d3-NMeFOSAA	10907	5.317	114.46	19.7778	98.89	3542.46	1.80	
PFBA	166397.689	0.505	MPFBA	36586	0.511	103.54	17.6432	88.22	4925.54	1.58	
PFBS	61418.812	2.465	M3PFBS	12994	2.473	110.16	15.3447	86.69	3179.87	1.10	
NMeFOSA	61209.778	5.928	d-NMeFOSA	17370	5.917	103.32	37.8342	94.59	4977.65	1.31	
PFDA	181850.151	5.176	M6PFDA	35160	5.176	113.76	17.1485	85.74	2997.04	1.80	
PFDoA	159258.506	5.818	MPFDoA	42313	5.818	112.38	18.1886	90.94	1405.63	1.43	
NEtFOSA	60696.478	6.227	d-NEtFOSA	11963	6.216	100.80	36.8246	92.06	1348.39	1.62	
PFHpA	143370.649	4.057	M4PFHpA	39028	4.056	110.59	17.9819	89.91	10971.52	1.37	
PFHxA	134948.540	3.493	M5PFHxA	29707	3.490	110.59	17.2148	86.07	2361.47	1.28	
NMeFOSE	86513.759	5.953	d7-NMeFOSE	25512	5.943	109.65	32.4331	81.08	4333.09	1.69	
PFHxS	81059.438	4.126	M3PFHxS	9459	4.126	94.73	19.1269	104.86	3363.98	1.27	m
PFNA	153813.490	4.853	M9PFNA	29221	4.853	109.73	16.9050	84.53	1153.88	1.72	
NEtFOSE	87481.606	6.244	d9-NEtFOSE	22376	6.223	107.63	35.4845	88.71	796.81	1.31	
PFOA	130461.801	4.490	M8PFOA	22924	4.488	109.29	20.1942	100.97	1069.46	1.37	
PFOS	77945.673	4.873	M8PFOS	4656	4.872	98.81	18.3808	99.30	10868.35	1.81	m
PFPeA	69745.658	1.627	M5PFPeA	17313	1.624	102.96	17.1337	85.67	INF	1.24	
PFMPA	142350.124	0.755	M5PFPeA	17313	1.624	102.96	36.1455	90.36	2224.96	1.40	
PFTA	124986.842	6.624	M2PFTA	34610	6.623	108.90	20.3520	101.76	1132.95	1.45	
PFMBA	131100.669	2.510	M5PFHxA	29707	3.490	110.59	32.6027	81.51	4639.12	1.05	
PFTrDA	185337.721	6.201	MPFDoA	42313	5.818	112.38	20.4514	102.26	1994.42	1.21	
PFEESA	340936.552	3.253	M3PFHxS	9459	4.126	94.73	39.0722	109.75	7656.54	1.22	
PFUnA	225929.330	5.486	M7PFUnA	58421	5.485	111.33	18.0918	90.46	5465.09	1.57	
NFDHA	137368.563	3.372	M4PFHpA	39028	4.056	110.59	35.7265	89.32	11047.77	1.84	

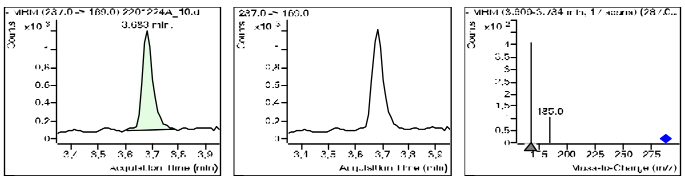
HFPO-DA



4:2 FTS



M3HFPODA



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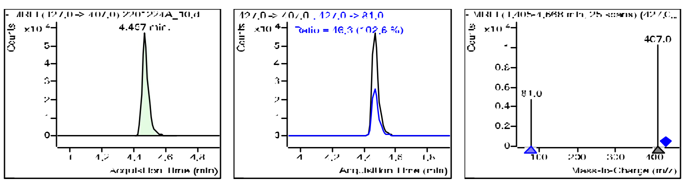

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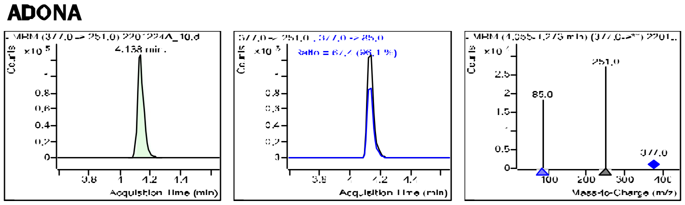
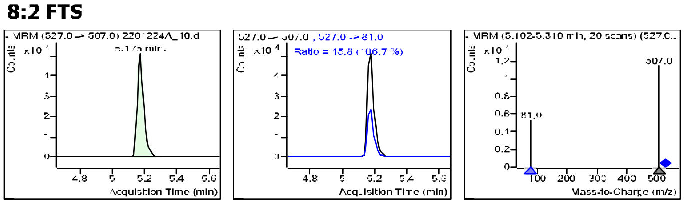


8:2 FTS



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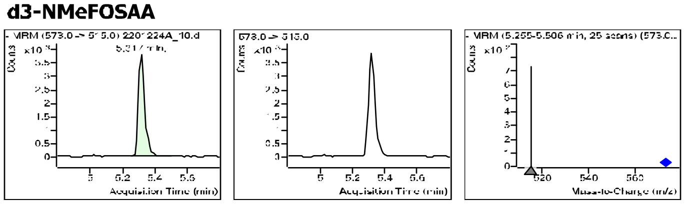

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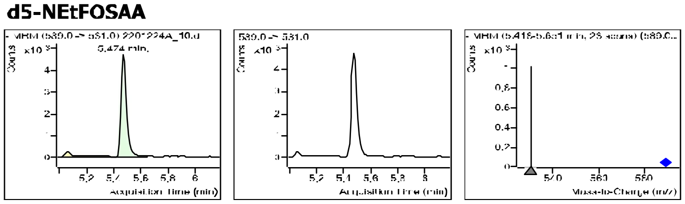
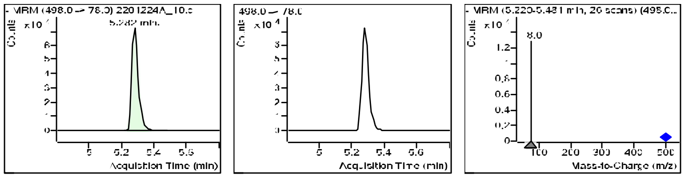


FOSA



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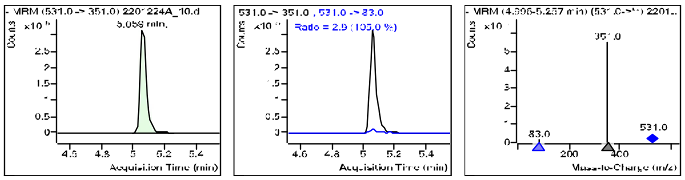

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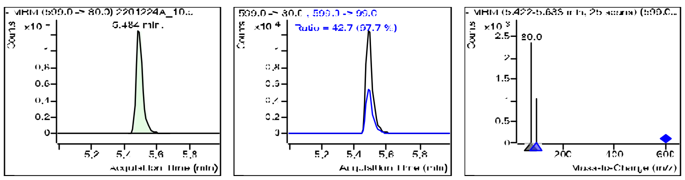

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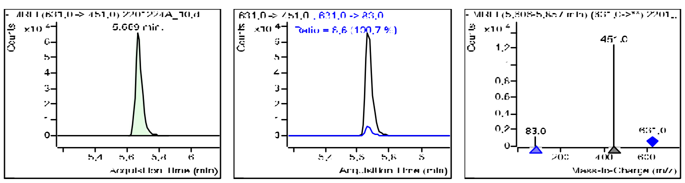

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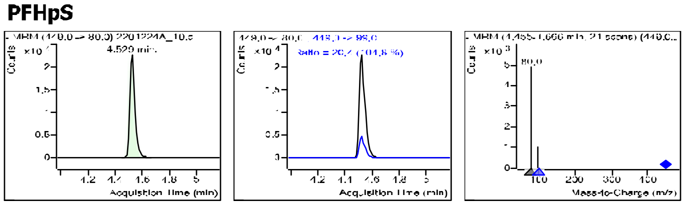

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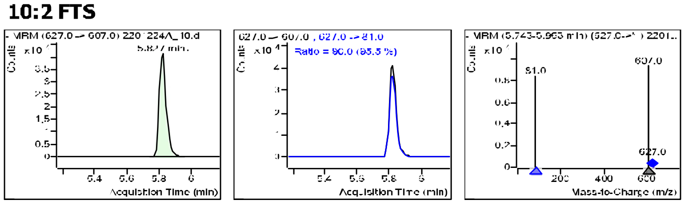

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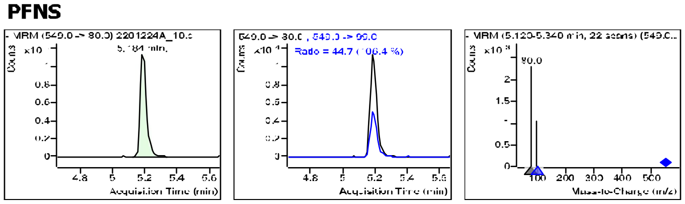

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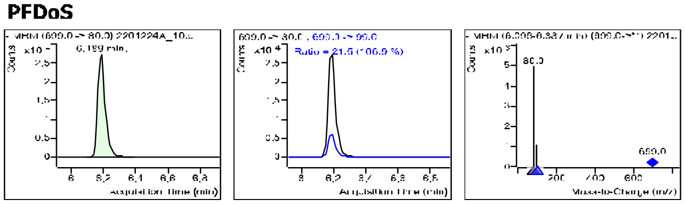

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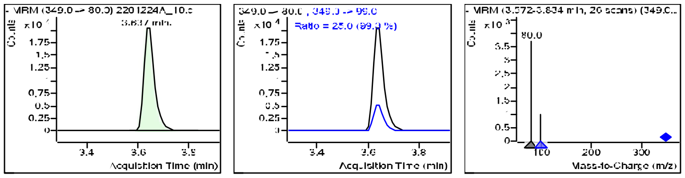

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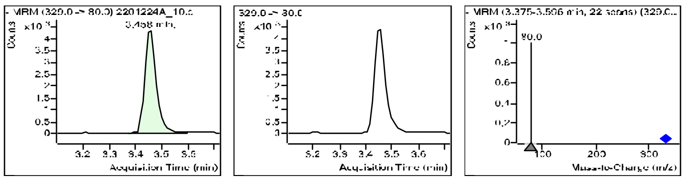

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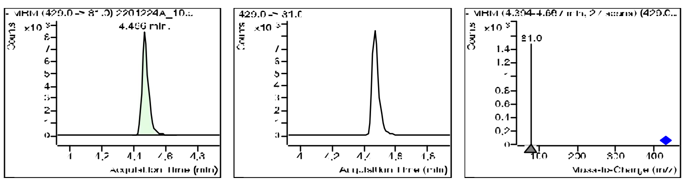

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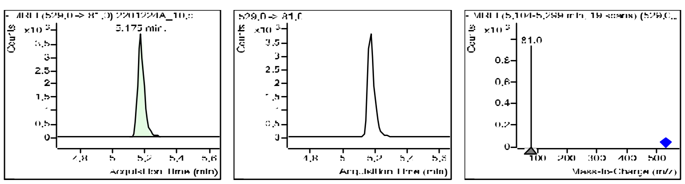

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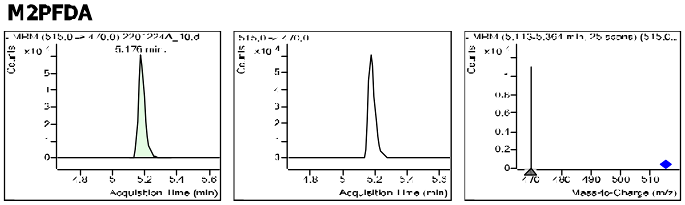

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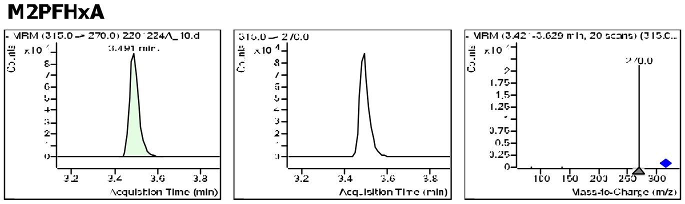

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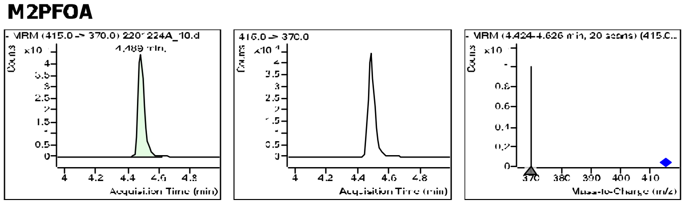

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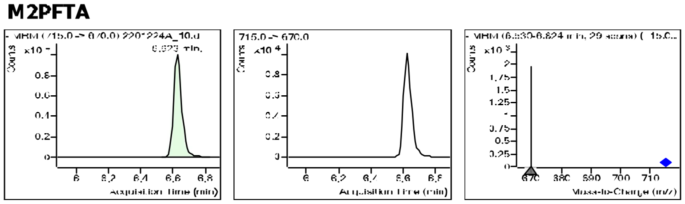

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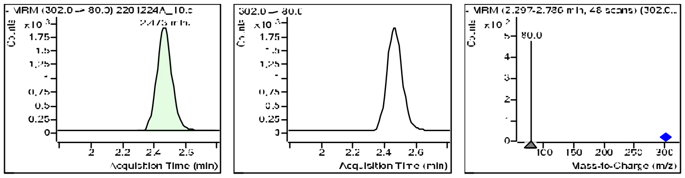

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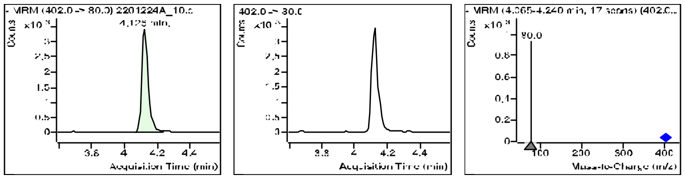

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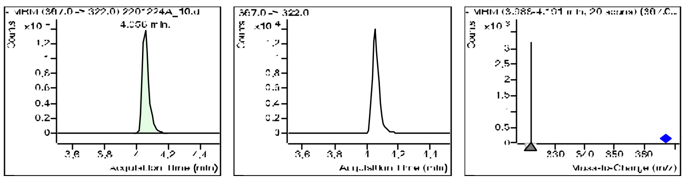

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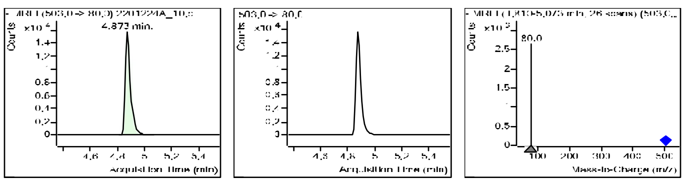

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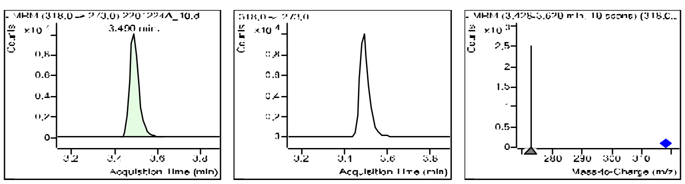

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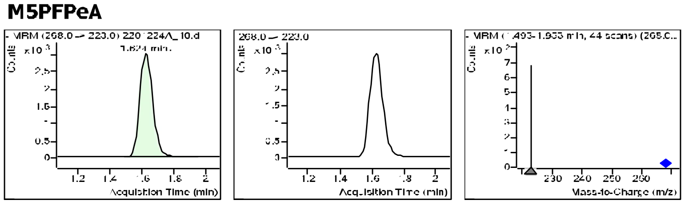

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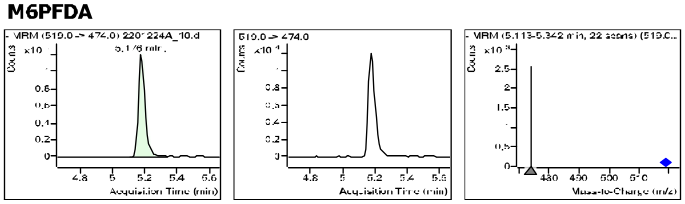

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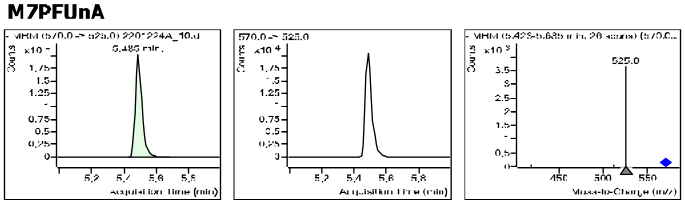

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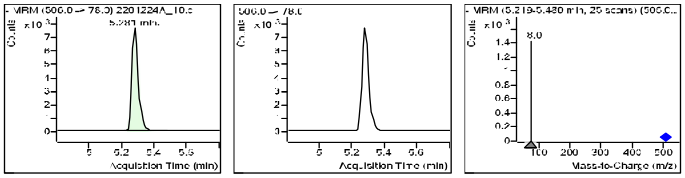

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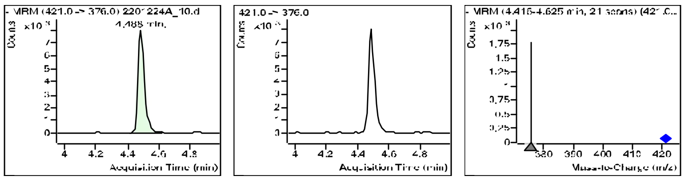

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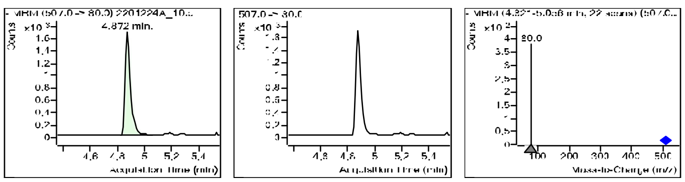

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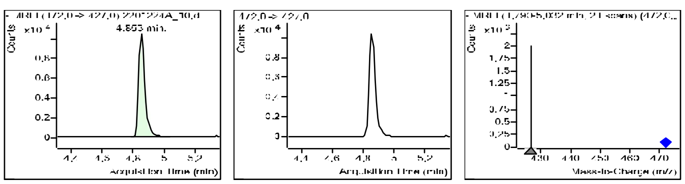

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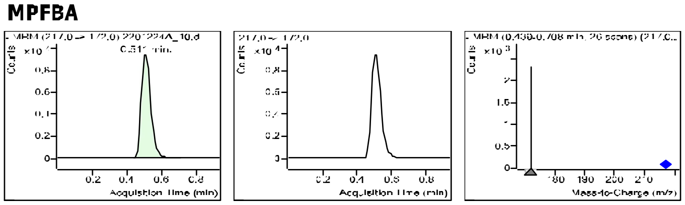

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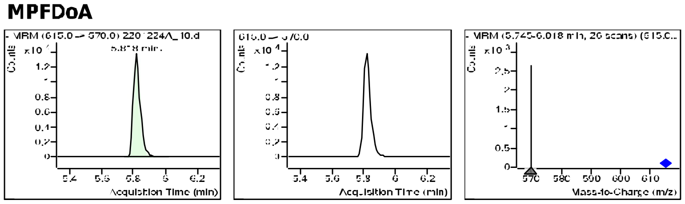

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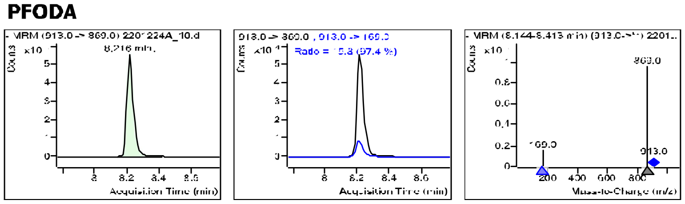

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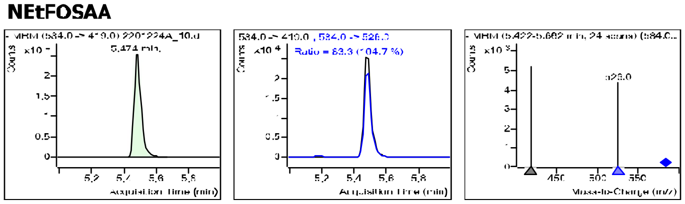

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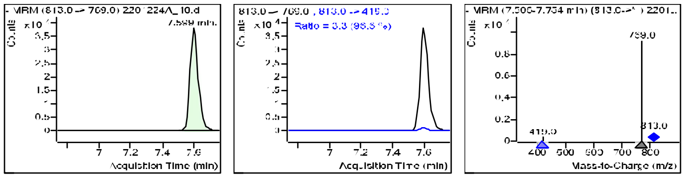

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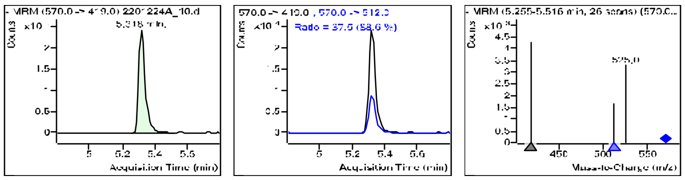

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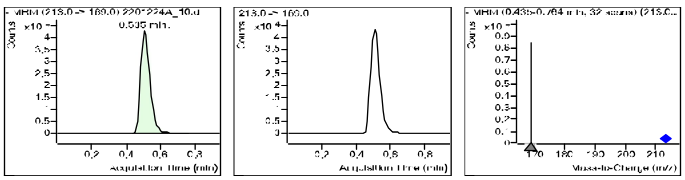

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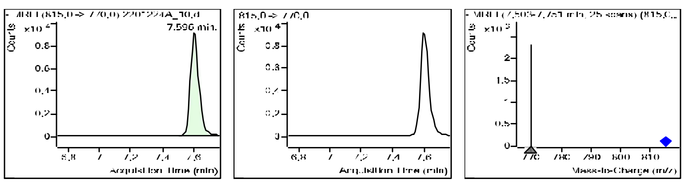

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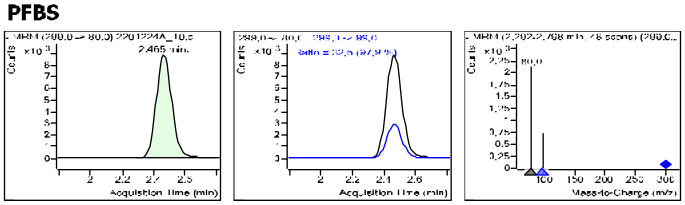

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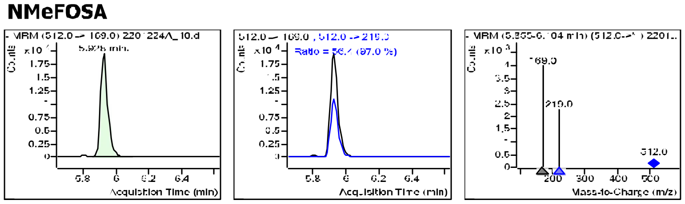

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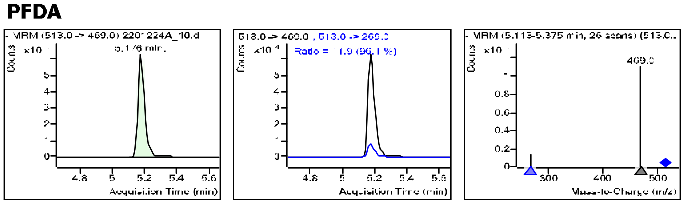

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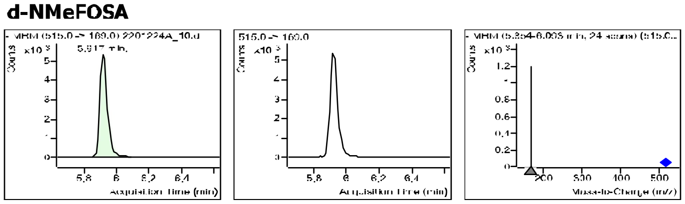

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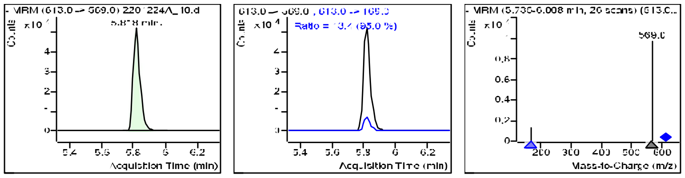

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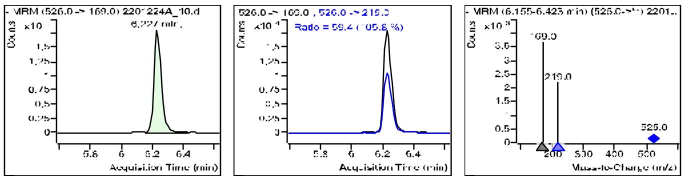

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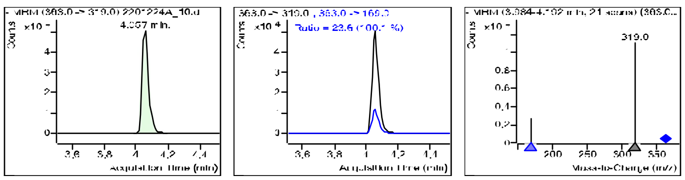

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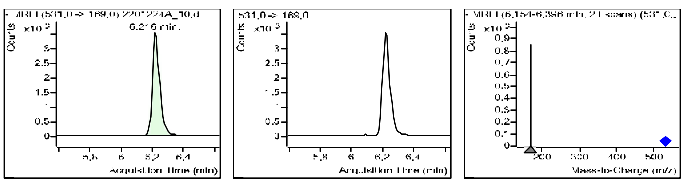

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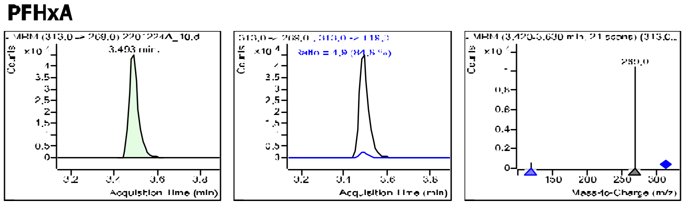

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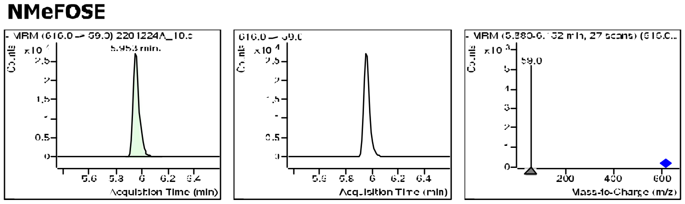

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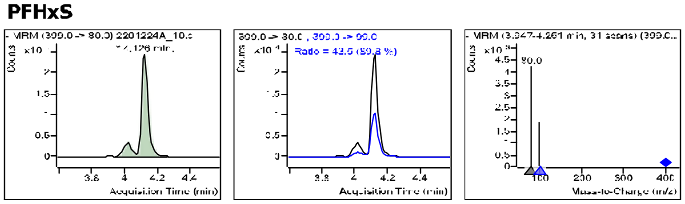

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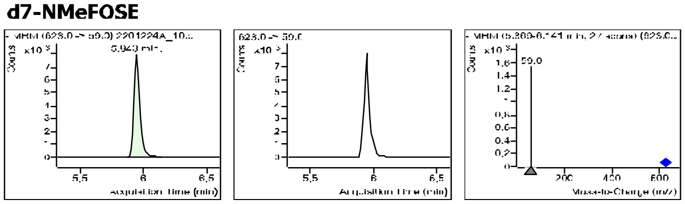

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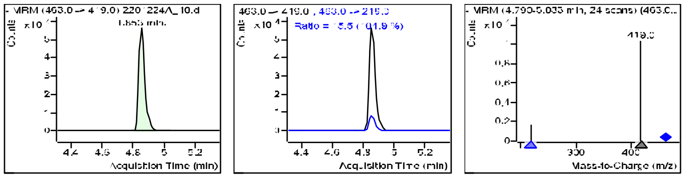

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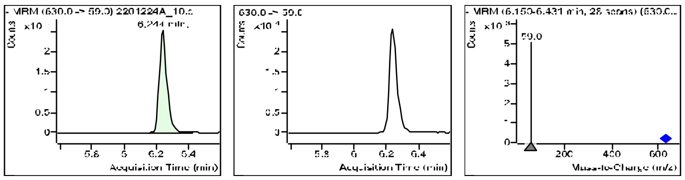

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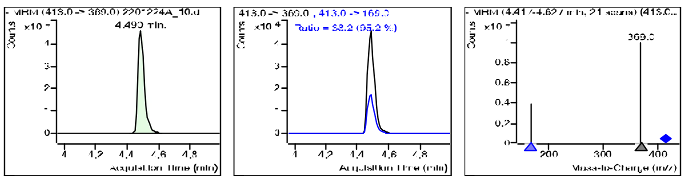

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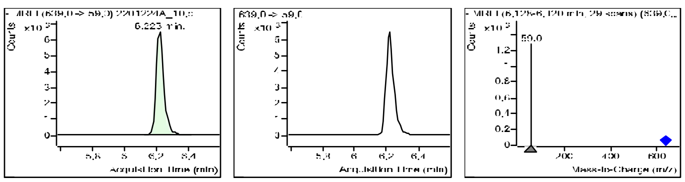

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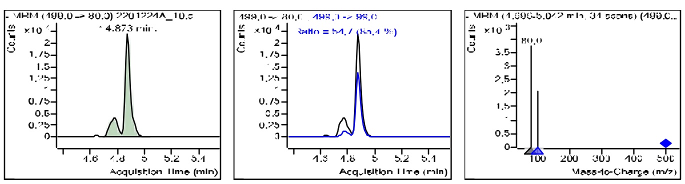

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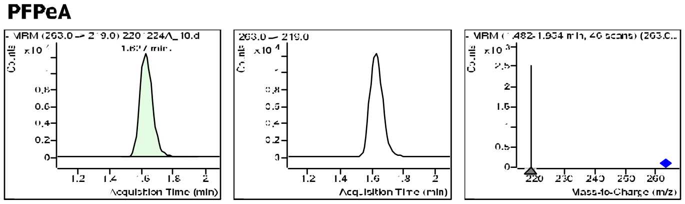

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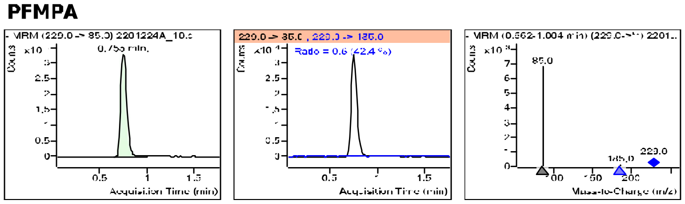

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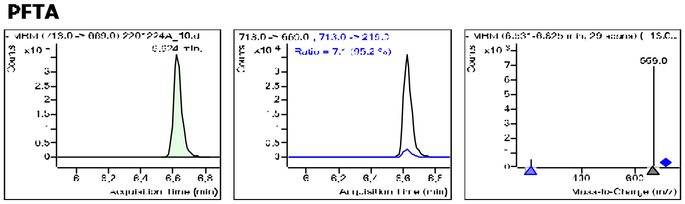

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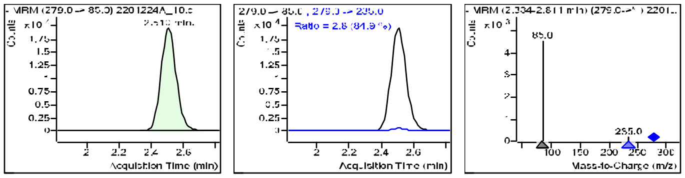

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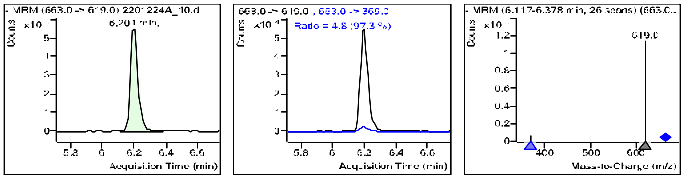

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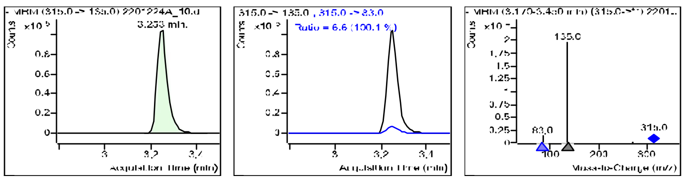

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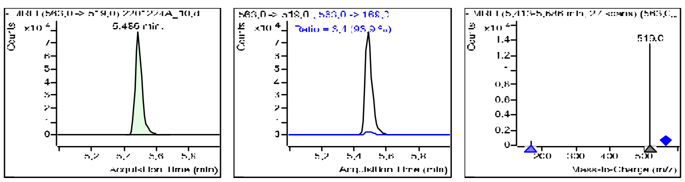

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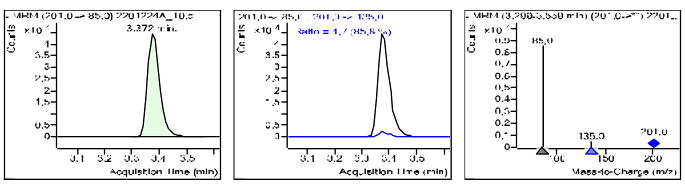

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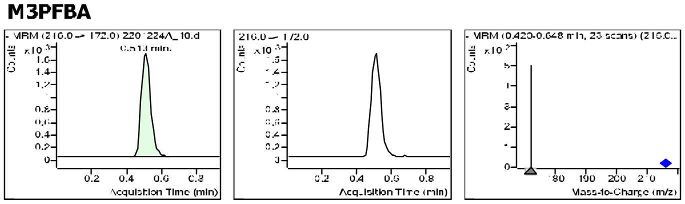

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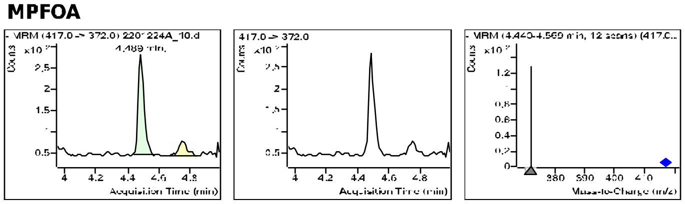

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Report Time	1/6/2021 9:05 AM	**Reporter Name**	GCAL\lcms
Last Calib Update	1/5/2021 2:27 PM	**Batch State**	Processed

Calibration Info

Extracted ISTD *MPFBA*

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Instrument ISTD *M3PFBA*

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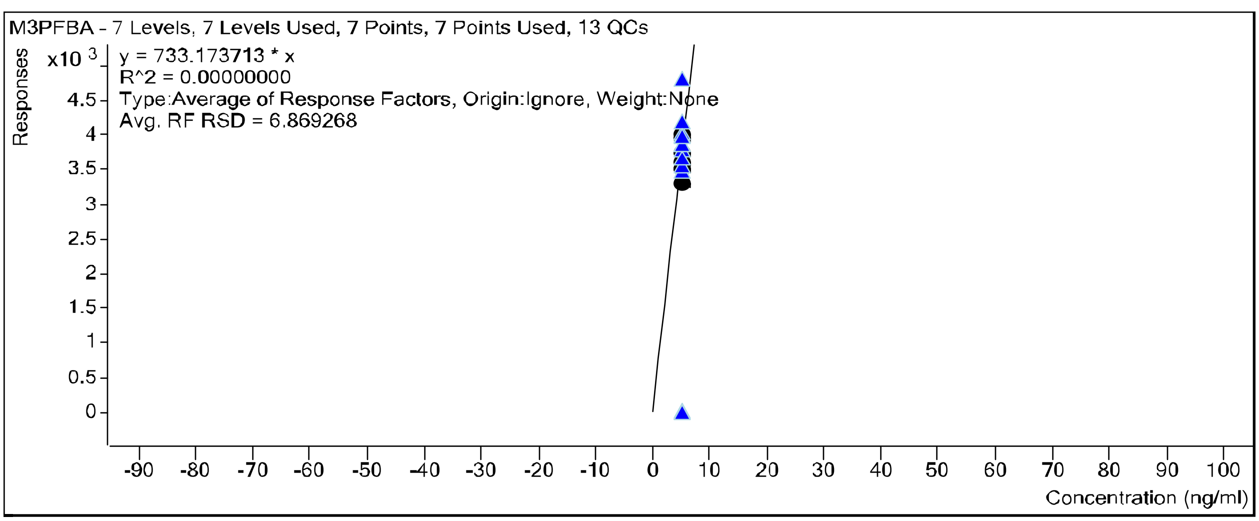

Quantitative Analysis Calibration Report

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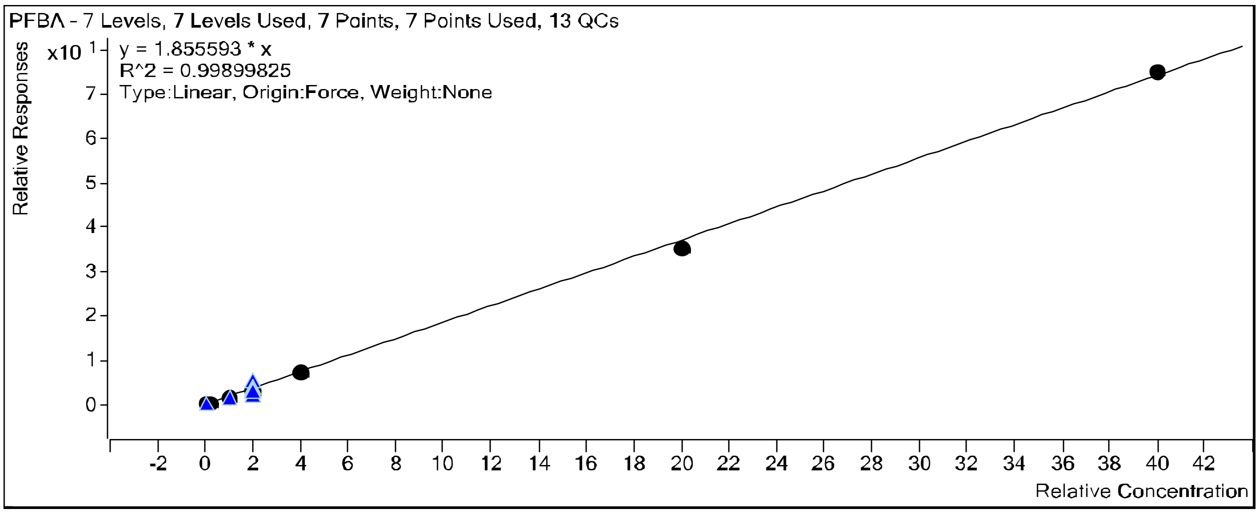

Target Compound	*PFMPA*

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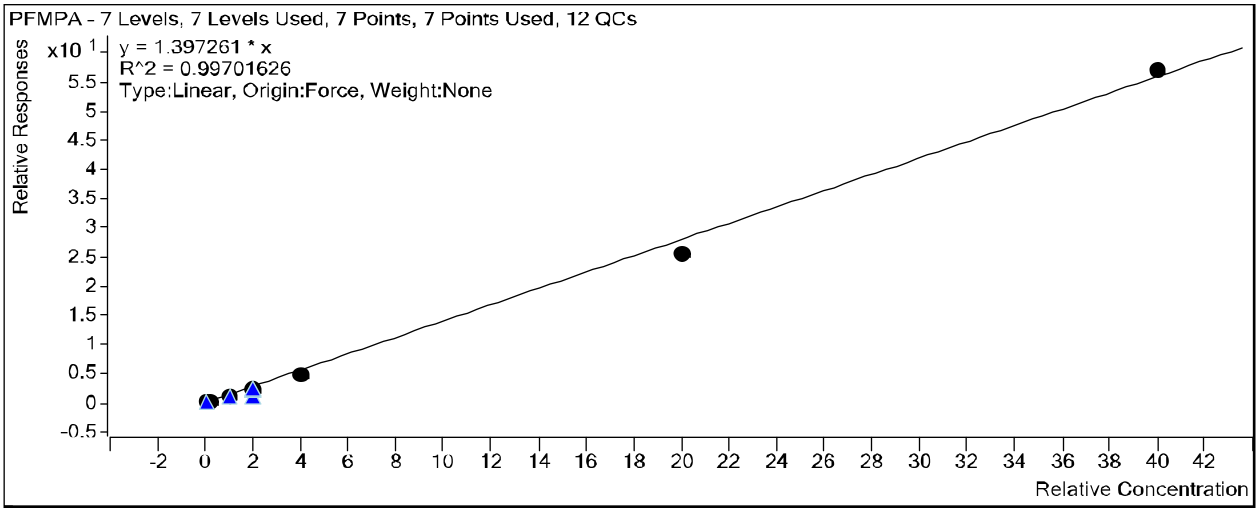
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	83096	20.0000	1.2268
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	439726	100.0000	1.2769
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	886885	200.0000	1.4298

Quantitative Analysis Calibration Report



Extracted ISTD *M5PFPeA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	16744	5.0000	3348.8952
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	17570	5.0000	3514.0632
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	17771	5.0000	3554.1079
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	17092	5.0000	3418.4164
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	16933	5.0000	3386.5699
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	17219	5.0000	3443.8155
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	15507	5.0000	3101.4466

Target Compound *PFPeA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	2239	0.5000	1.3374
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	5277	1.2500	1.2013
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	22503	5.0000	1.2663
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	44608	10.0000	1.3049
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	94561	20.0000	1.3961
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	503591	100.0000	1.4623
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	1013294	200.0000	1.6336

Quantitative Analysis Calibration Report

Extracted ISTD	*M3PFBS*

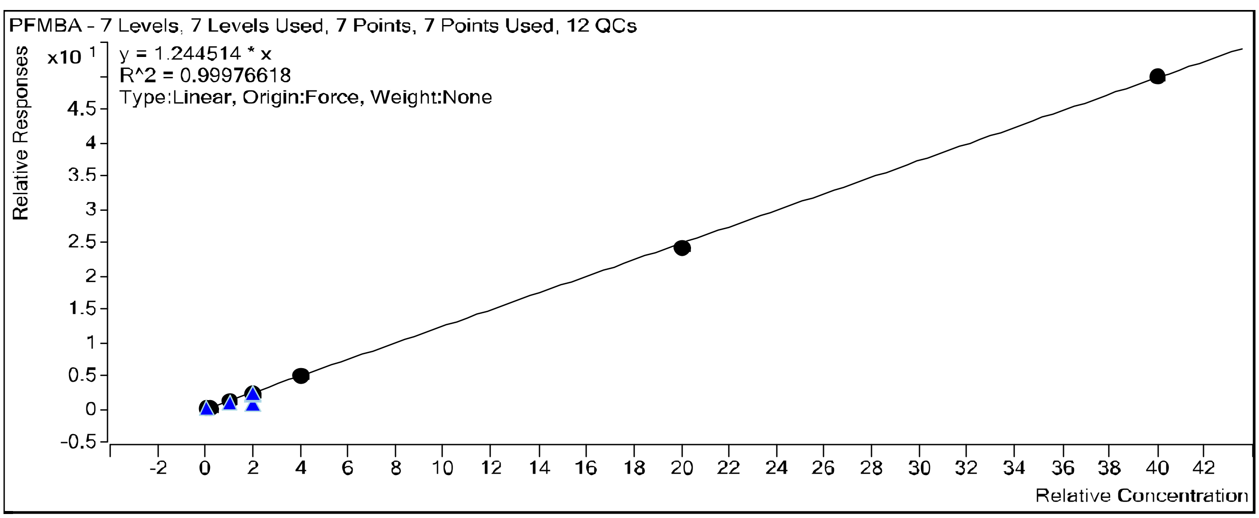
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	8833	5.0000	1766.6865
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	9742	5.0000	1948.4375
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	9690	5.0000	1938.0997
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	9204	5.0000	1840.8388
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	9118	5.0000	1823.6643
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	9158	5.0000	1831.6863
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	8318	5.0000	1663.5224

Target Compound	*PFBS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	910	0.4435	1.1608
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	2320	1.1088	1.0740
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	8996	4.4350	1.0466
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	17888	8.8700	1.0956
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	38102	17.7400	1.1777
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	191957	88.7000	1.1815
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	383552	177.4000	1.2997

Target Compound *PFMBA*

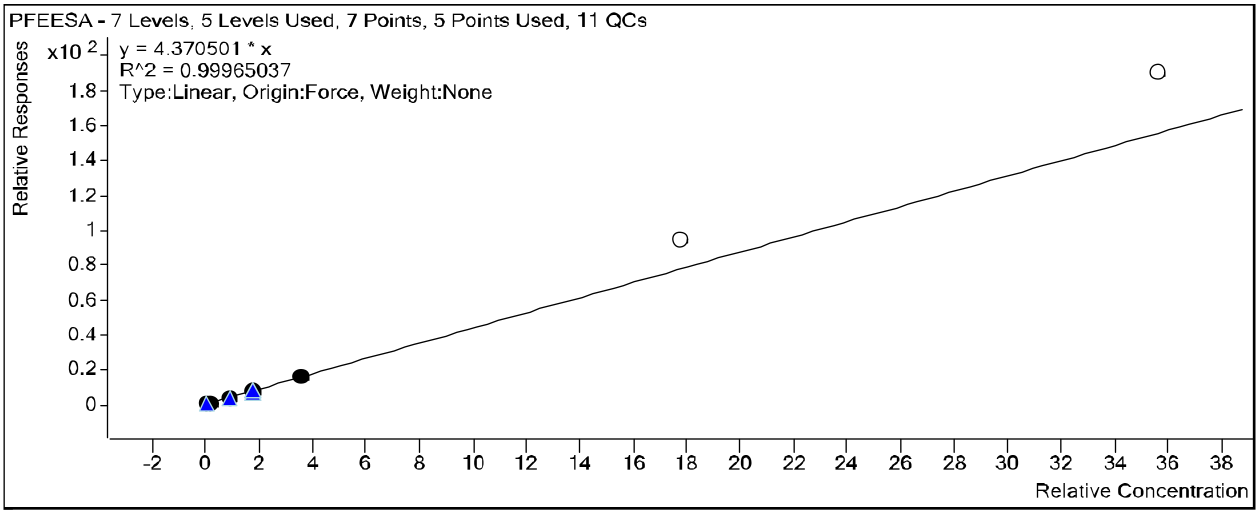
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	2052	0.5000	0.9915
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	5662	1.2500	1.0372
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	22962	5.0000	1.1018
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	46609	10.0000	1.1069
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	97623	20.0000	1.2209
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	499713	100.0000	1.2170
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	1006765	200.0000	1.2521



Target Compound *PFEESA*

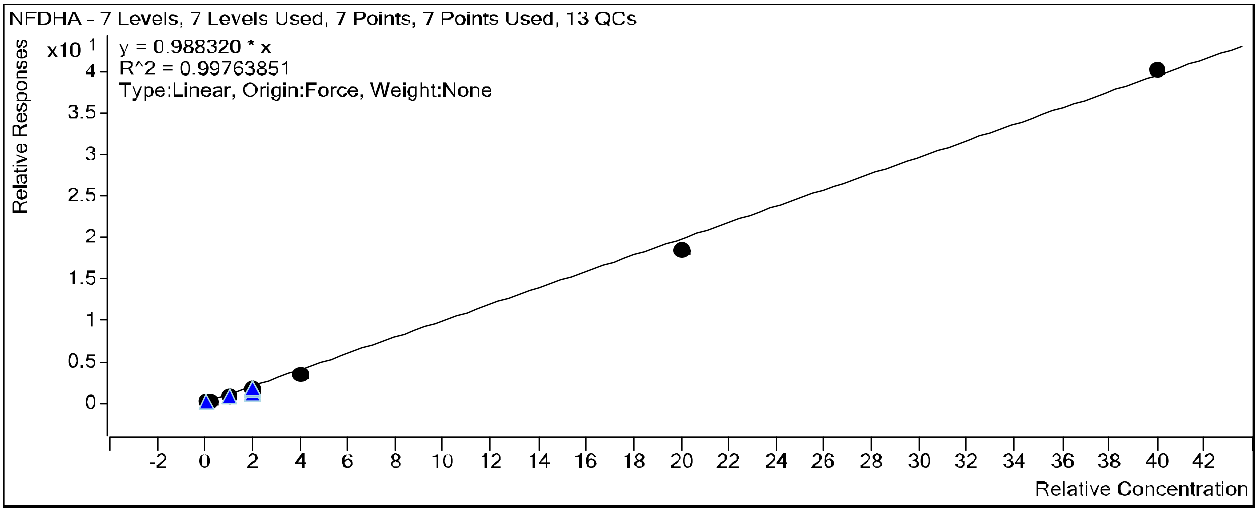
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF

D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	3225	0.4450	3.6512
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	9317	1.1125	4.0699
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	37675	4.4500	4.3632
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	76620	8.9000	4.2637
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	157867	17.8000	4.3993
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☐	812031	89.0000	5.3130
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☐	1562892	178.0000	5.3807



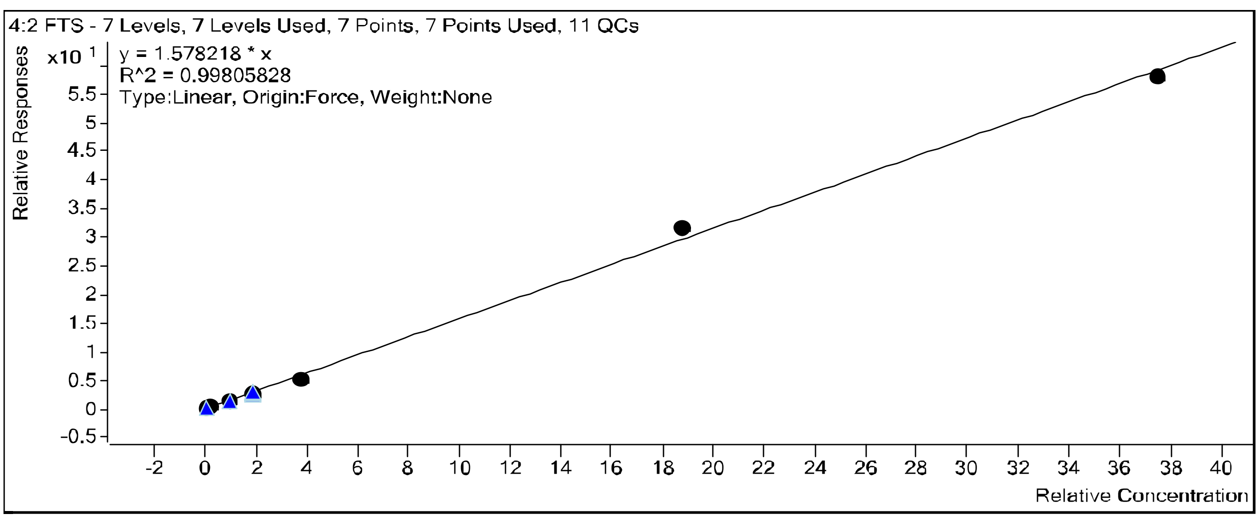
Target Compound *NFDHA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1496	0.5000	0.7186
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	3992	1.2500	0.7199
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	16312	5.0000	0.7643
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	32716	10.0000	0.7781
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	68203	20.0000	0.8482
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	361564	100.0000	0.9164
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	738291	200.0000	1.0084



Target Compound *4:2 FTS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	343	0.4685	1.4881
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	944	1.1713	1.5756
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	3271	4.6850	1.3496
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	6823	9.3700	1.3888
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	13208	18.7400	1.3967
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	68530	93.7000	1.6891
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	137571	187.4000	1.5529



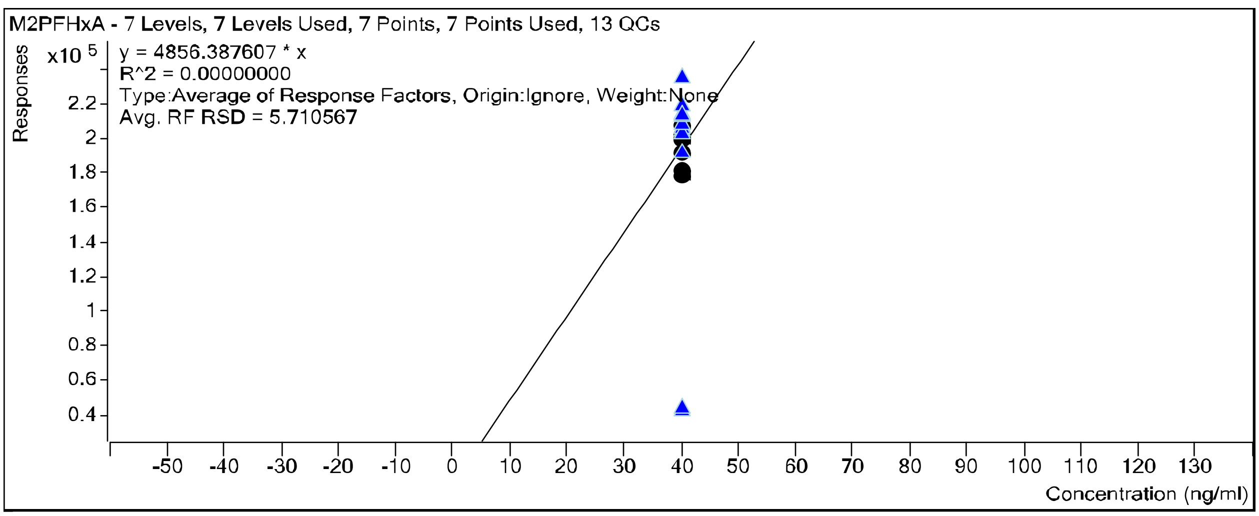
Extracted ISTD *M2 4:2 FTS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF

D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	2457	5.0000	491.3673
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	2559	5.0000	511.7491
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	2587	5.0000	517.3580
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	2622	5.0000	524.3245
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	2523	5.0000	504.6257
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	2165	5.0000	433.0052
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	2364	5.0000	472.7197

Instrument ISTD *M2PFHxA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	191694	40.0000	4792.3475
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	202134	40.0000	5053.3581
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	207650	40.0000	5191.2507
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	198751	40.0000	4968.7781
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	181436	40.0000	4535.9098
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	200282	40.0000	5007.0425
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	177841	40.0000	4446.0266



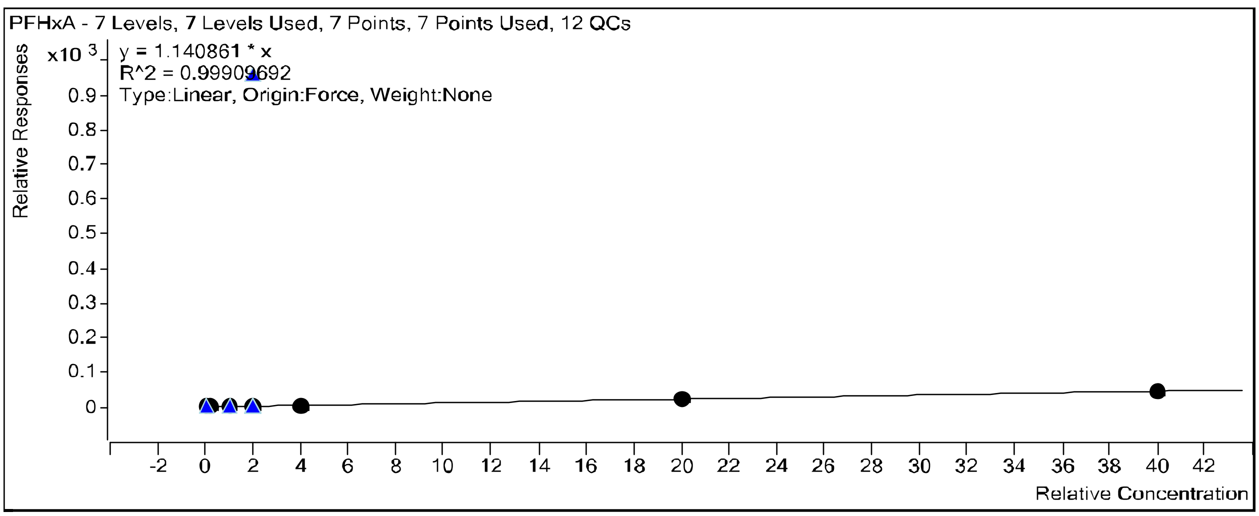
Extracted ISTD *M5PFHxA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	20691	5.0000	4138.1094
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	21834	5.0000	4366.8745
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	20841	5.0000	4168.1796

D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	21054	5.0000	4210.8188
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	19991	5.0000	3998.1441
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	20530	5.0000	4106.0324
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	20102	5.0000	4020.4117

Target Compound *PFHxA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	2037	0.5000	0.9843
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	5289	1.2500	0.9690
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	19829	5.0000	0.9515
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	41550	10.0000	0.9868
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	84280	20.0000	1.0540
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	447276	100.0000	1.0893
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	928818	200.0000	1.1551

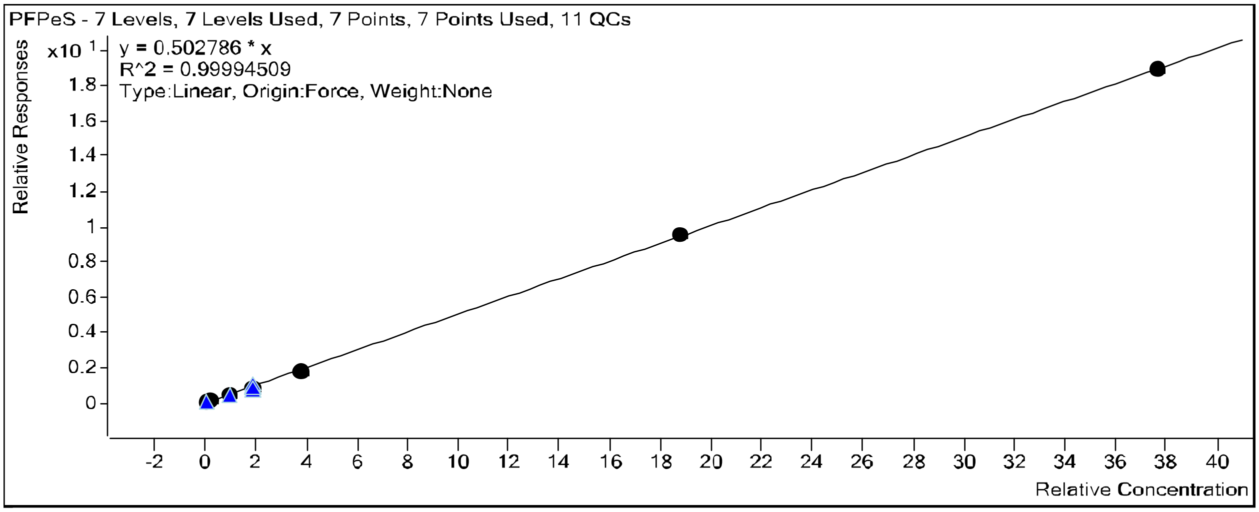


Target Compound *PFPeS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	820	0.4705	0.4210
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	2422	1.1763	0.4714
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	9293	4.7050	0.4739
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	19006	9.4100	0.4797
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	36549	18.8200	0.4857
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	196177	94.1000	0.5077

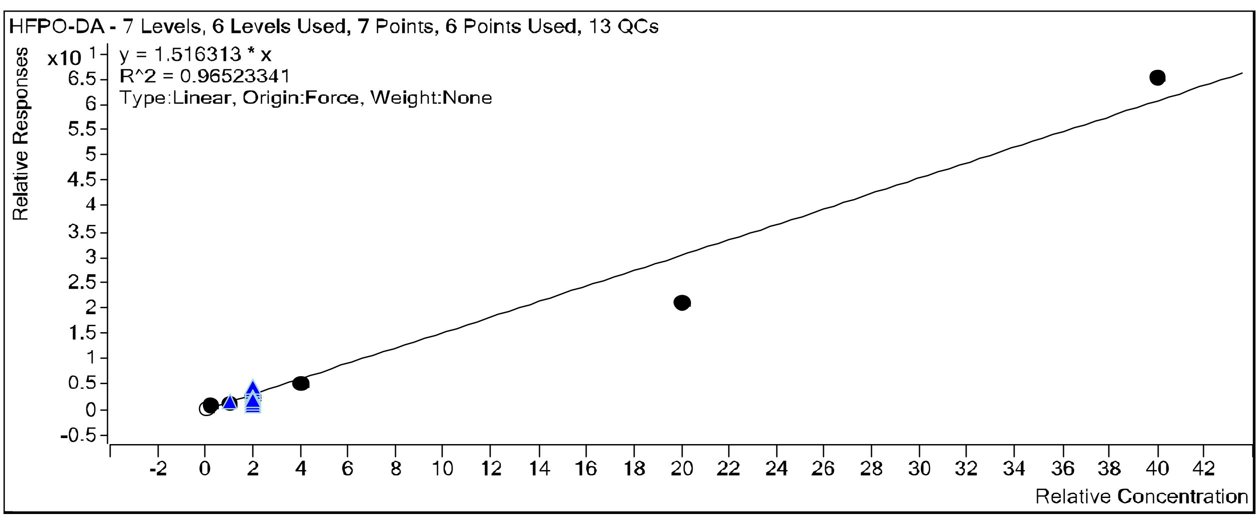
Quantitative Analysis Calibration Report

D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	379680	188.2000	0.5018



Target Compound *HFPO-DA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☐	143	1.0000	1.8227
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	489	2.5000	3.2231
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	853	10.0000	1.2838
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	1698	20.0000	1.3029
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	3318	40.0000	1.2436
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	16332	200.0000	1.0493
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	34681	400.0000	1.6364



Extracted ISTD *M3HFPODA*

Quantitative Analysis Calibration Report

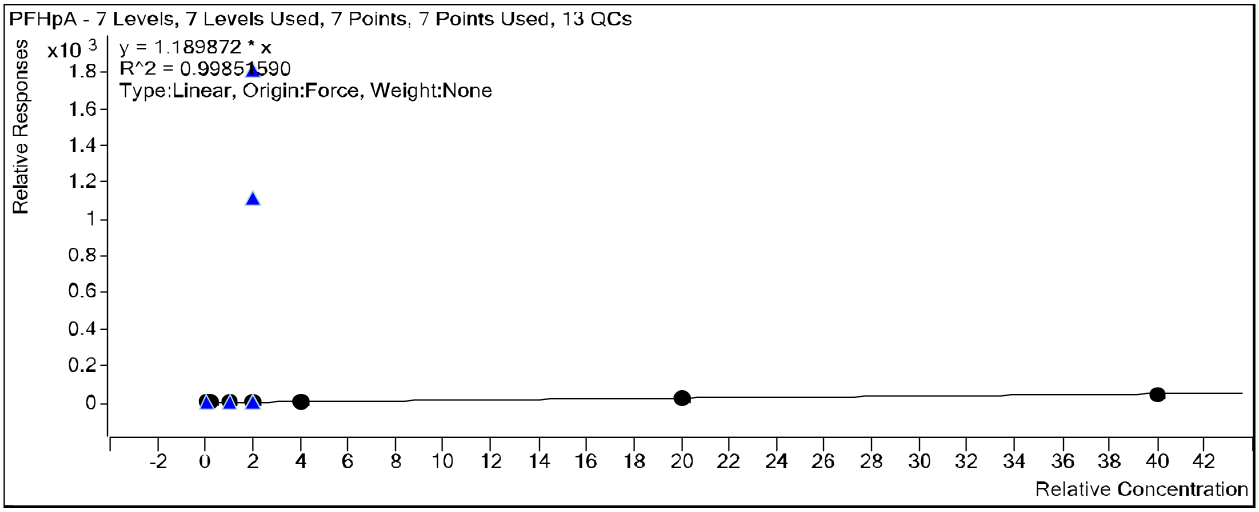
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	786	10.0000	78.6470
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	607	10.0000	60.7297
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	664	10.0000	66.4049
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	651	10.0000	65.1498
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	667	10.0000	66.7101
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	778	10.0000	77.8238
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	530	10.0000	52.9839

Extracted ISTD *M4PFHpA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	20817	5.0000	4163.3773
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	22182	5.0000	4436.4864
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	21342	5.0000	4268.4851
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	21024	5.0000	4204.7421
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	20102	5.0000	4020.4118
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	19728	5.0000	3945.5589
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	18304	5.0000	3660.7624

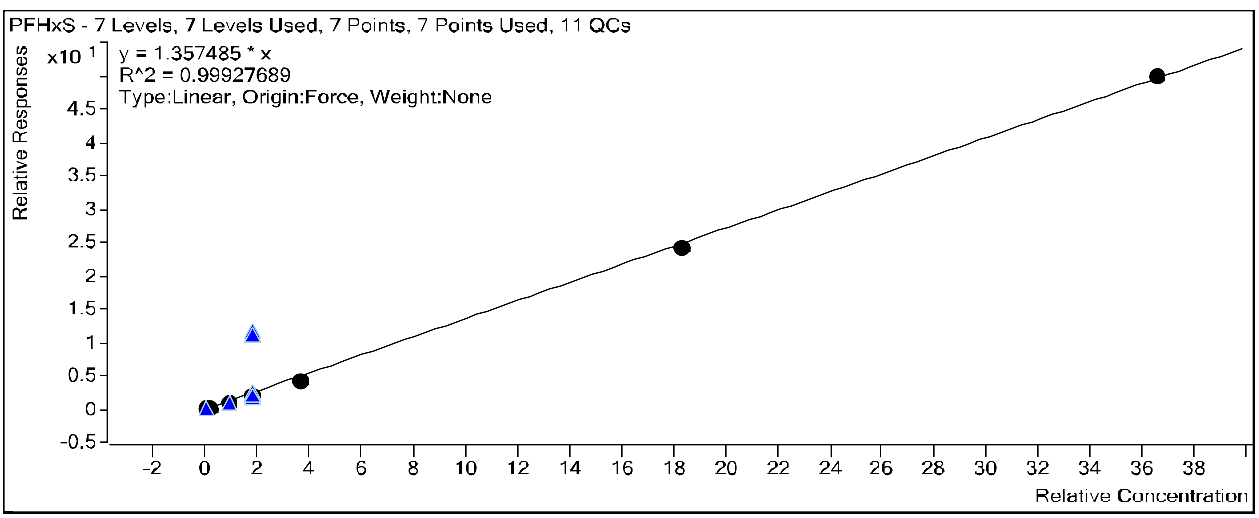
Target Compound *PFHpA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	2014	0.5000	0.9673
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	5352	1.2500	0.9651
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	19789	5.0000	0.9272
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	40936	10.0000	0.9736
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	82933	20.0000	1.0314
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	443511	100.0000	1.1241
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	884895	200.0000	1.2086



Target Compound	*PFHxS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	963	0.4570	1.0619
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	2385	1.1425	1.0146
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	10197	4.5700	1.1500
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	20324	9.1400	1.1013
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	41026	18.2800	1.1132
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	208099	91.4000	1.3258
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	408253	182.8000	1.3686



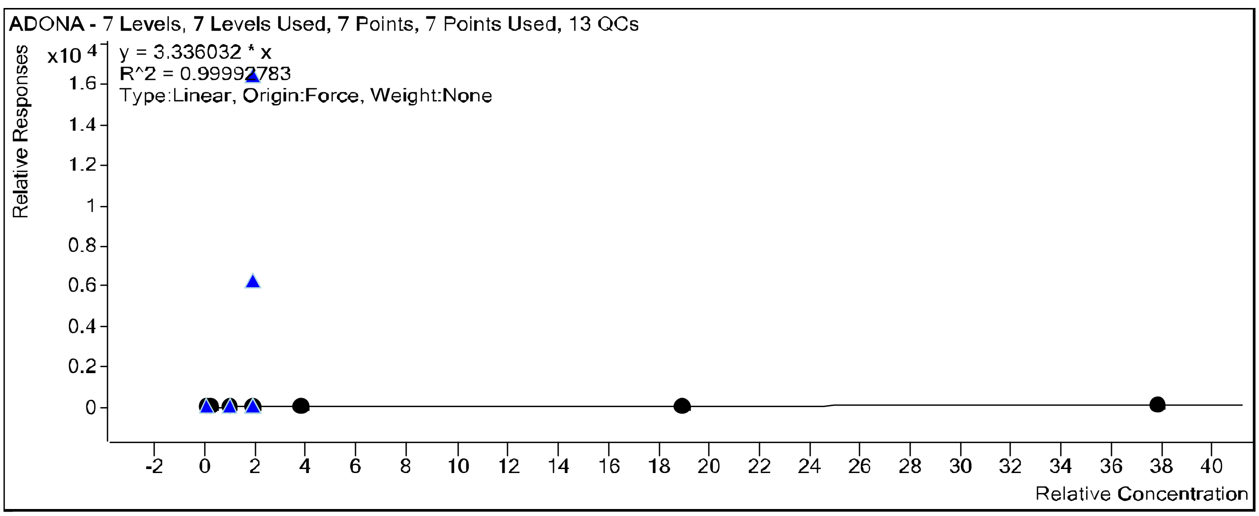
Extracted ISTD	*M3PFHxS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF

D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	9925	5.0000	1985.0109
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	10289	5.0000	2057.7628
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	9702	5.0000	1940.3596
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	10096	5.0000	2019.1363
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	10080	5.0000	2015.9965
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	8586	5.0000	1717.2812
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	8159	5.0000	1631.8005

Target Compound *ADONA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	5310	0.4725	2.5679
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	13960	1.1813	2.5792
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	61355	4.7250	2.8140
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	129527	9.4500	2.9986
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	265111	18.9000	3.2002
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	1308176	94.5000	3.3468
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	2563250	189.0000	3.3359



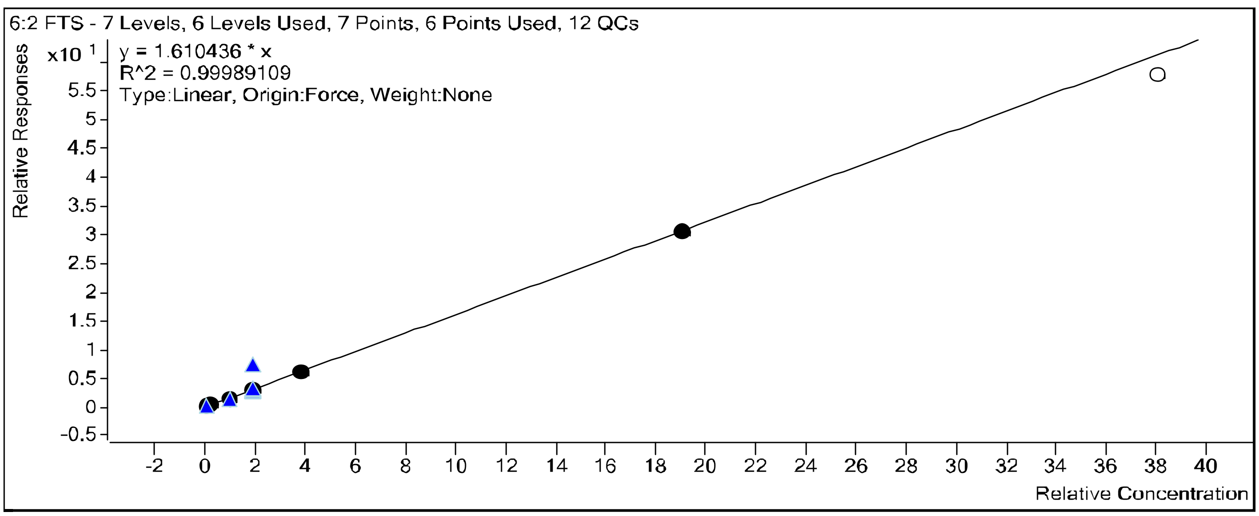
Extracted ISTD *M2 6:2 FTS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	4656	5.0000	931.2841
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	4718	5.0000	943.5207
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	4880	5.0000	976.0484

D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	4679	5.0000	935.7625
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	4337	5.0000	867.3450
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	4267	5.0000	853.3496
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	4106	5.0000	821.1489

Target Compound *6:2 FTS*

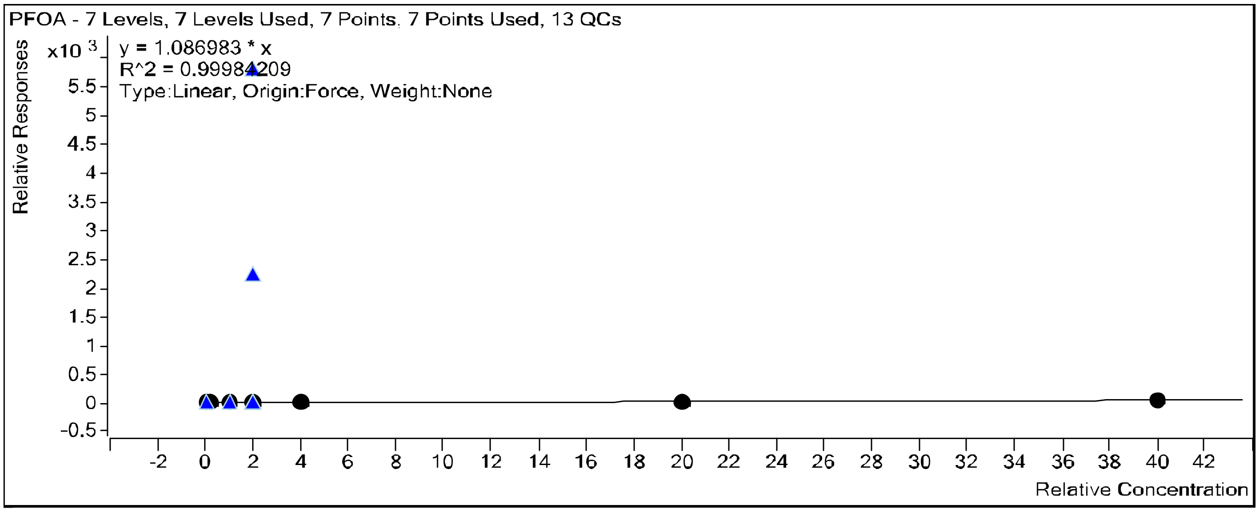
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	740	0.4755	1.6717
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	1654	1.1888	1.4748
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	6437	4.7550	1.3870
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	13733	9.5100	1.5432
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	26098	19.0200	1.5820
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	130886	95.1000	1.6128
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☐	238506	190.2000	1.5271



Target Compound *PFOA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	2198	0.5000	1.0046
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	5372	1.2500	0.9379
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	21724	5.0000	0.9415
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	44149	10.0000	0.9659
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	87765	20.0000	1.0011
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	454439	100.0000	1.0987

D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	882475	200.0000	1.0853

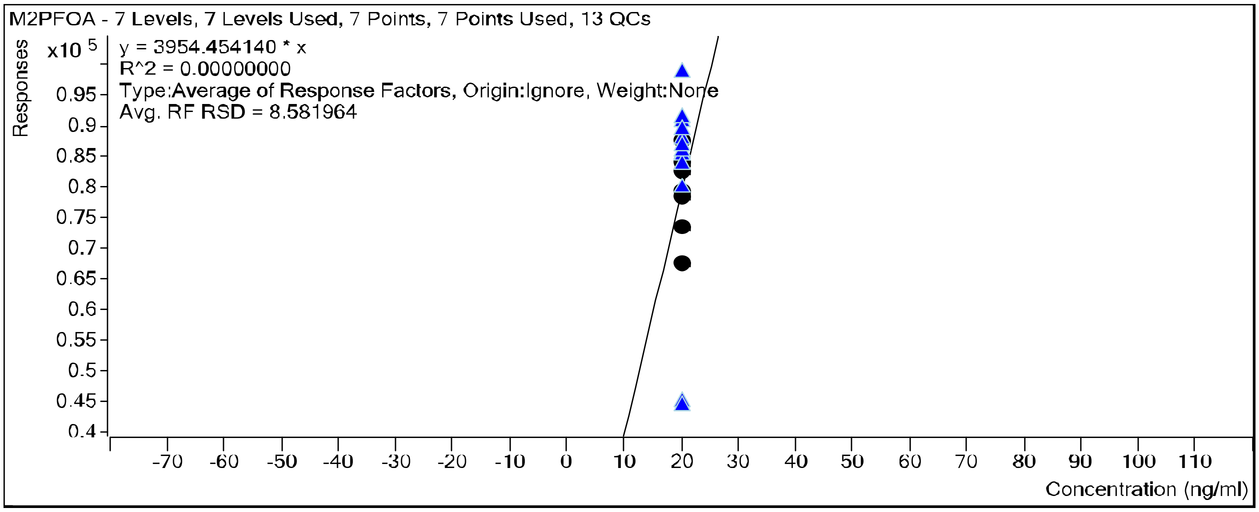


Extracted ISTD *M8PFOA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	21881	5.0000	4376.2432
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	22909	5.0000	4581.7544
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	23073	5.0000	4614.5965
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	22855	5.0000	4570.9745
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	21916	5.0000	4383.2179
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	20681	5.0000	4136.2730
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	20328	5.0000	4065.5062

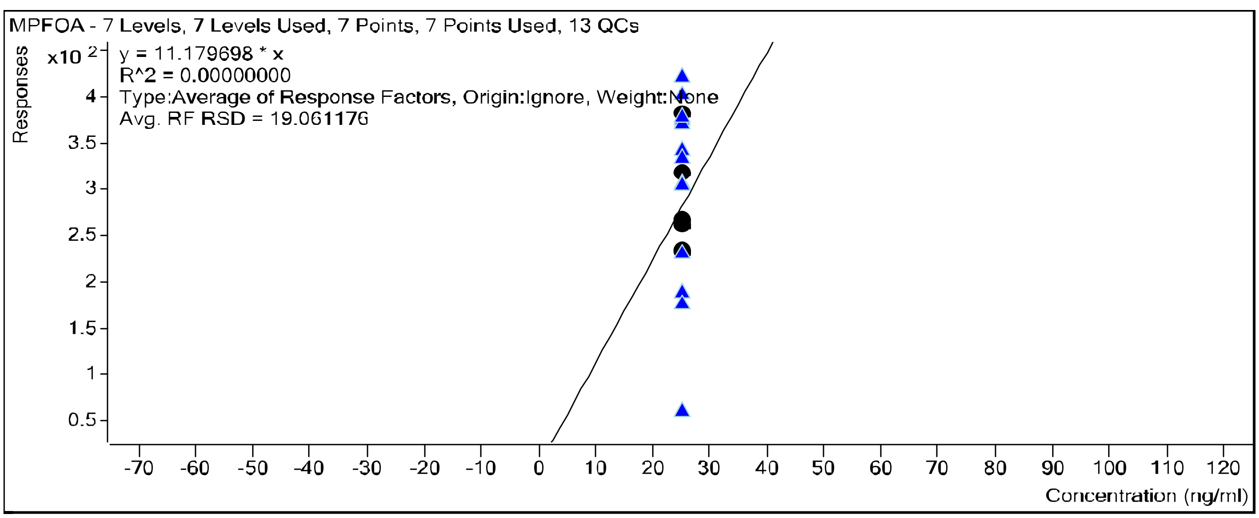
Instrument ISTD *M2PFOA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	79349	20.0000	3967.4271
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	84294	20.0000	4214.7247
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	87606	20.0000	4380.3063
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	82680	20.0000	4133.9847
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	73467	20.0000	3673.3680
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	78627	20.0000	3931.3691
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	67600	20.0000	3379.9991



Instrument ISTD	*MPFOA*

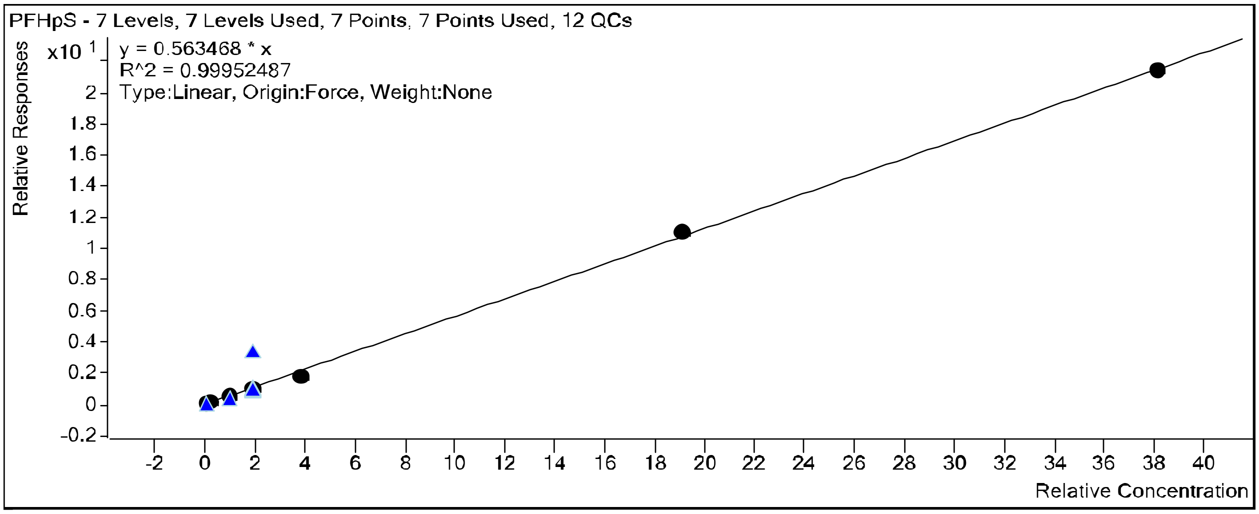
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	235	25.0000	9.4021
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	382	25.0000	15.2632
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	261	25.0000	10.4314
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	261	25.0000	10.4551
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	232	25.0000	9.2673
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	319	25.0000	12.7408
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	267	25.0000	10.6980



Target Compound	*PFHpS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF

D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1024	0.4765	0.4911
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	2759	1.1913	0.5055
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	10791	4.7650	0.4908
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	21868	9.5300	0.5020
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	40213	19.0600	0.4813
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	227395	95.3000	0.5769
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	434819	190.6000	0.5611



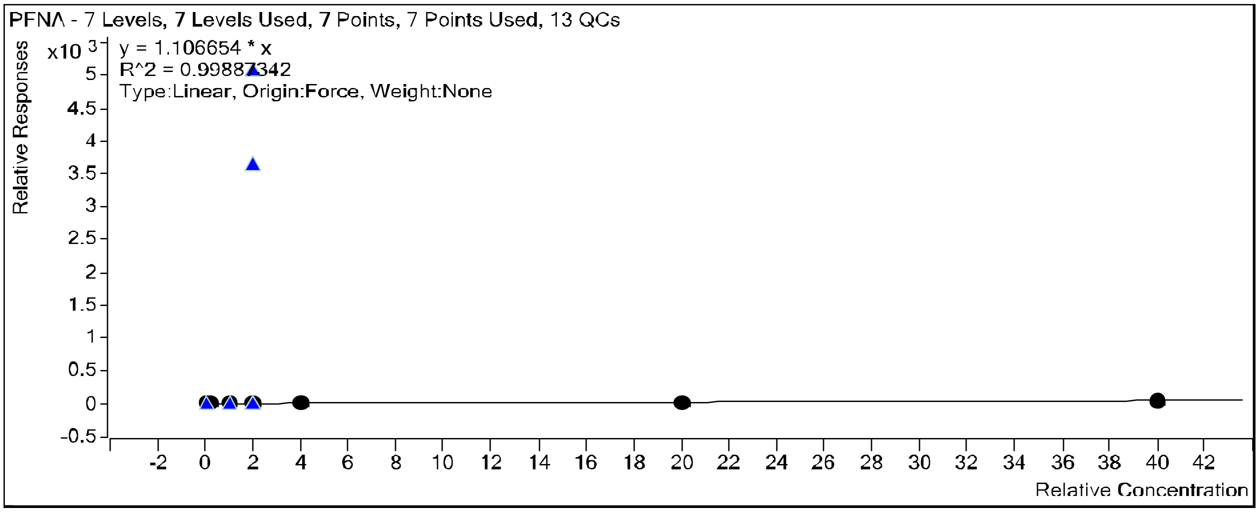
Extracted ISTD *M9PFNA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	20036	5.0000	4007.1649
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	22307	5.0000	4461.3435
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	21337	5.0000	4267.4363
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	21148	5.0000	4229.6022
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	21293	5.0000	4258.5874
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	19962	5.0000	3992.3791
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	18620	5.0000	3723.9942

Target Compound *PFNA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1826	0.5000	0.9112
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	4671	1.2500	0.8375
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	19191	5.0000	0.8994

D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	39779	10.0000	0.9405
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	81881	20.0000	0.9614
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	421076	100.0000	1.0547
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	835405	200.0000	1.1217



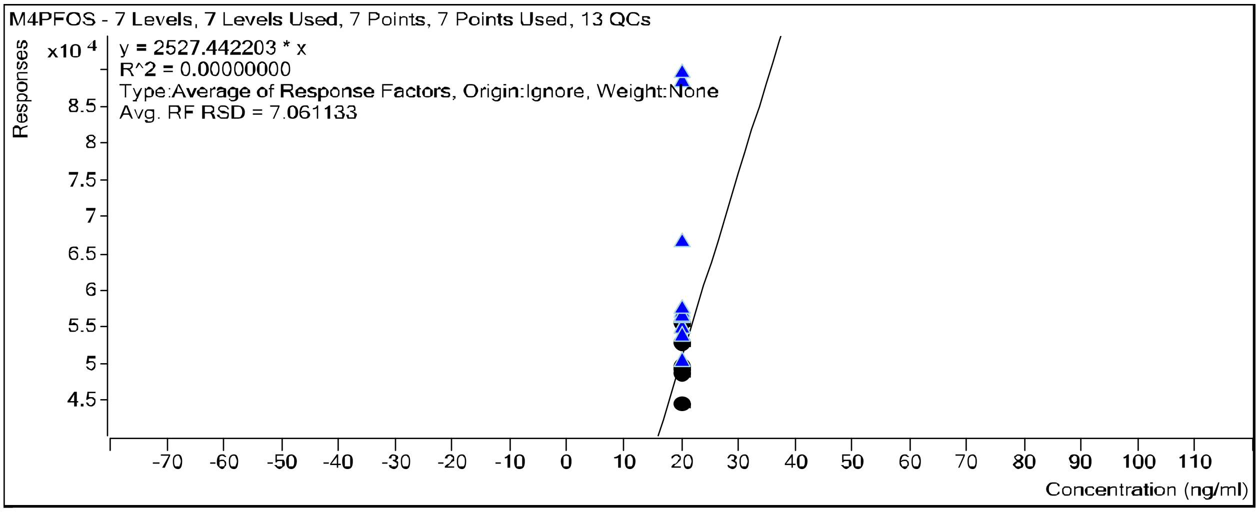
Extracted ISTD *M8PFOS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	10771	5.0000	2154.1307
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	10418	5.0000	2083.6060
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	10700	5.0000	2139.9304
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	10156	5.0000	2031.2627
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	10428	5.0000	2085.6552
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	10218	5.0000	2043.5772
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	9436	5.0000	1887.1666

Instrument ISTD *M4PFOS*

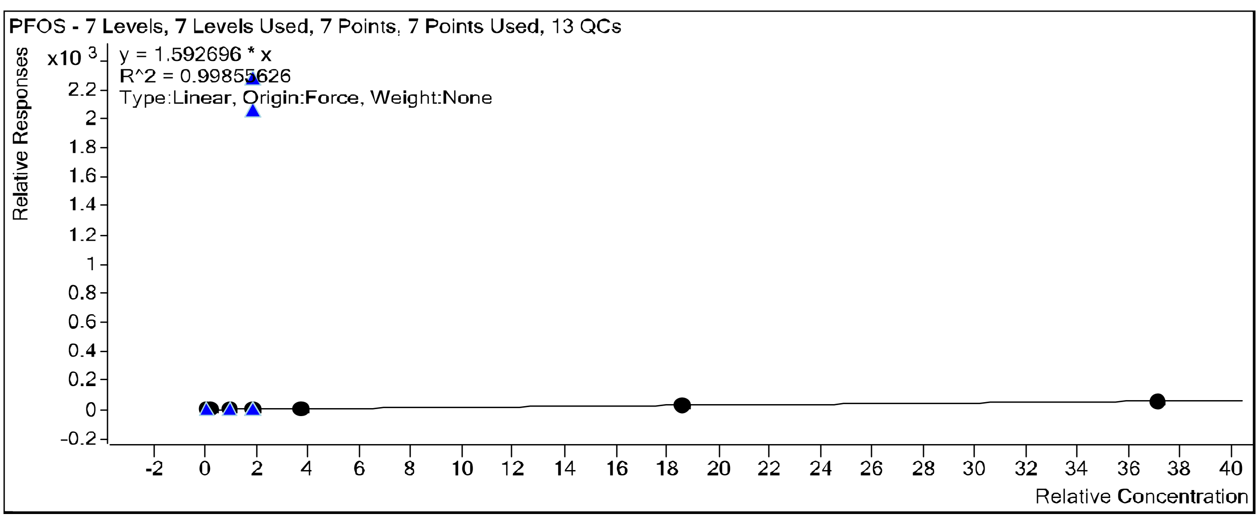
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	49705	20.0000	2485.2380
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	52998	20.0000	2649.8922
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	55599	20.0000	2779.9565
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	52828	20.0000	2641.4184
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	48670	20.0000	2433.5123
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	49323	20.0000	2466.1748

D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	44718	20.0000	2235.9031



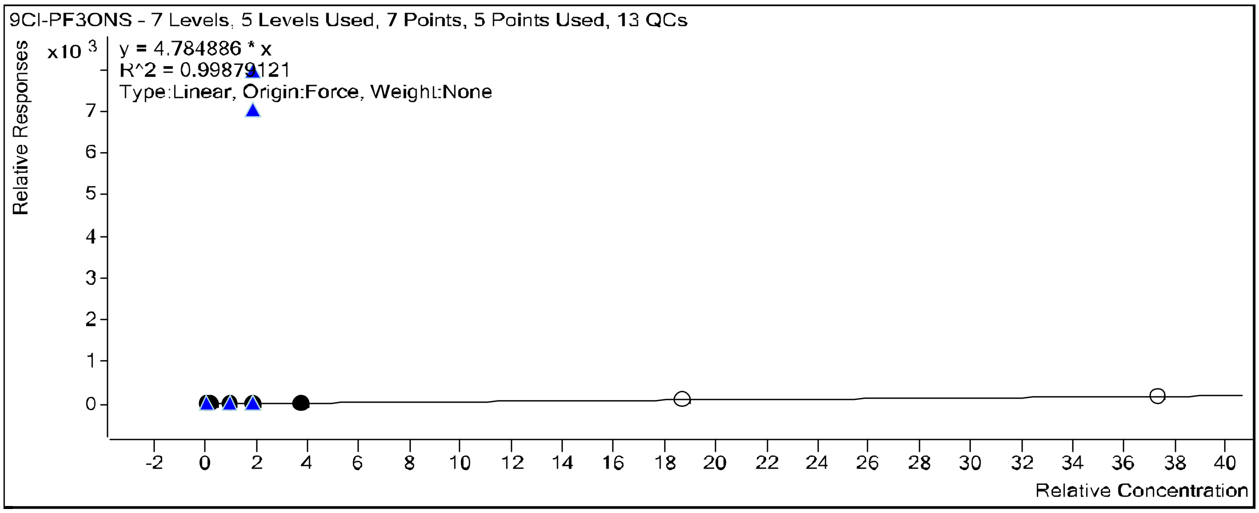
Target Compound *PFOS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1236	0.4640	1.2363
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	3391	1.1600	1.4028
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	13315	4.6400	1.3410
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	26927	9.2800	1.4285
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	54499	18.5600	1.4079
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	284614	92.8000	1.5008
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	566753	185.6000	1.6181



Target Compound *9Cl-PF3ONS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	3771	0.4665	3.7525
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	10194	1.1663	4.1947
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	43091	4.6650	4.3166
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	89695	9.3300	4.7328
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	187980	18.6600	4.8301
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☐	964745	93.3000	5.0599
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☐	1918659	186.6000	5.4485



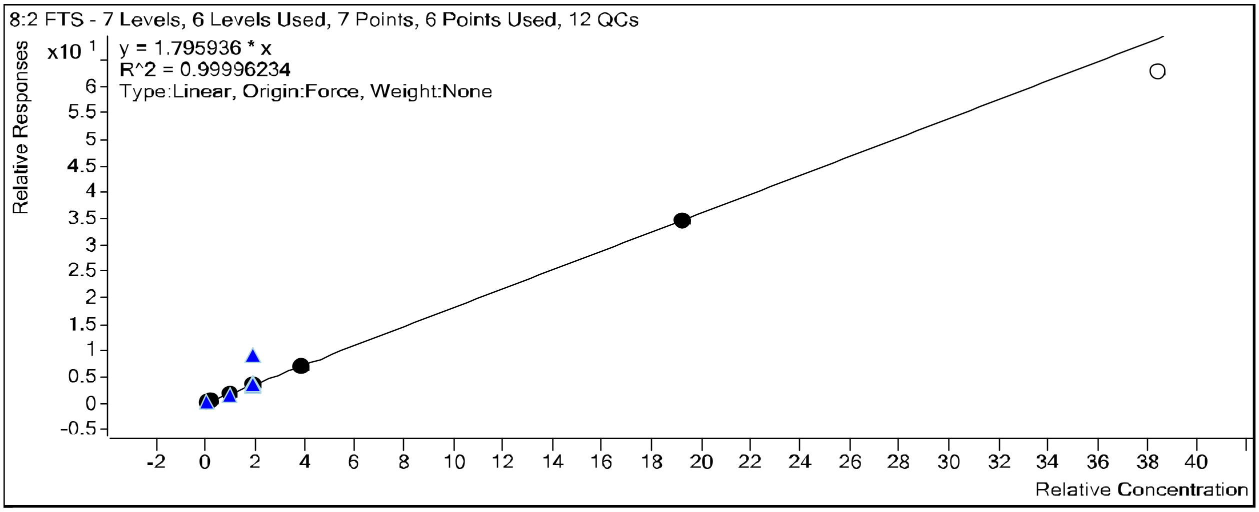
Extracted ISTD *M2 8:2 FTS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	4170	5.0000	834.0666
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	4449	5.0000	889.7736
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	4092	5.0000	818.4739
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	4083	5.0000	816.5865
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	4129	5.0000	825.8561
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	4035	5.0000	806.9819
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	4067	5.0000	813.4435

Target Compound *8:2 FTS*

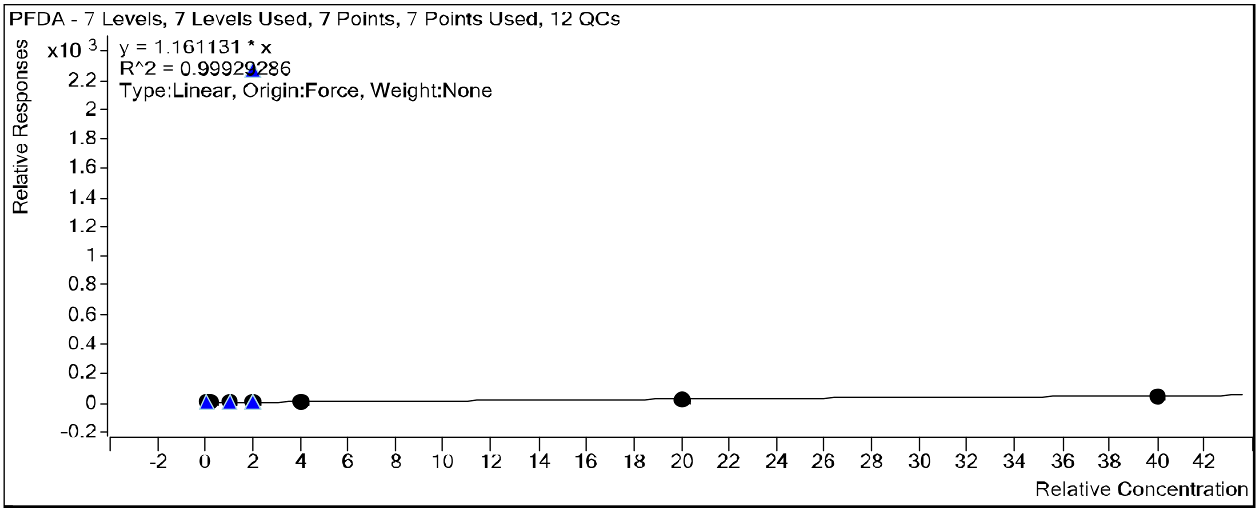
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	820	0.4800	2.0476

D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	1851	1.2000	1.7332
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	7584	4.8000	1.9304
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	14465	9.6000	1.8452
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	28788	19.2000	1.8155
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	139007	96.0000	1.7943
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☐	256528	192.0000	1.6425



Target Compound *PFDA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1420	0.5000	0.9172
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	3929	1.2500	0.9001
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	15951	5.0000	0.9467
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	30893	10.0000	1.0191
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	63544	20.0000	0.9913
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	324917	100.0000	1.1246
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	636523	200.0000	1.1725

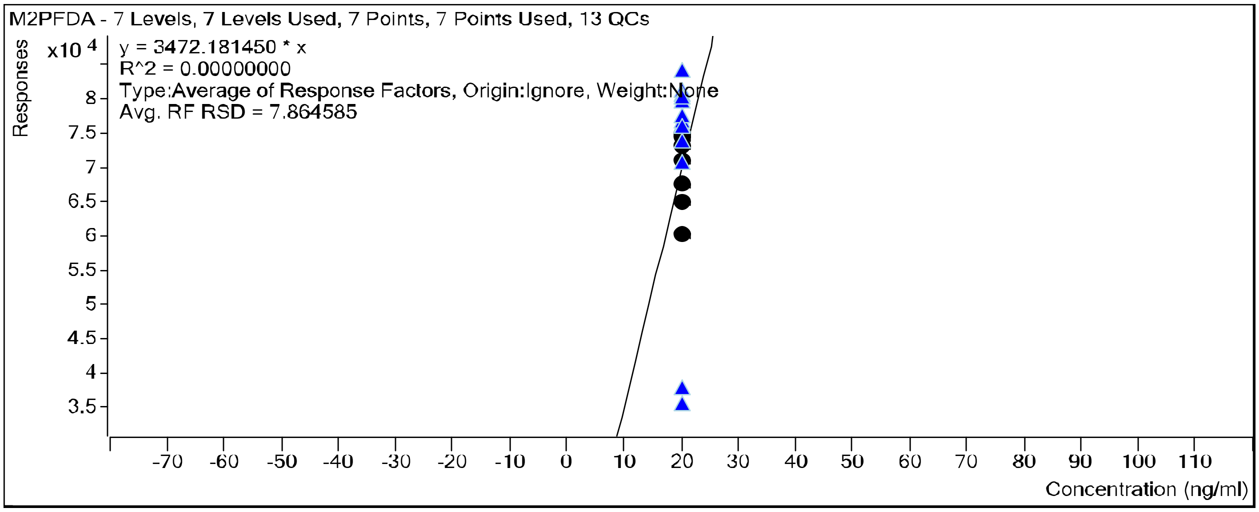


Extracted ISTD *M6PFDA*

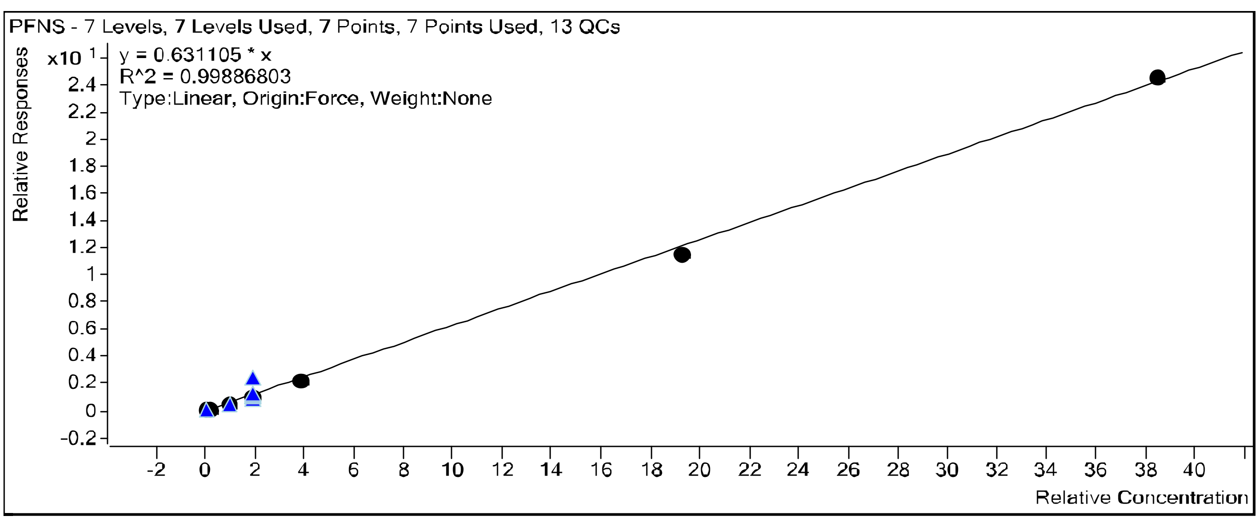
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	15479	5.0000	3095.7822
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	17462	5.0000	3492.3998
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	16850	5.0000	3369.9694
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	15157	5.0000	3031.3195
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	16026	5.0000	3205.1517
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	14446	5.0000	2889.2995
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	13572	5.0000	2714.4408

Instrument ISTD *M2PFDA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	70990	20.0000	3549.4769
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	73052	20.0000	3652.6184
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	74336	20.0000	3716.8122
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	74992	20.0000	3749.6087
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	64922	20.0000	3246.0755
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	67585	20.0000	3379.2723
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	60228	20.0000	3011.4061



Target Compound	*PFNS*					
Calibration STD	**Cal Type**	**Level**	**Enabled**	**Response**	**Exp Conc (ng/mL)**	**RF**
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1155	0.4810	0.5990
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	2449	1.2025	0.4565
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	11032	4.8100	0.5375
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	22046	9.6200	0.5418
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	45791	19.2400	0.5589
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	230499	96.2000	0.6002
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	458453	192.4000	0.6399

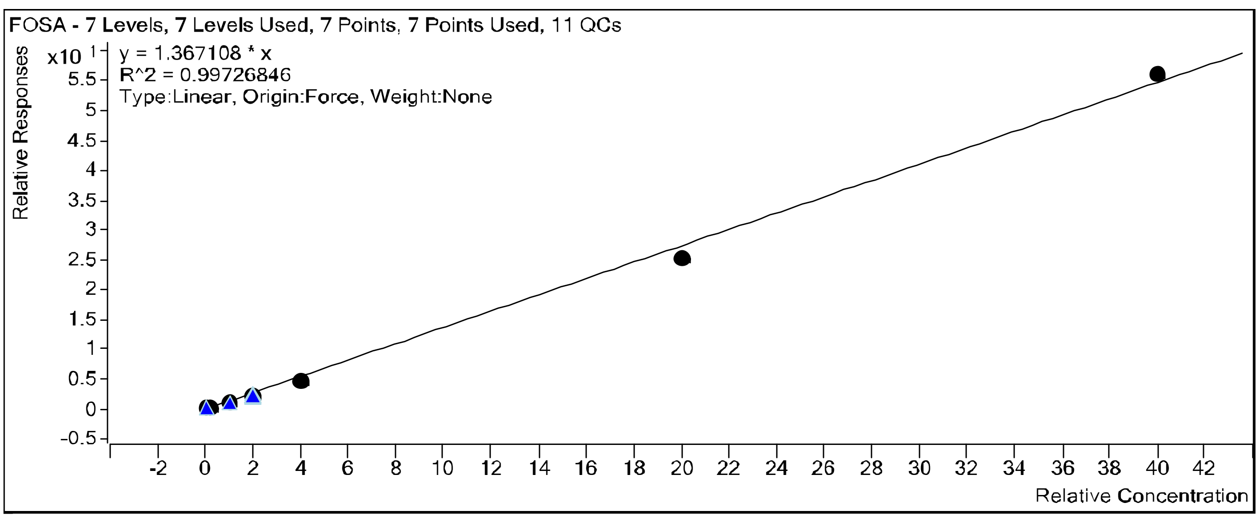


Extracted ISTD	*M8FOSA*					
Calibration STD	**Cal Type**	**Level**	**Enabled**	**Response**	**Exp Conc (ng/mL)**	**RF**

D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	13392	5.0000	2678.3648
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	14091	5.0000	2818.2427
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	13814	5.0000	2762.7324
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	13500	5.0000	2700.0431
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	13770	5.0000	2754.0795
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	13502	5.0000	2700.3510
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	12370	5.0000	2473.9049

Target Compound *FOSA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1376	0.5000	1.0275
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	3589	1.2500	1.0187
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	15244	5.0000	1.1036
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	29849	10.0000	1.1055
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	62734	20.0000	1.1389
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	340191	100.0000	1.2598
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	691234	200.0000	1.3971



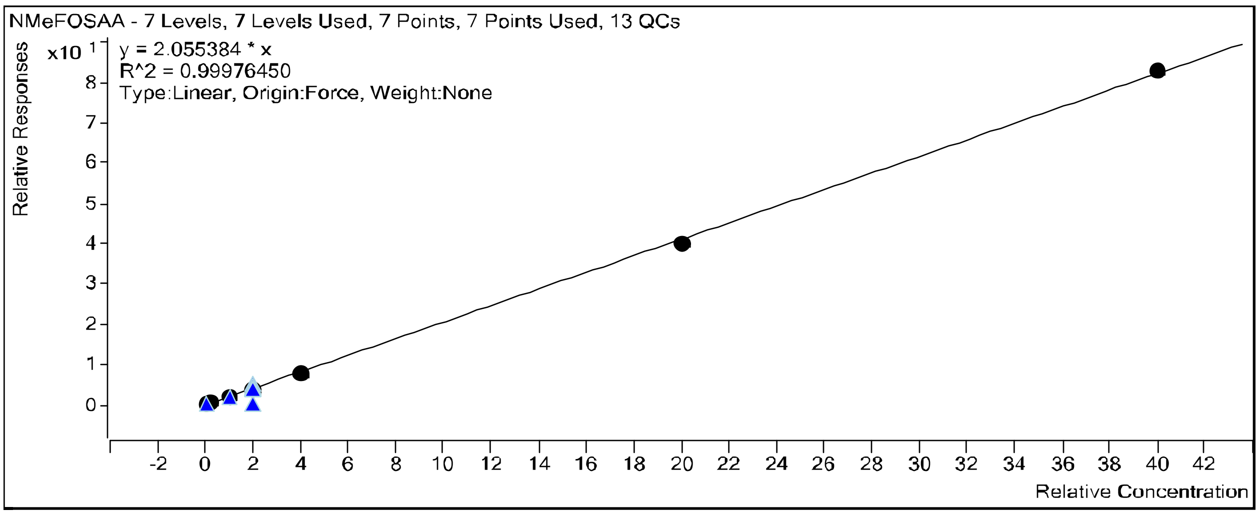
Extracted ISTD *d3-NMeFOSAA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	7009	5.0000	1401.7346
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	7981	5.0000	1596.1713
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	7968	5.0000	1593.6599

D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	7393	5.0000	1478.5626
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	7685	5.0000	1536.9521
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	8048	5.0000	1609.5345
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	7941	5.0000	1588.1409

Target Compound *NMeFOSAA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1353	0.5000	1.9309
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	3877	1.2500	1.9429
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	14407	5.0000	1.8080
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	28815	10.0000	1.9488
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	60706	20.0000	1.9749
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	323211	100.0000	2.0081
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	656993	200.0000	2.0684



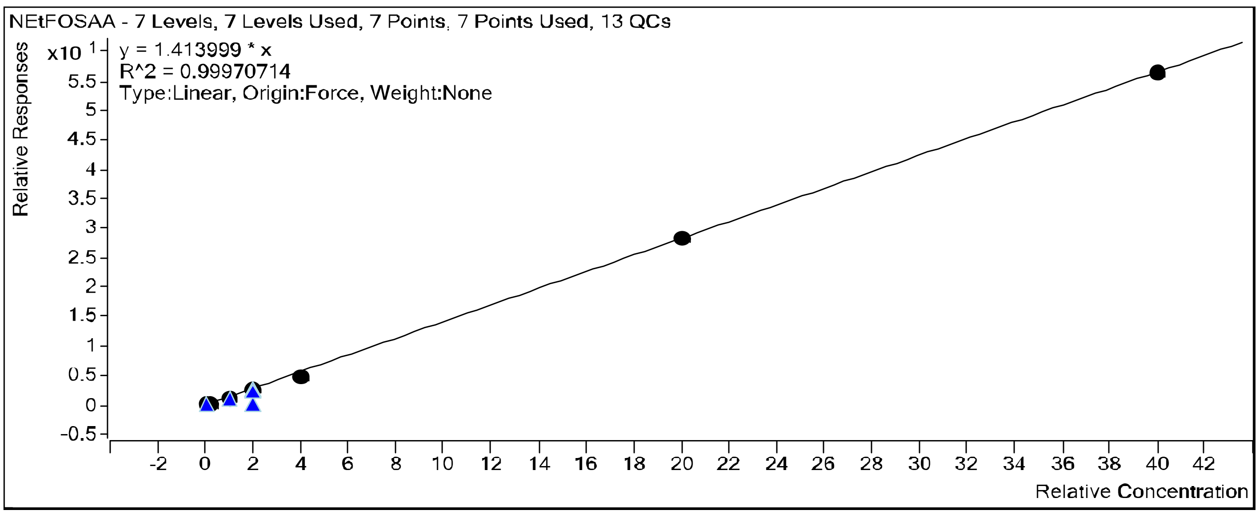
Extracted ISTD *d5-NEtFOSAA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	11069	5.0000	2213.8547
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	11995	5.0000	2398.9670
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	11476	5.0000	2295.2075
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	10554	5.0000	2110.8476
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	10983	5.0000	2196.6341
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	10000	5.0000	1999.9328

D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	9753	5.0000	1950.6855

Target Compound *NEtFOSAA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1275	0.5000	1.1515
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	3117	1.2500	1.0396
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	13162	5.0000	1.1469
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	27538	10.0000	1.3046
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	53165	20.0000	1.2101
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	284190	100.0000	1.4210
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	551944	200.0000	1.4147

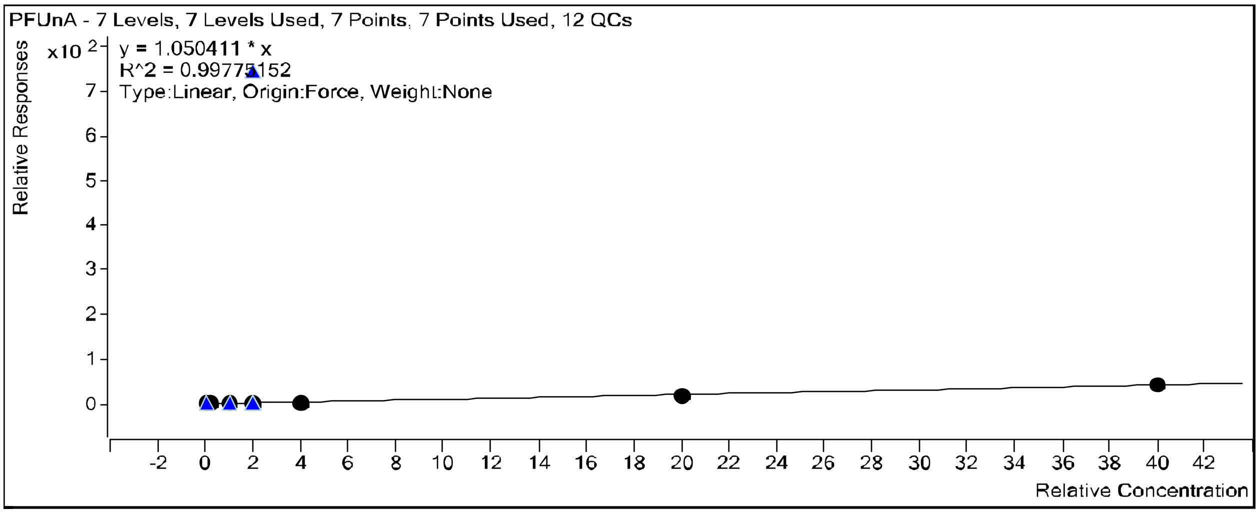


Extracted ISTD *M7PFUnA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	17171	5.0000	3434.1607
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	18209	5.0000	3641.8237
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	17240	5.0000	3447.9997
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	16783	5.0000	3356.6142
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	16444	5.0000	3288.7399
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	16274	5.0000	3254.7996
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	14749	5.0000	2949.7047

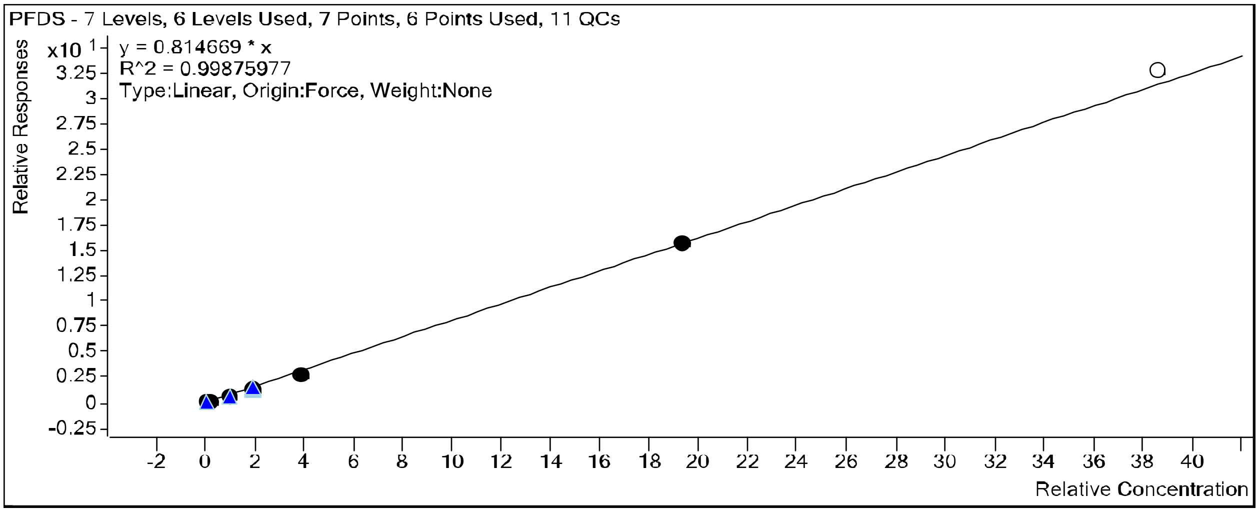
Target Compound *PFUnA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1582	0.5000	0.9213
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	3854	1.2500	0.8466
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	14768	5.0000	0.8566
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	29654	10.0000	0.8834
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	59368	20.0000	0.9026
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	317241	100.0000	0.9747
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	632043	200.0000	1.0714



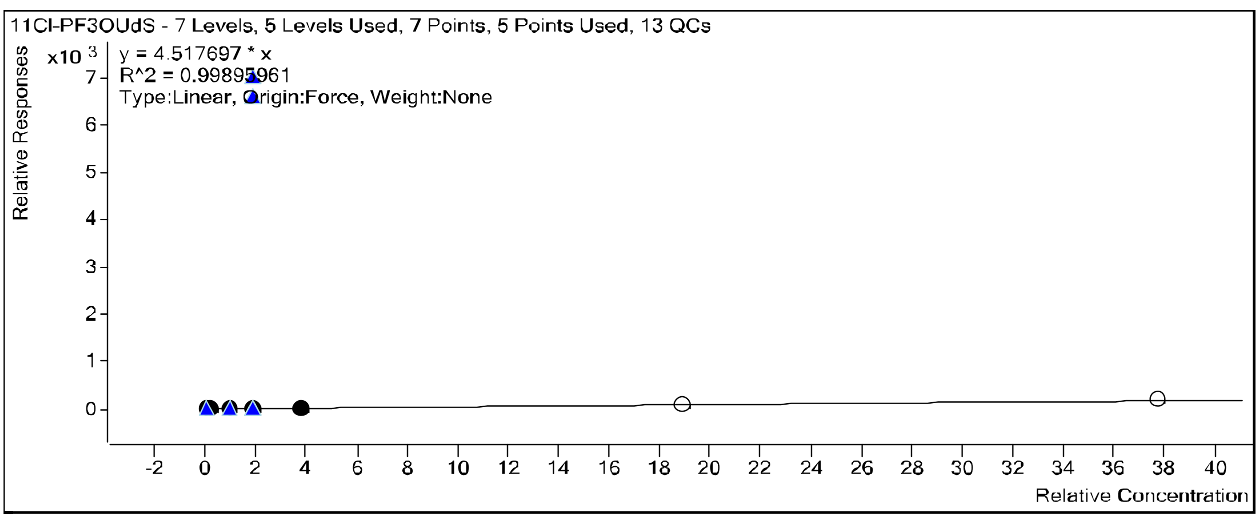
Target Compound *PFDS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1144	0.4825	0.7658
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	2731	1.2063	0.6482
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	10827	4.8250	0.6658
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	21007	9.6500	0.7181
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	43888	19.3000	0.7095
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	228697	96.5000	0.8202
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☐	447858	193.0000	0.8549



Target Compound *11Cl-PF3OUdS*

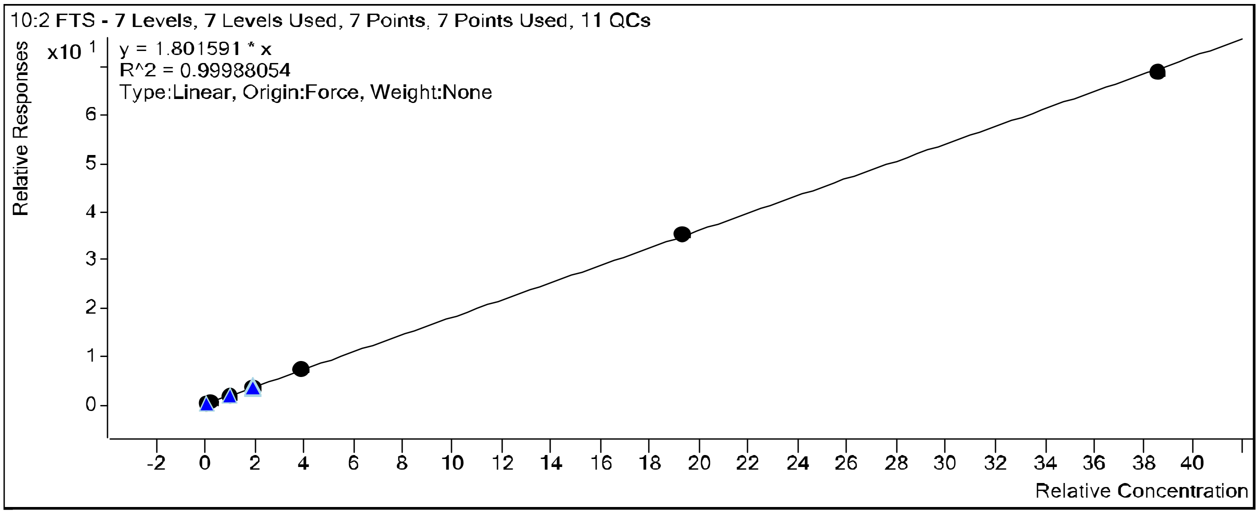
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	3634	0.4715	3.5776
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	9597	1.1788	3.9073
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	42019	4.7150	4.1645
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	84796	9.4300	4.4269
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	179584	18.8600	4.5654
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☐	937078	94.3000	4.8626
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☐	1858315	188.6000	5.2212



Target Compound *10:2 FTS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF

D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	629	0.4820	1.5651
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	1978	1.2050	1.8449
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	7364	4.8200	1.8665
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	15103	9.6400	1.9186
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	29791	19.2800	1.8710
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	142263	96.4000	1.8287
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	281322	192.8000	1.7938



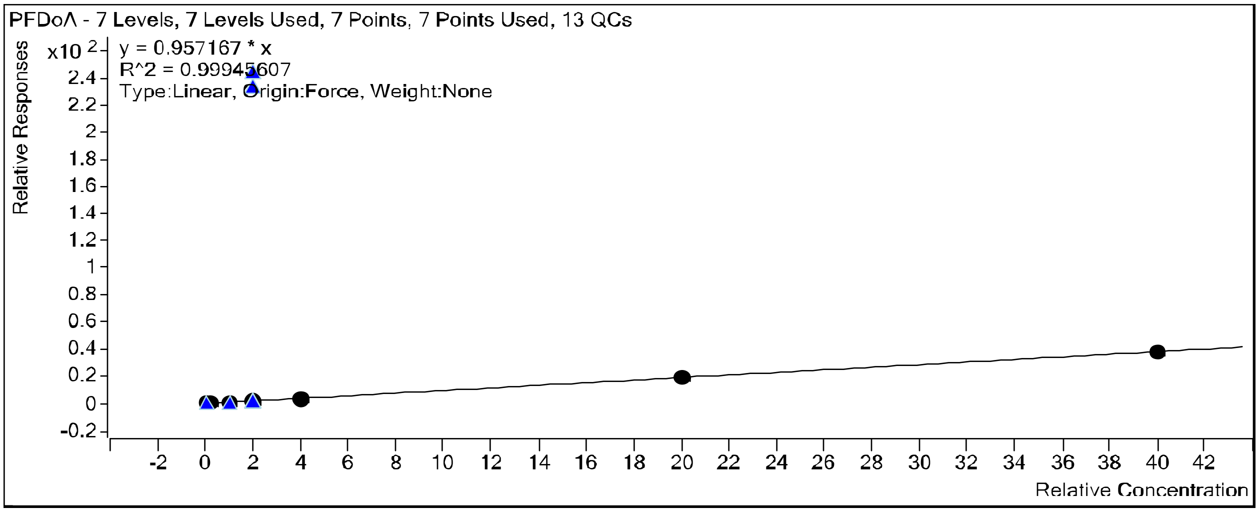
Extracted ISTD *MPFDoA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	13043	5.0000	2608.6455
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	13506	5.0000	2701.2111
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	13532	5.0000	2706.4718
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	12794	5.0000	2558.7619
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	12956	5.0000	2591.1020
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	13980	5.0000	2796.0941
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	14860	5.0000	2971.9948

Target Compound *PFDoA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1177	0.5000	0.9027
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	2675	1.2500	0.7923
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	12909	5.0000	0.9539

D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	24807	10.0000	0.9695
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	51421	20.0000	0.9923
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	277691	100.0000	0.9931
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	563372	200.0000	0.9478



Extracted ISTD *d-NMeFOSA*

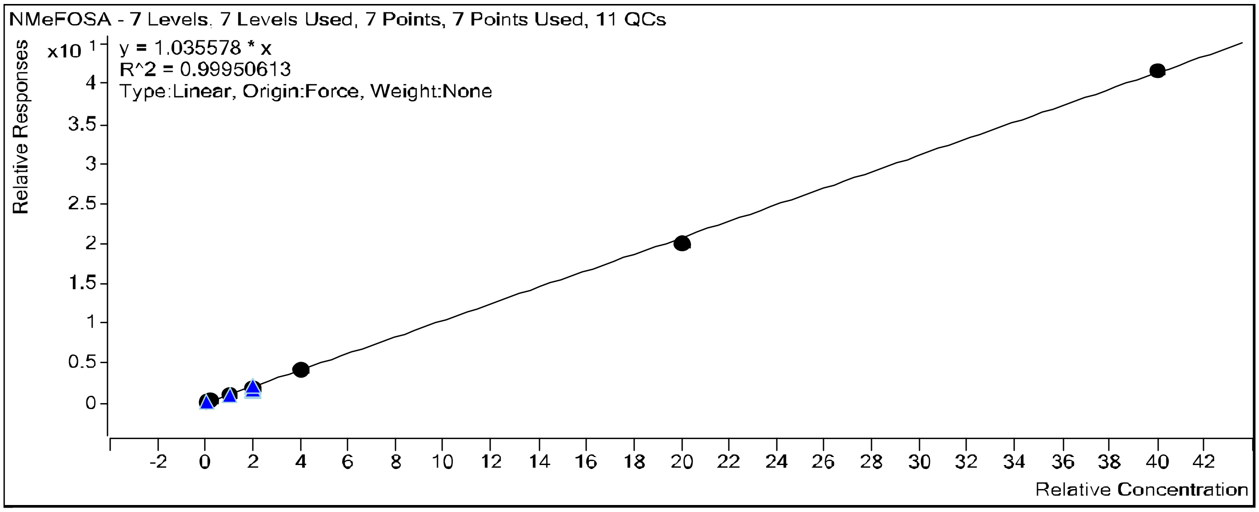
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	5632	5.0000	1126.4592
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	5932	5.0000	1186.4921
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	5768	5.0000	1153.6679
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	6082	5.0000	1216.3172
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	5670	5.0000	1133.9635
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	6557	5.0000	1311.3794
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	6453	5.0000	1290.6029

Target Compound *NMeFOSA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	477	0.5000	0.8467
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	1554	1.2500	1.0475
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	5892	5.0000	1.0214
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	11702	10.0000	0.9621
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	23989	20.0000	1.0578
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	130887	100.0000	0.9981

Quantitative Analysis Calibration Report

D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	269716	200.0000	1.0449



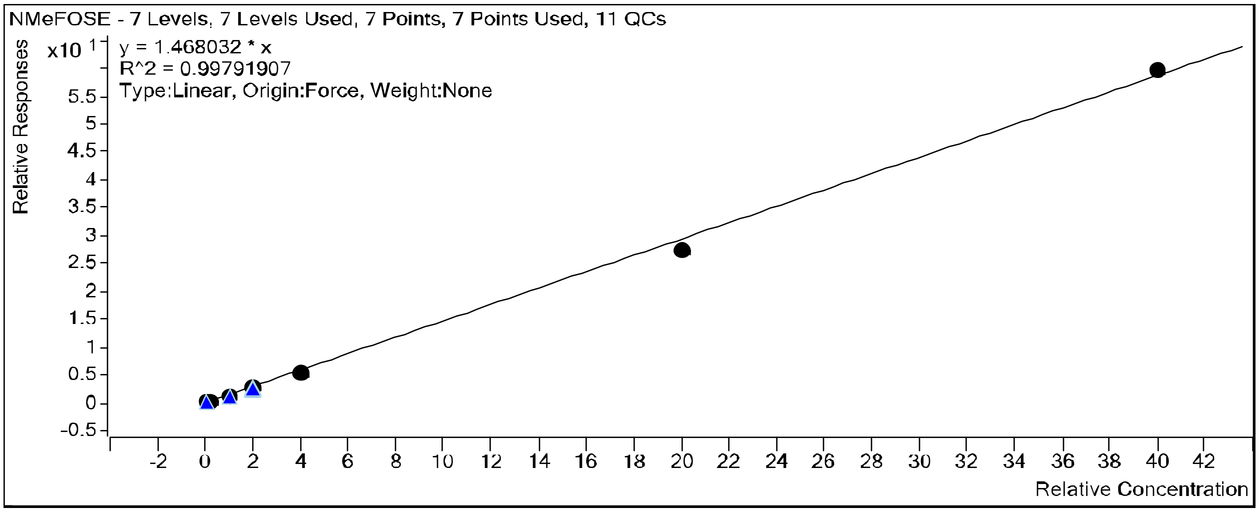
Extracted ISTD *d7-NMeFOSE*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	7541	5.0000	1508.1067
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	7616	5.0000	1523.1836
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	7275	5.0000	1454.9881
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	7171	5.0000	1434.2436
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	7351	5.0000	1470.1912
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	7253	5.0000	1450.5447
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	6963	5.0000	1392.5755

Target Compound *NMeFOSE*

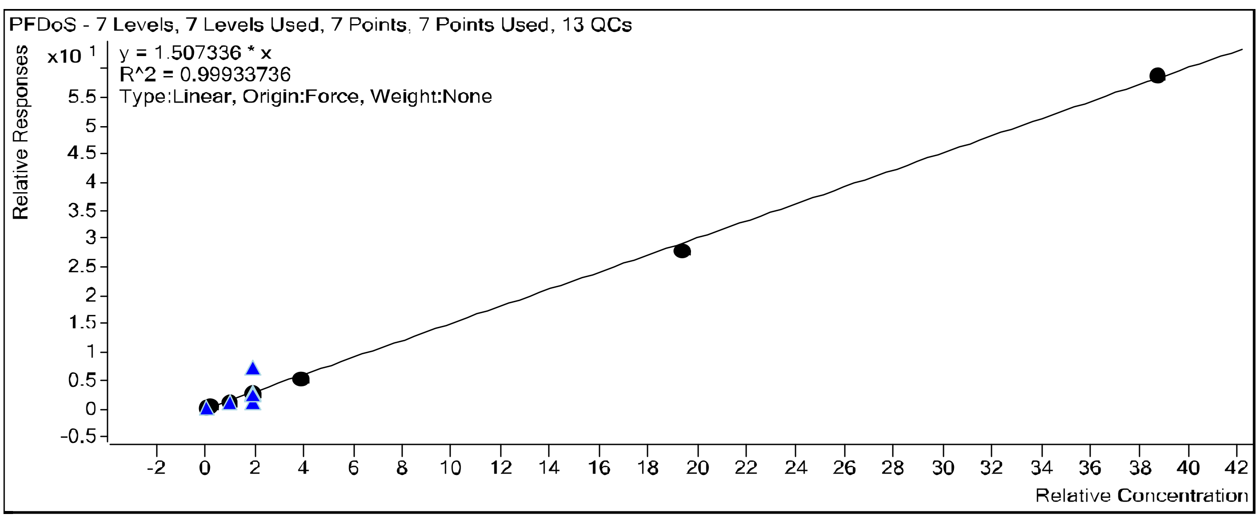
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	911	0.5000	1.2076
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	2342	1.2500	1.2301
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	8709	5.0000	1.1972
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	18683	10.0000	1.3026
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	39062	20.0000	1.3285
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	197557	100.0000	1.3620
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	416809	200.0000	1.4965

Quantitative Analysis Calibration Report



Target Compound *PFDoS*

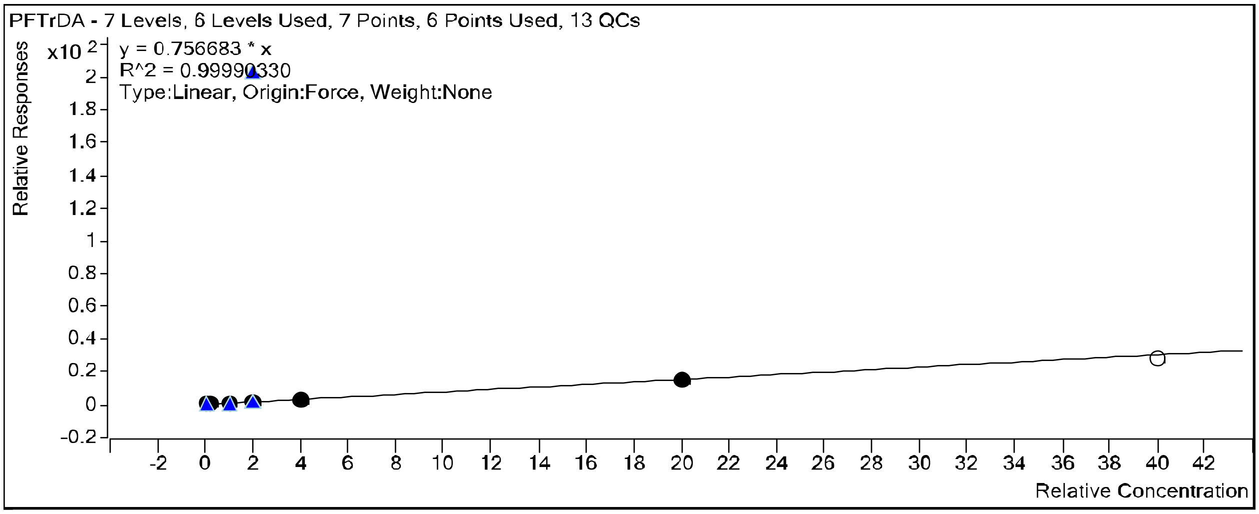
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1339	0.4840	1.2841
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	3434	1.2100	1.3619
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	13514	4.8400	1.3048
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	27565	9.6800	1.4019
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	56100	19.3600	1.3894
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	286614	96.8000	1.4489
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	556629	193.6000	1.5235



Target Compound *PFTrDA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF

D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	968	0.5000	0.7424
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	2801	1.2500	0.8297
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	10522	5.0000	0.7776
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	20435	10.0000	0.7986
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	40353	20.0000	0.7787
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	211195	100.0000	0.7553
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☐	415141	200.0000	0.6984



Extracted ISTD *d9-NEtFOSE*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	9859	5.0000	1971.8849
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	11010	5.0000	2201.9581
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	9901	5.0000	1980.2637
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	10054	5.0000	2010.8979
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	9581	5.0000	1916.2665
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	9310	5.0000	1862.0423
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	9310	5.0000	1862.0492

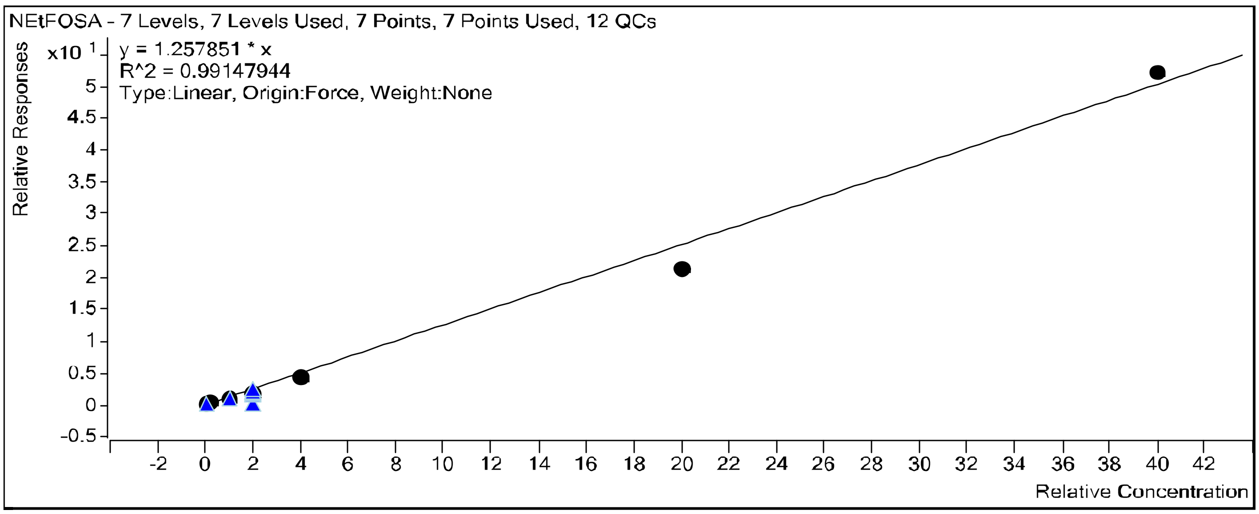
Extracted ISTD *d-NEtFOSA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	6595	5.0000	1319.0522
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	6126	5.0000	1225.1109
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	6350	5.0000	1269.9796

D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	6515	5.0000	1303.0688
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	6015	5.0000	1203.0183
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	6624	5.0000	1324.8834
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	5630	5.0000	1126.0464

Target Compound *NEtFOSA*

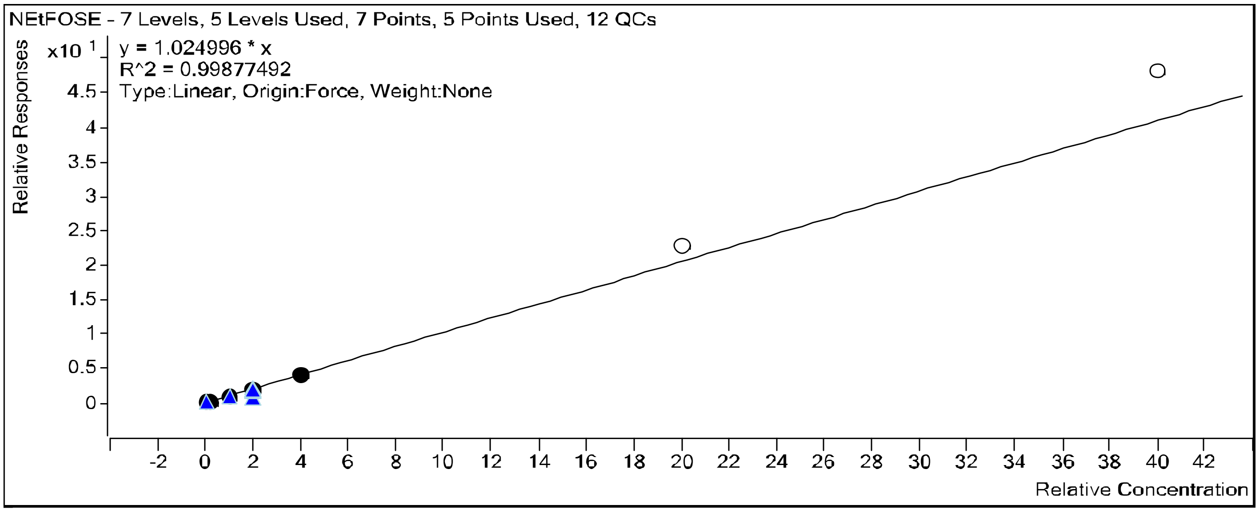
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	684	0.5000	1.0366
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	1739	1.2500	1.1359
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	6292	5.0000	0.9909
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	12783	10.0000	0.9810
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	25573	20.0000	1.0629
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	141553	100.0000	1.0684
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	294579	200.0000	1.3080



Target Compound *NEtFOSE*

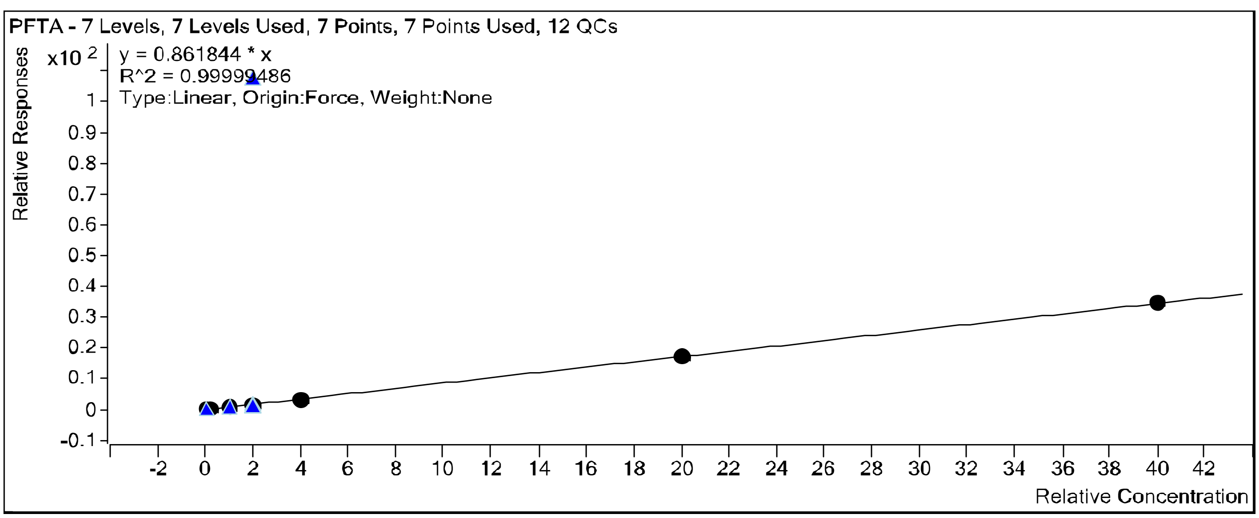
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1090	0.5000	1.1056
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	2171	1.2500	0.7887
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	9637	5.0000	0.9733
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	19913	10.0000	0.9903
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	39774	20.0000	1.0378
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☐	212679	100.0000	1.1422

D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☐	450552	200.0000	1.2098



Target Compound *PFTA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	638	0.5000	0.6790
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	1999	1.2500	0.8507
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	7629	5.0000	0.8292
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	15413	10.0000	0.8427
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	32026	20.0000	0.8499
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	167016	100.0000	0.8617
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	343087	200.0000	0.8621



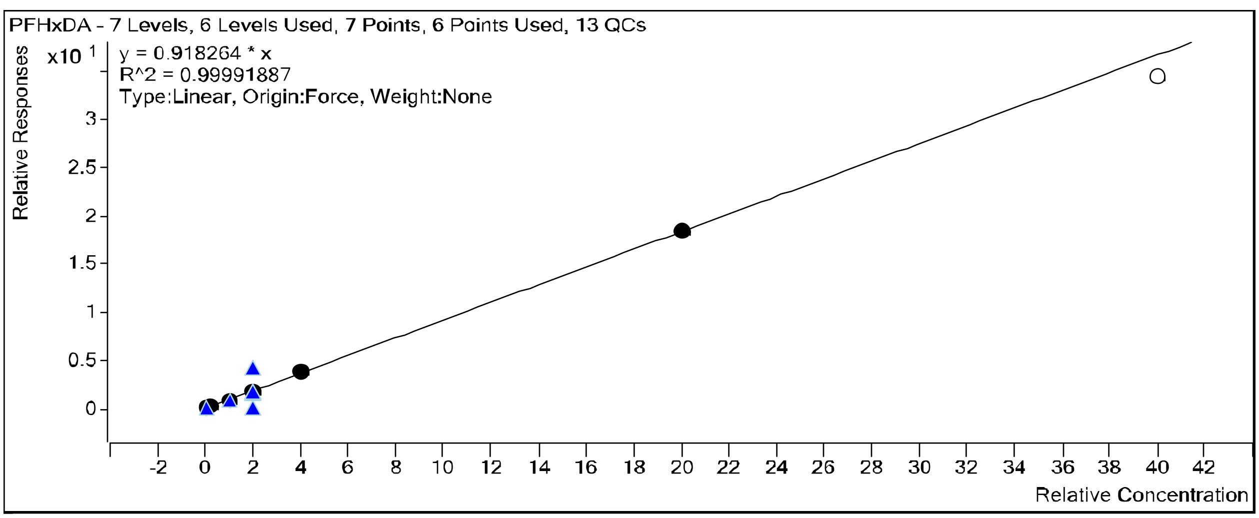
Extracted ISTD *M2PFTA*

Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	9400	5.0000	1880.0932
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	9398	5.0000	1879.5027
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	9200	5.0000	1839.9746
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	9145	5.0000	1829.0901
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	9421	5.0000	1884.1725
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	9691	5.0000	1938.1415
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	9950	5.0000	1989.9233

Target Compound *PFHxDA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	1087	0.5000	1.0497
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	2529	1.2500	0.9246
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	10380	5.0000	0.8989
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	20076	10.0000	0.8986
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	38439	20.0000	0.9515
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	210082	100.0000	0.9172
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☐	435001	200.0000	0.8655



Extracted ISTD *M2PFHxDA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
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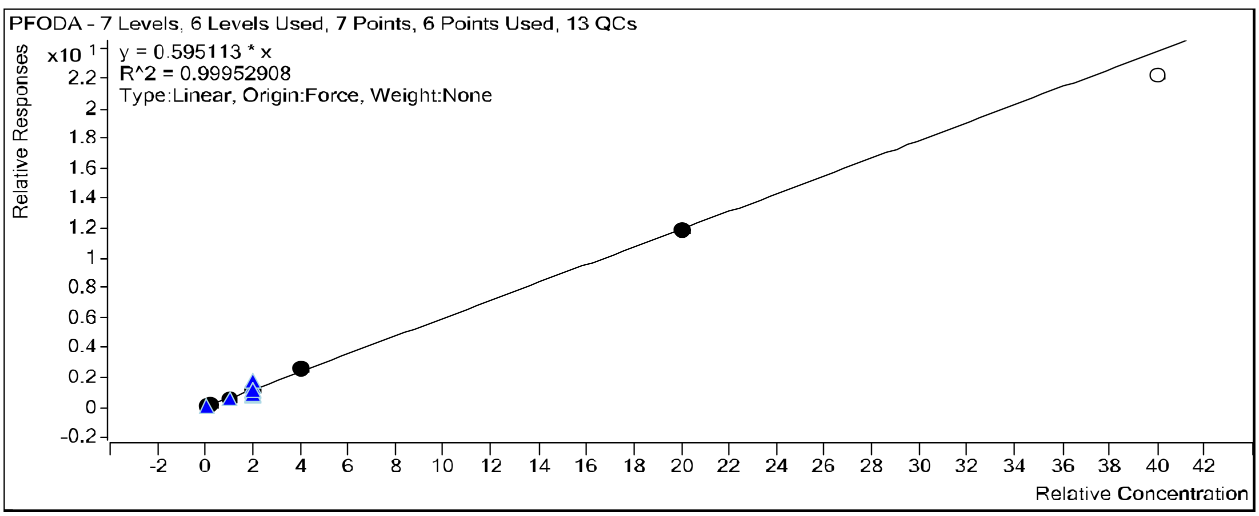
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	10943	5.0000	2188.5574
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	11547	5.0000	2309.4353
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	11171	5.0000	2234.1786
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	10100	5.0000	2019.9560
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	11453	5.0000	2290.5276
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☑	12565	5.0000	2513.0390

Target Compound *PFODA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2210104ACAL\2210104B_02.d	Calibration	1	☑	536	0.5000	0.5175
D:\MassHunter\Data\2210104ACAL\2210104B_03.d	Calibration	2	☑	1661	1.2500	0.6070
D:\MassHunter\Data\2210104ACAL\2210104B_04.d	Calibration	3	☑	6433	5.0000	0.5571
D:\MassHunter\Data\2210104ACAL\2210104B_05.d	Calibration	4	☑	12351	10.0000	0.5528
D:\MassHunter\Data\2210104ACAL\2210104B_06.d	Calibration	5	☑	26057	20.0000	0.6450
D:\MassHunter\Data\2210104ACAL\2210104B_07.d	Calibration	6	☑	135974	100.0000	0.5936
D:\MassHunter\Data\2210104ACAL\2210104B_08.d	Calibration	7	☐	280200	200.0000	0.5575

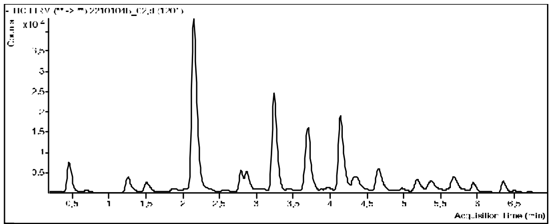


Quantitative Analysis Sample Report

Batch Data Path	D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update	1/5/2021 14:27

Data File	2210104B_02.d	**Position**	P1-A1	**Samp Name**	1201	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Calibration	**Comment**	MRA,QQQ2;Cal
Acq Date	1/4/2021 17:03						

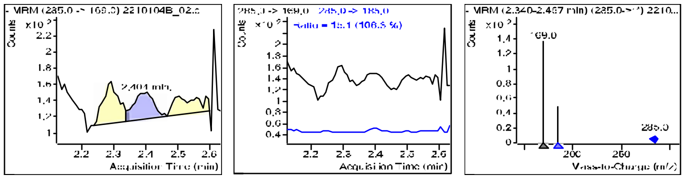
Sample Chromatogram



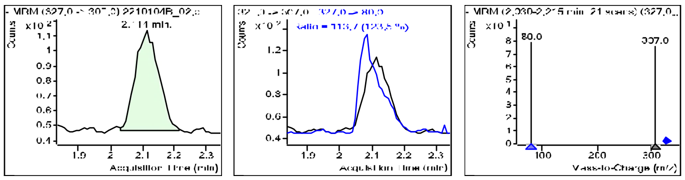
Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	70989.538	4.149				102.23	20.4452	102.23	133.15	1.58	
M2PFHxA	191693.899	2.152				98.68	39.4725	98.68	INF	1.59	
M2PFOA	79348.543	3.239				100.33	20.0656	100.33	2723.87	1.70	
M4PFOS	49704.761	3.703				98.33	19.6660	98.33	12102.57	1.52	
MPFOA	235.053	3.248				0.00	21.0250	84.10	1.12	1.63	
M3PFBA	3508.023	0.464				0.00	4.7847	95.69	129.94	1.57	
HFPO-DA	143.354	2.404	M3HFPODA	786	2.384	117.52	1.2021	120.21	0.11	0.85	
4:2 FTS	342.577	2.114	M2 4:2 FTS	2457	2.095	99.55	0.4418	94.29	9.22	1.11	
6:2 FTS	740.285	3.226	M2 6:2 FTS	4656	3.216	103.01	0.4936	103.81	12.09	1.42	
ADONA	5309.869	2.878	M8PFOA	21881	3.247	99.69	0.3637	76.98	116.74	1.73	
8:2 FTS	819.752	4.129	M2 8:2 FTS	4170	4.128	100.57	0.5473	114.01	32.52	1.65	
FOSA	1376.017	4.335	M8FOSA	13392	4.335	99.26	0.3758	75.16	42.92	1.57	
9Cl-PF3ONS	3770.919	3.979	M8PFOS	10771	3.702	104.53	0.3659	78.42	34.72	1.42	
PFDS	1143.846	4.676	M6PFDA	15479	4.149	99.41	0.4535	94.00	36.34	1.66	
11Cl-PF3OUdS	3633.656	4.979	M8PFOS	10771	3.702	104.53	0.3734	79.19	38.80	1.57	
PFHpS	1023.982	3.288	M8PFOA	21881	3.247	99.69	0.4153	87.15	19.41	1.70	
10:2 FTS	629.205	5.202	M2 8:2 FTS	4170	4.128	100.57	0.4187	86.87	26.38	1.27	
PFNS	1154.576	4.181	M9PFNA	20036	3.669	96.92	0.4565	94.92	45.08	1.49	
PFDoS	1338.753	5.614	M8PFOS	10771	3.702	104.53	0.4123	85.19	6.89	1.92	
PFPeS	819.663	2.332	M5PFHxA	20691	2.151	99.86	0.3940	83.73	26.16	1.36	
PFODA	535.671	6.697	M2PFHxDA	10351	6.348	92.74	0.4348	86.96	13.38	1.50	
NEtFOSAA	1274.638	4.670	d5-NEtFOSAA	11069	4.641	102.18	0.4072	81.44	13.67	0.88	m
PFHxDA	1086.577	6.342	M2PFHxDA	10351	6.348	92.74	0.5716	114.32	45.22	1.73	
NMeFOSAA	1353.322	4.384	d3-NMeFOSAA	7009	4.374	90.81	0.4697	93.94	25.77	0.85	m
PFBA	3585.649	0.466	MPFBA	24880	0.463	101.49	0.3883	77.67	38.77	1.40	
PFBS	909.548	1.507	M3PFBS	8833	1.505	96.52	0.4039	91.06	32.14	1.50	
NMeFOSA	476.892	5.354	d-NMeFOSA	5632	5.353	93.66	0.4088	81.76	19.37	1.50	
PFDA	1419.673	4.141	M6PFDA	15479	4.149	99.41	0.3949	78.99	51.78	1.66	m
PFDoA	1177.368	5.196	MPFDoA	13043	5.186	96.44	0.4715	94.31	47.14	1.30	
NEtFOSA	683.632	5.695	d-NEtFOSA	6595	5.684	105.27	0.4120	82.41	41.42	1.37	
PFHpA	2013.659	2.798	M4PFHpA	20817	2.797	101.55	0.4065	81.30	17.13	1.50	
PFHxA	2036.570	2.162	M5PFHxA	20691	2.151	99.86	0.4314	86.28	37.85	1.40	
NMeFOSE	910.600	5.388	d7-NMeFOSE	7541	5.379	103.16	0.4113	82.26	52.92	1.71	
PFHxS	963.291	2.875	M3PFHxS	9925	2.874	103.95	0.3575	78.22	9.36	0.78	m
PFNA	1825.597	3.670	M9PFNA	20036	3.669	96.92	0.4117	82.34	39.20	1.69	
NEtFOSE	1090.104	5.703	d9-NEtFOSE	9859	5.682	99.98	0.5393	107.87	45.96	1.54	
PFOA	2198.175	3.240	M8PFOA	21881	3.247	99.69	0.4621	92.42	10.82	1.70	m
PFOS	1235.725	3.694	M8PFOS	10771	3.702	104.53	0.3602	77.62	17.21	0.82	m
PFPeA	2239.372	1.265	M5PFPeA	16744	1.263	98.63	0.4187	83.75	17.26	1.33	
PFMPA	1864.870	0.688	M5PFPeA	16744	1.263	98.63	0.3985	79.71	71.21	1.67	
PFTA	638.299	5.957	M2PFTA	9400	5.944	99.39	0.3939	78.79	7.55	1.30	
PFMBA	2051.541	1.547	M5PFHxA	20691	2.151	99.86	0.3984	79.67	27.10	1.48	
PFTrDA	968.309	5.634	MPFDoA	13043	5.186	96.44	0.4906	98.11	7.48	1.39	
PFEESA	3225.255	1.876	M3PFHxS	9925	2.874	103.95	0.3718	83.54	44.56	1.30	
PFUnA	1582.015	4.674	M7PFUnA	17171	4.672	102.85	0.4386	87.71	15.82	1.50	
NFDHA	1495.926	2.027	M4PFHpA	20817	2.797	101.55	0.3636	72.71	45.54	1.36	

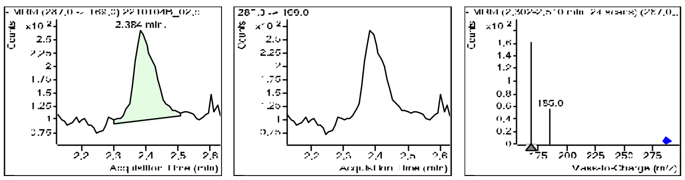
HFPO-DA



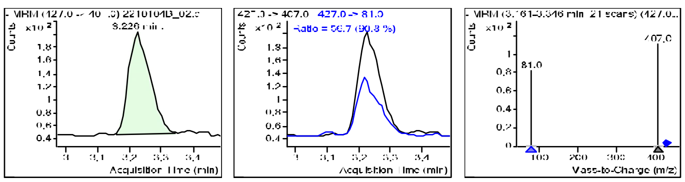
4:2 FTS



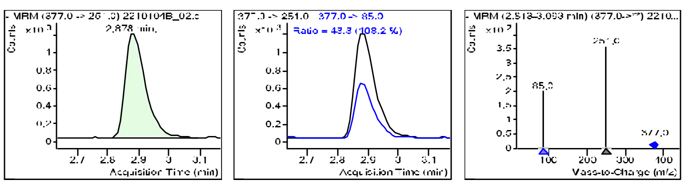
M3HFPODA



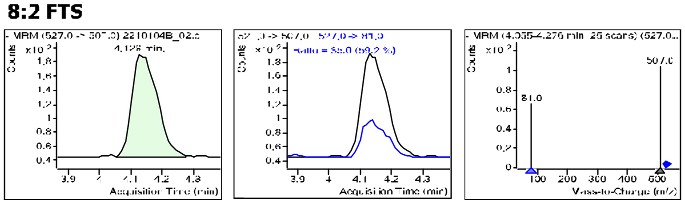
6:2 FTS



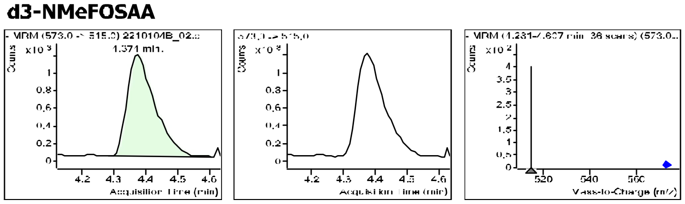
ADONA



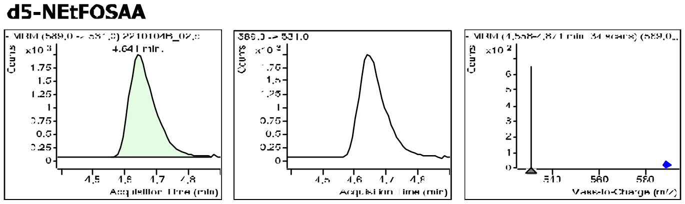
8:2 FTS



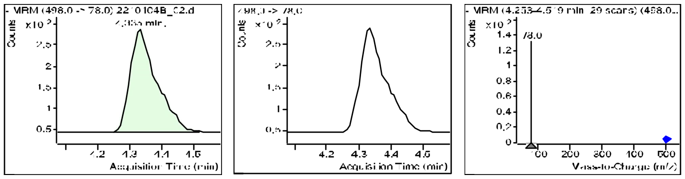
d3-NMeFOSAA



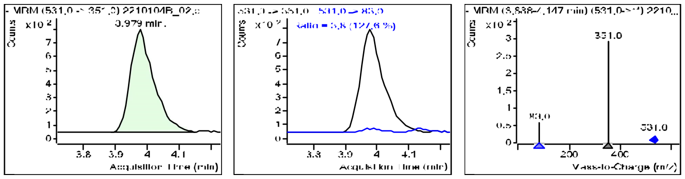
d5-NEtFOSAA



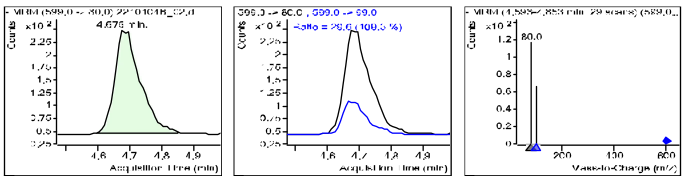
FOSA



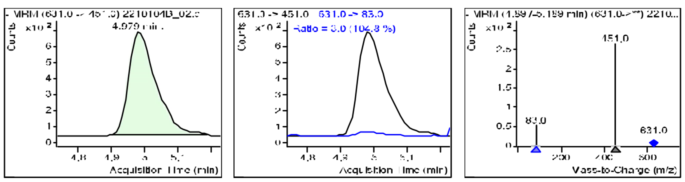
9Cl-PF3ONS



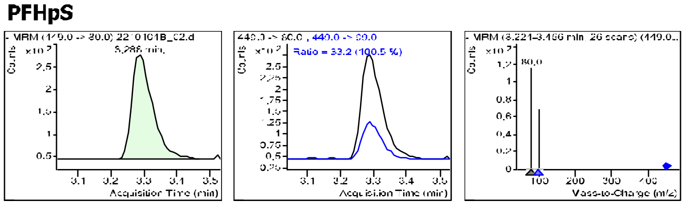
PFDS



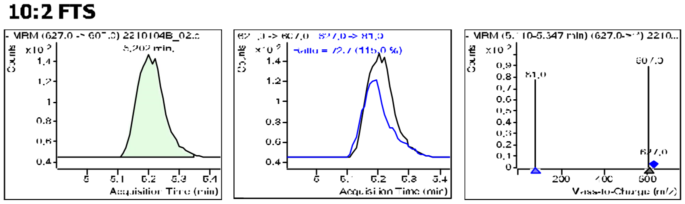
11Cl-PF3OUdS



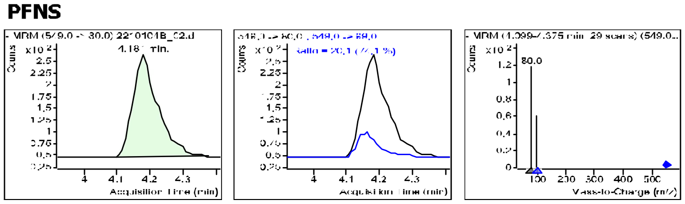
PFHpS



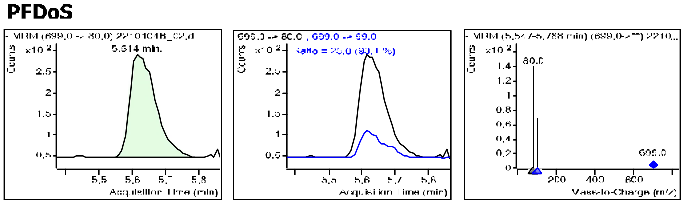
10:2 FTS



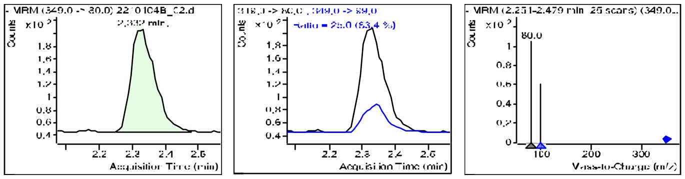
PFNS



PFDoS



PFPeS



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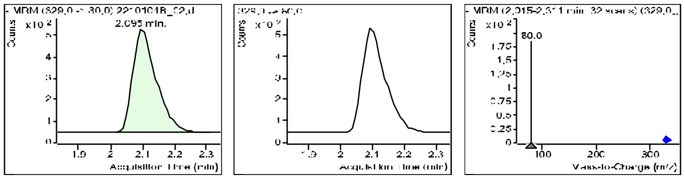

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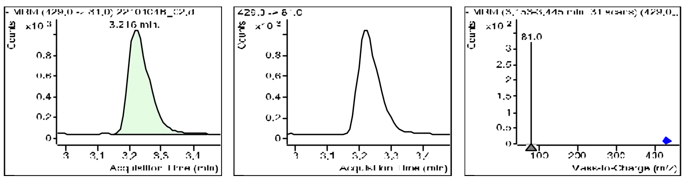

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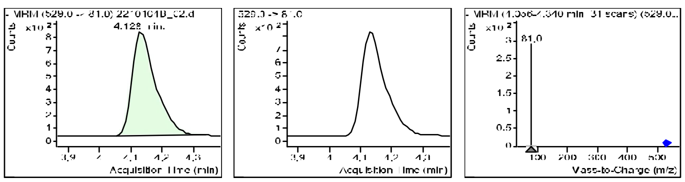

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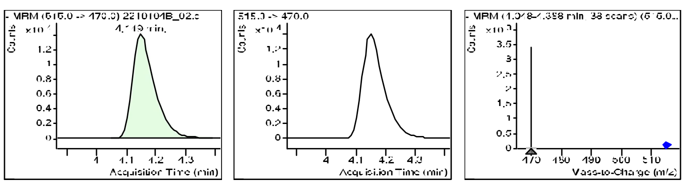

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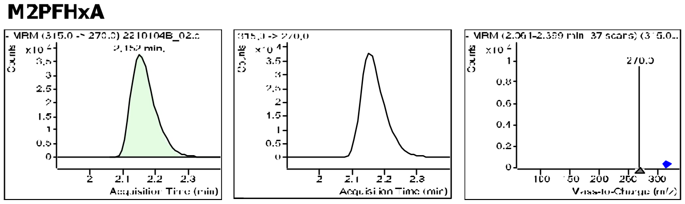

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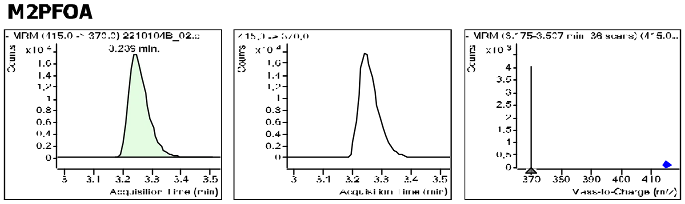

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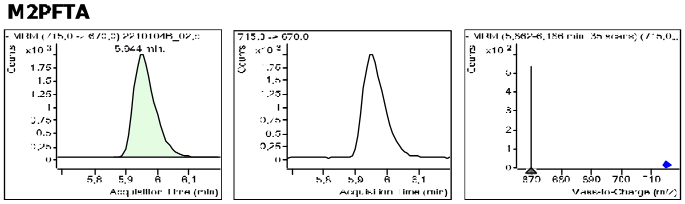

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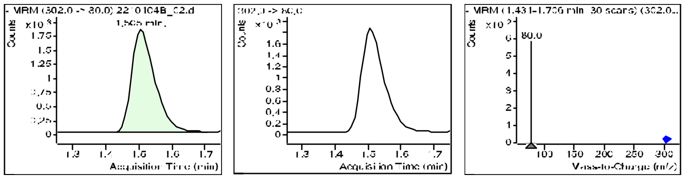

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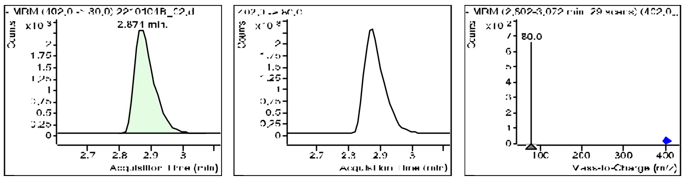

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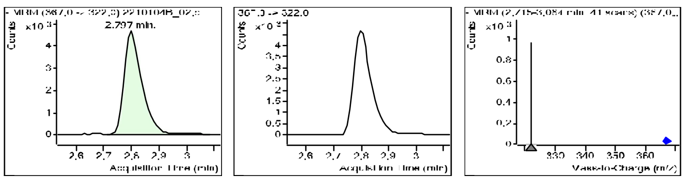

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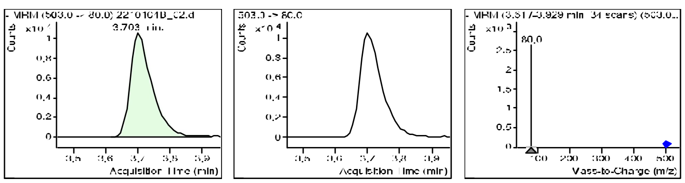

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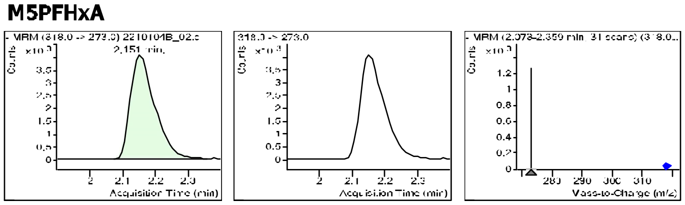

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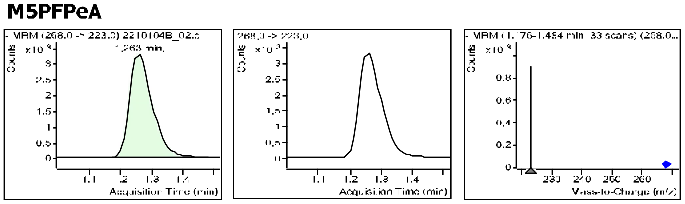

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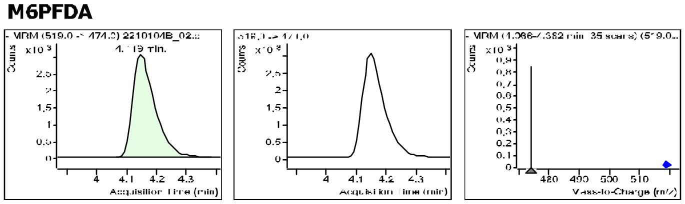
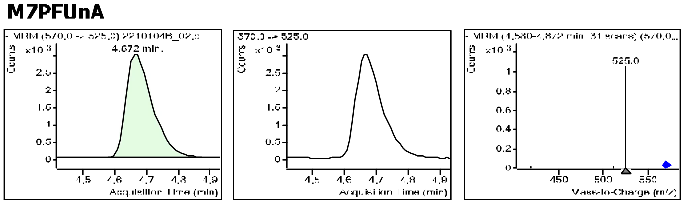


M7PFUnA



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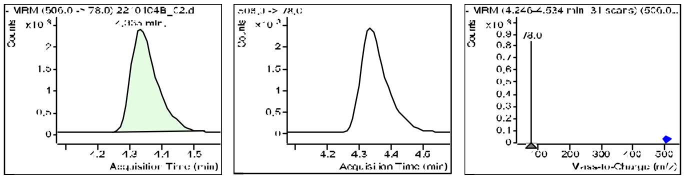

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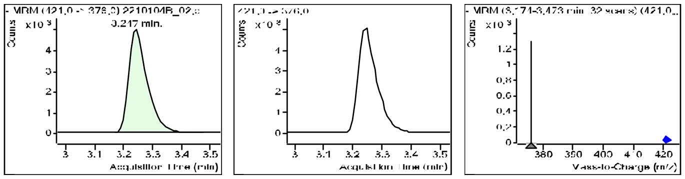

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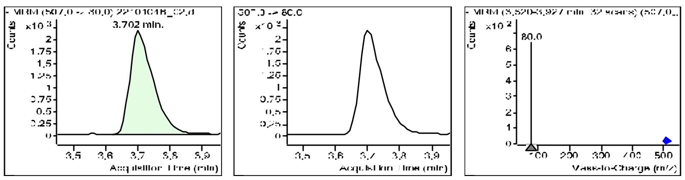

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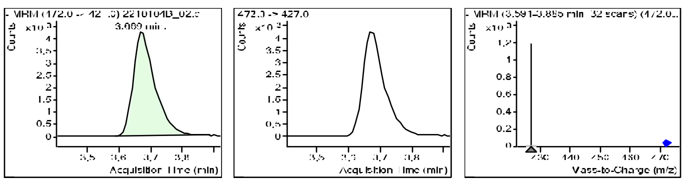

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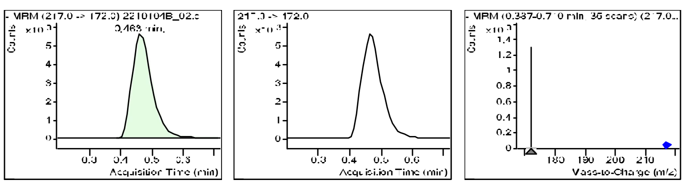

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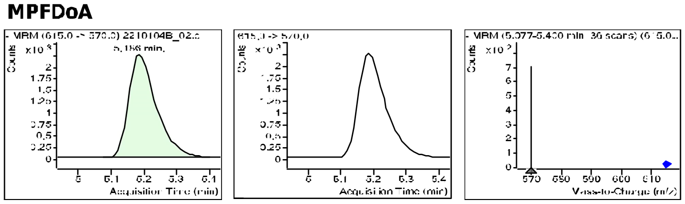

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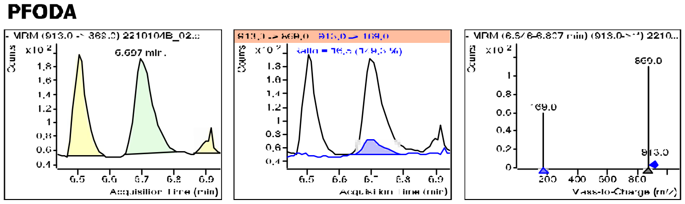

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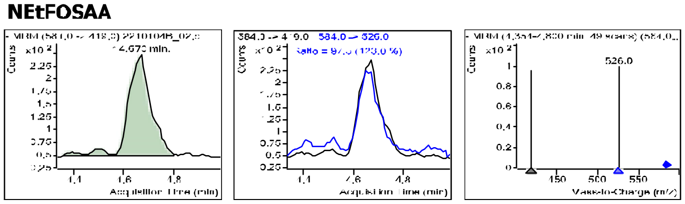

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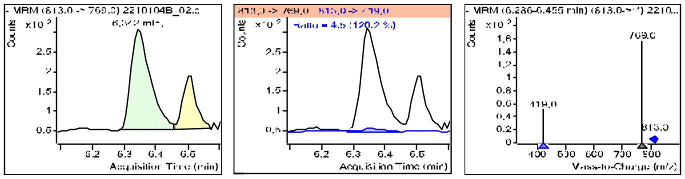

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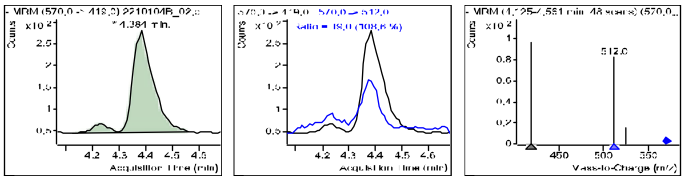

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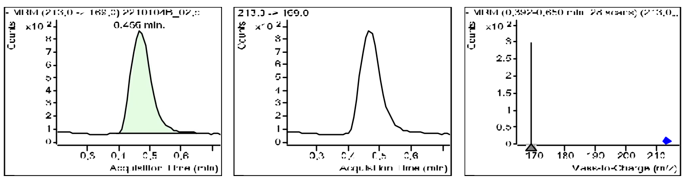

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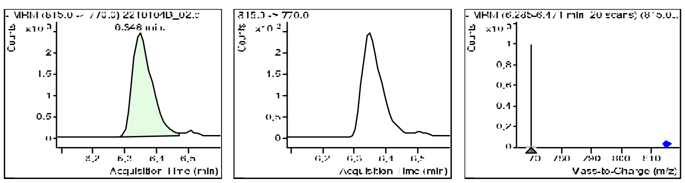

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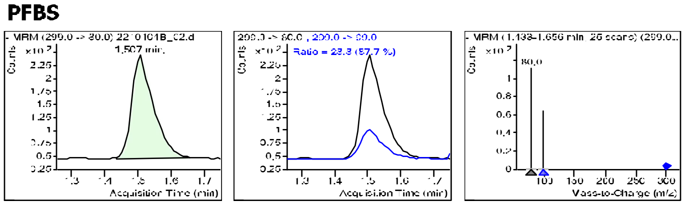

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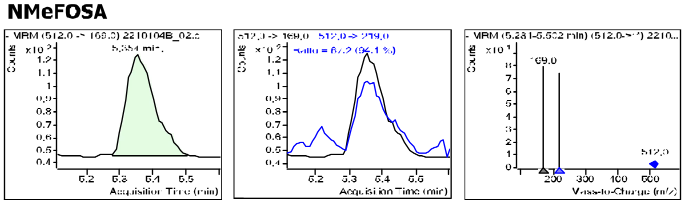

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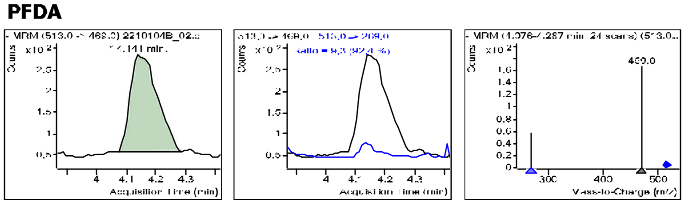

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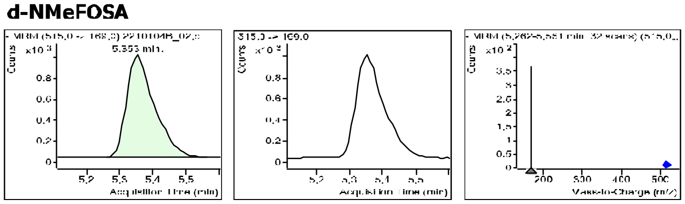

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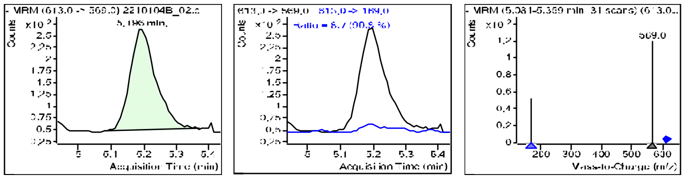

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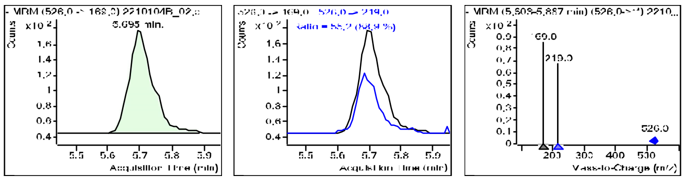

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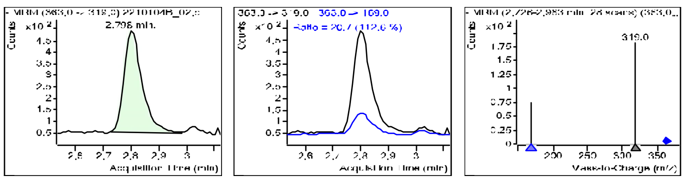

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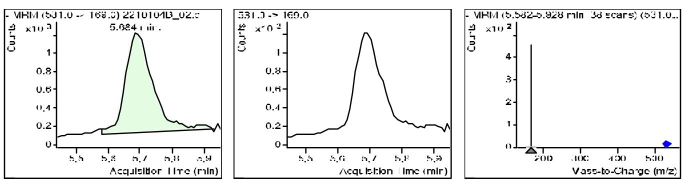

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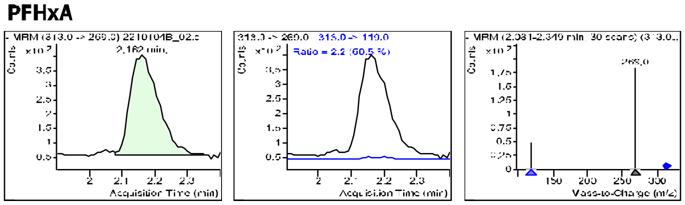

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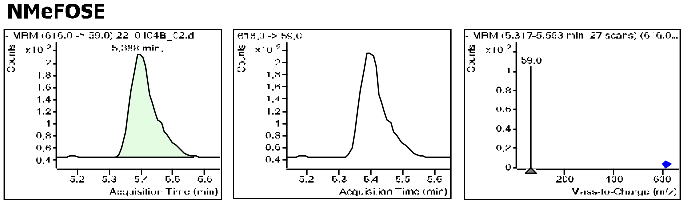

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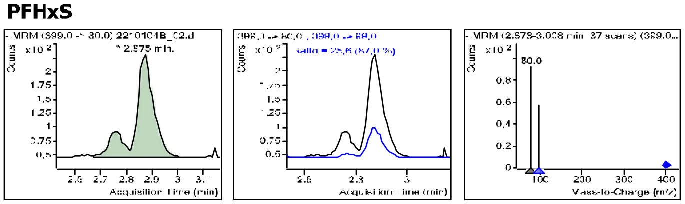

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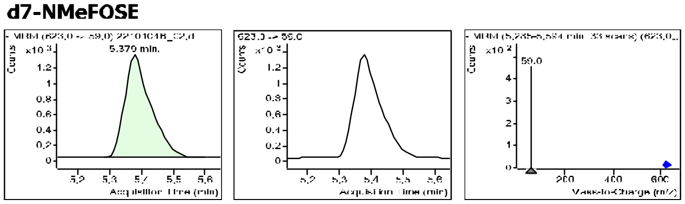

Quantitative Analysis Sample Report

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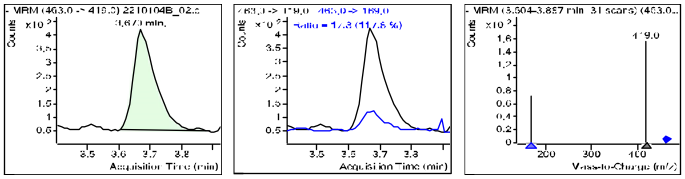

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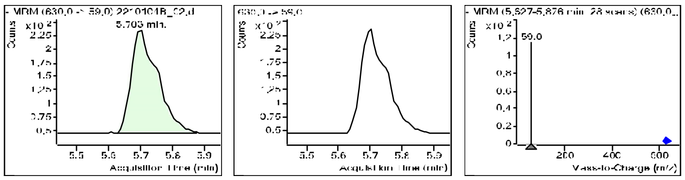

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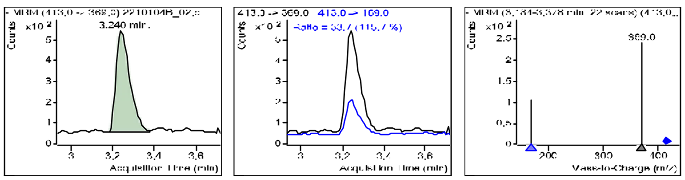

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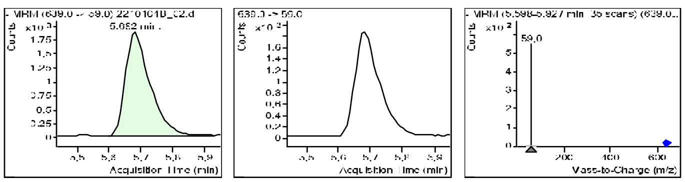

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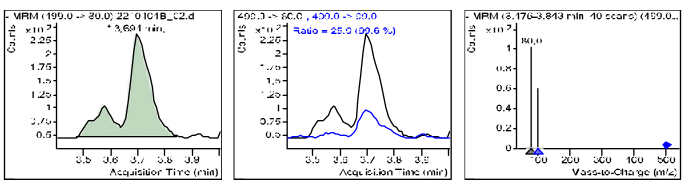

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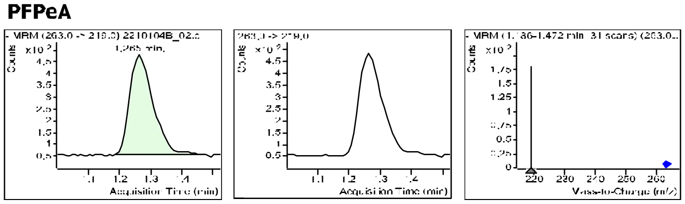

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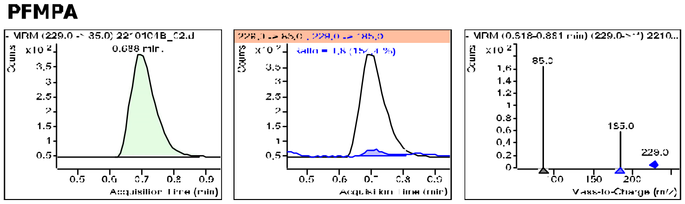

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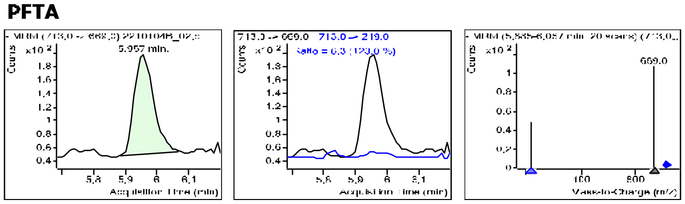

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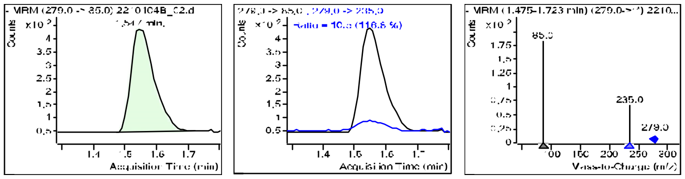

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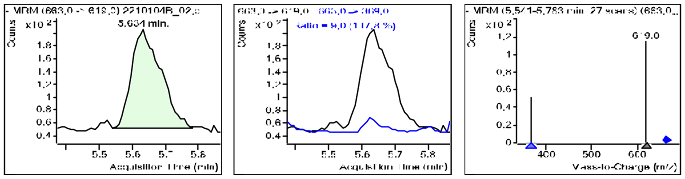

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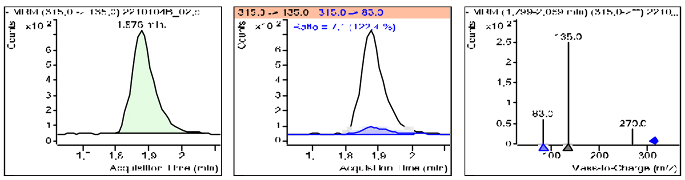

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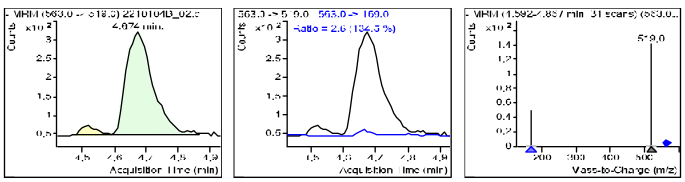

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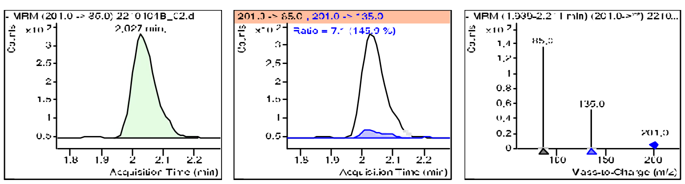
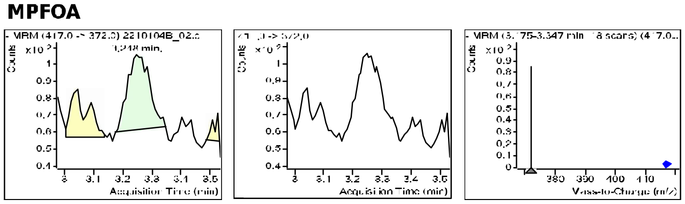
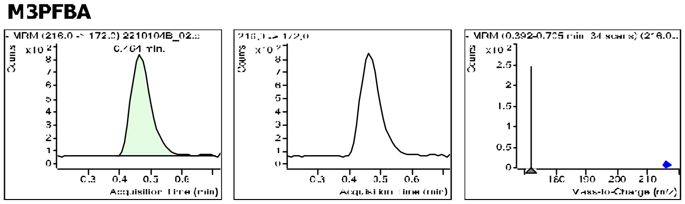


MPFOA



M3PFBA



Quantitative Analysis Sample Report

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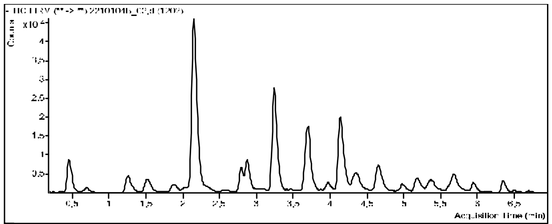
Last Calib Update	1/5/2021 14:27

Data File	2210104B_03.d	**Position**	P1-A2	**Samp Name**	1202	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Calibration	**Comment**	MRA,QQQ2;Cal
Acq Date	1/4/2021 17:16						

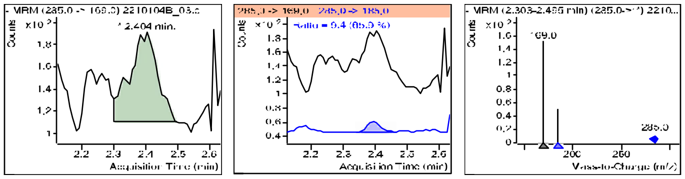
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	73052.368	4.149				105.20	21.0393	105.20	3306.58	1.49	
M2PFHxA	202134.324	2.152				104.06	41.6224	104.06	6623.40	1.59	
M2PFOA	84294.494	3.248				106.58	21.3163	106.58	1233.48	1.42	
M4PFOS	52997.845	3.703				104.84	20.9690	104.84	3201.49	1.52	
MPFOA	381.581	3.248				0.00	34.1316	136.53	1.34	4.41	
M3PFBA	3953.055	0.464				0.00	5.3917	107.83	115.33	1.60	
HFPO-DA	489.352	2.404	M3HFPODA	607	2.393	90.75	5.3141	212.56	0.72	0.90	m
4:2 FTS	944.456	2.086	M2 4:2 FTS	2559	2.095	103.68	1.1694	99.84	40.71	1.96	
6:2 FTS	1654.246	3.226	M2 6:2 FTS	4718	3.226	104.36	1.0887	91.58	37.12	1.42	
ADONA	13959.633	2.887	M8PFOA	22909	3.247	104.37	0.9133	77.31	502.86	1.44	
8:2 FTS	1850.639	4.138	M2 8:2 FTS	4449	4.129	107.29	1.1581	96.51	29.89	1.49	
FOSA	3588.747	4.335	M8FOSA	14091	4.335	104.45	0.9315	74.52	76.87	1.57	
9Cl-PF3ONS	10193.539	3.979	M8PFOS	10418	3.702	101.11	1.0224	87.67	369.50	1.42	
PFDS	2730.734	4.676	M6PFDA	17462	4.149	112.15	0.9598	79.56	58.74	1.59	
11Cl-PF3OUdS	9597.002	4.989	M8PFOS	10418	3.702	101.11	1.0195	86.49	61.66	1.31	
PFHpS	2759.005	3.288	M8PFOA	22909	3.247	104.37	1.0687	89.71	210.69	1.70	
10:2 FTS	1978.027	5.174	M2 8:2 FTS	4449	4.129	107.29	1.2339	102.40	5.91	1.91	
PFNS	2449.225	4.172	M9PFNA	22307	3.669	107.91	0.8699	72.34	70.51	1.49	
PFDoS	3433.532	5.623	M8PFOS	10418	3.702	101.11	1.0932	90.35	9.96	1.45	
PFPeS	2421.608	2.323	M5PFHxA	21834	2.151	105.38	1.1029	93.76	26.20	1.50	
PFODA	1660.563	6.697	M2PFHxDA	10943	6.339	98.04	1.2750	102.00	30.16	1.60	
NEtFOSAA	3117.359	4.642	d5-NEtFOSAA	11995	4.641	110.73	0.9190	73.52	12.07	0.80	m
PFHxDA	2529.417	6.342	M2PFHxDA	10943	6.339	98.04	1.2586	100.69	38.14	1.73	
NMeFOSAA	3876.521	4.384	d3-NMeFOSAA	7981	4.374	103.41	1.1816	94.53	113.39	0.80	m
PFBA	8903.317	0.466	MPFBA	26139	0.463	106.62	0.9178	73.43	114.51	1.40	
PFBS	2320.283	1.507	M3PFBS	9742	1.505	106.45	0.9341	84.25	33.67	1.50	
NMeFOSA	1553.590	5.354	d-NMeFOSA	5932	5.353	98.65	1.2644	101.15	28.47	1.50	
PFDA	3929.421	4.150	M6PFDA	17462	4.149	112.15	0.9690	77.52	50.37	1.49	
PFDoA	2675.300	5.178	MPFDoA	13506	5.186	99.86	1.0347	82.78	10.84	1.97	
NEtFOSA	1739.488	5.695	d-NEtFOSA	6126	5.684	97.77	1.1288	90.30	30.46	1.43	
PFHpA	5352.244	2.798	M4PFHpA	22182	2.797	108.21	1.0139	81.11	234.65	1.50	
PFHxA	5289.220	2.153	M5PFHxA	21834	2.151	105.38	1.0617	84.93	174.24	1.53	
NMeFOSE	2342.025	5.398	d7-NMeFOSE	7616	5.379	104.19	1.0474	83.79	68.00	1.54	
PFHxS	2385.297	2.866	M3PFHxS	10289	2.874	107.76	0.8539	74.74	27.81	0.89	m
PFNA	4670.521	3.670	M9PFNA	22307	3.669	107.91	0.9460	75.68	488.78	1.60	
NEtFOSE	2170.922	5.703	d9-NEtFOSE	11010	5.682	111.65	0.9619	76.95	18.83	1.47	
PFOA	5371.518	3.249	M8PFOA	22909	3.247	104.37	1.0786	86.28	153.41	1.42	
PFOS	3390.525	3.704	M8PFOS	10418	3.702	101.11	1.0217	88.08	26.23	0.79	m
PFPeA	5276.961	1.265	M5PFPeA	17570	1.263	103.50	0.9403	75.23	54.12	1.39	
PFMPA	4758.363	0.698	M5PFPeA	17570	1.263	103.50	0.9691	77.53	161.41	1.43	
PFTA	1998.693	5.946	M2PFTA	9398	5.954	99.36	1.2339	98.71	11.30	1.72	
PFMBA	5661.657	1.547	M5PFHxA	21834	2.151	105.38	1.0418	83.34	5646.75	1.56	
PFTrDA	2801.371	5.625	MPFDoA	13506	5.186	99.86	1.3706	109.64	43.44	1.51	
PFEESA	9317.007	1.877	M3PFHxS	10289	2.874	107.76	1.0360	93.12	42.06	1.44	
PFUnA	3853.950	4.665	M7PFUnA	18209	4.672	109.07	1.0075	80.60	54.53	1.57	
NFDHA	3992.406	2.027	M4PFHpA	22182	2.797	108.21	0.9105	72.84	125.05	1.67	

HFPO-DA



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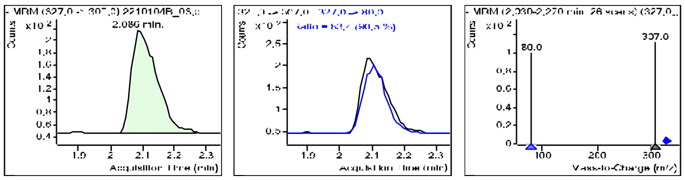

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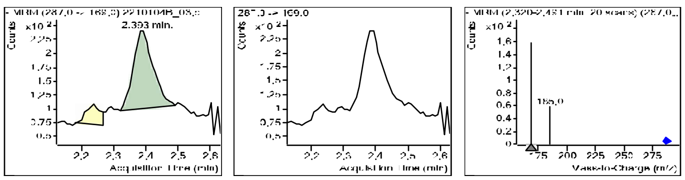

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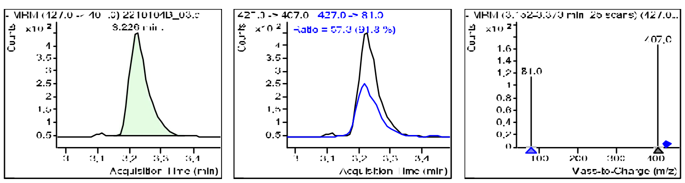

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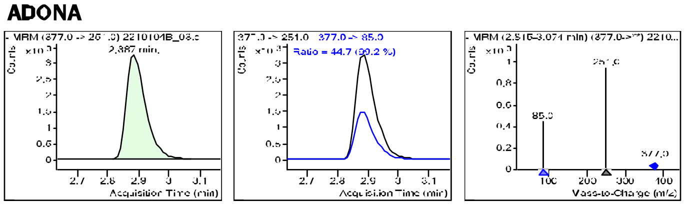

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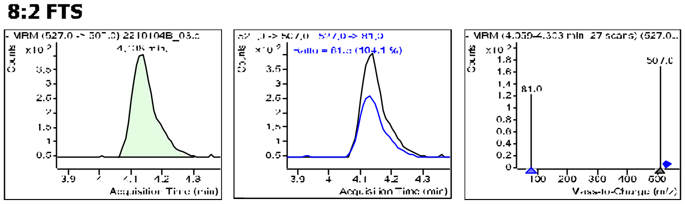

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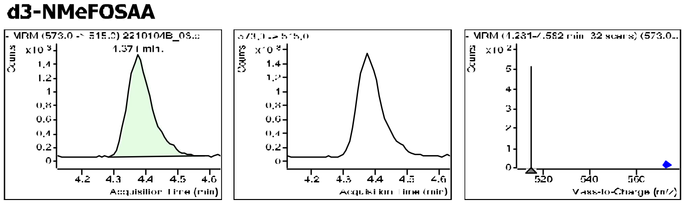

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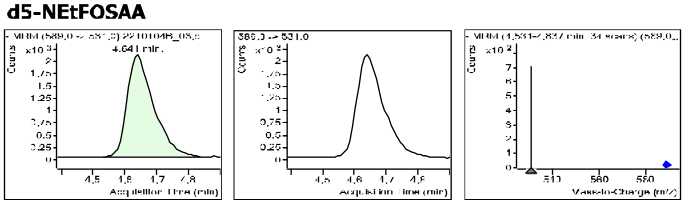

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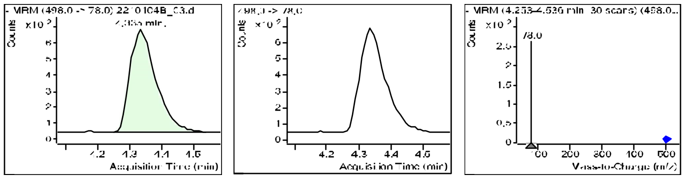

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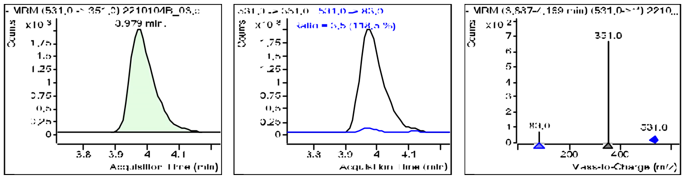

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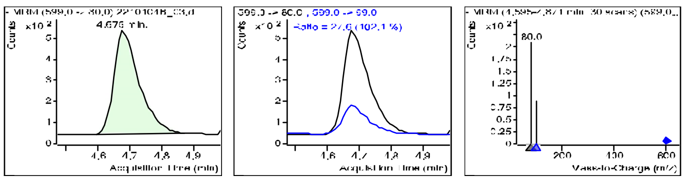

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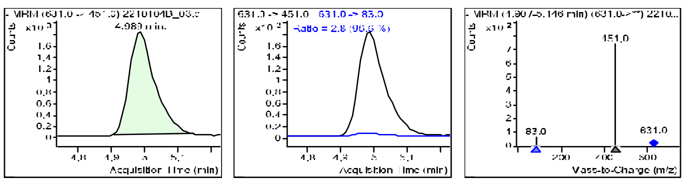

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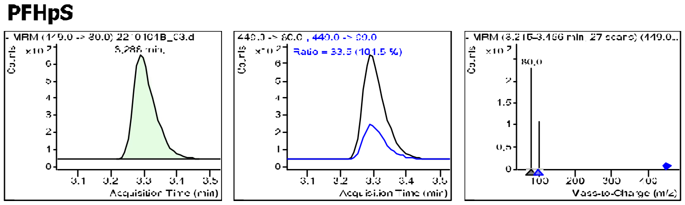

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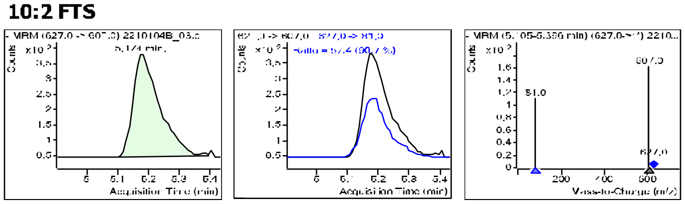

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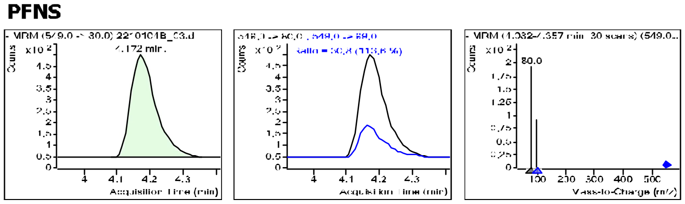

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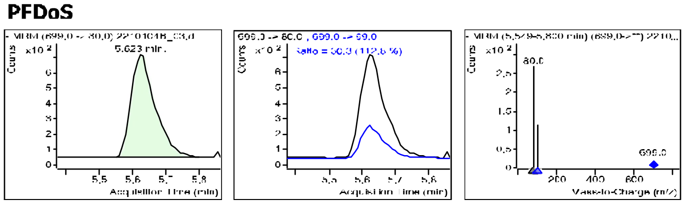

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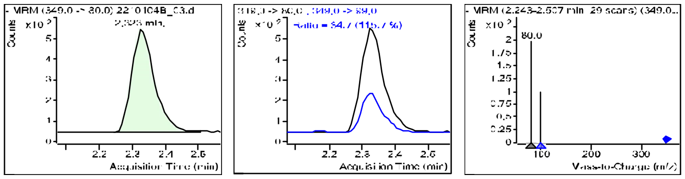

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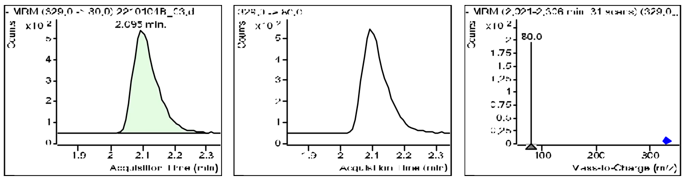

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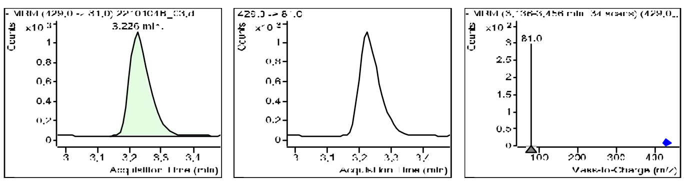

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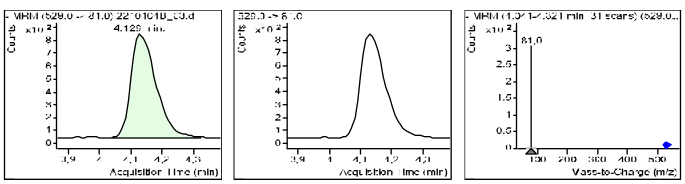

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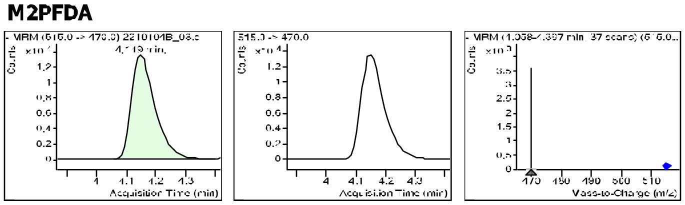

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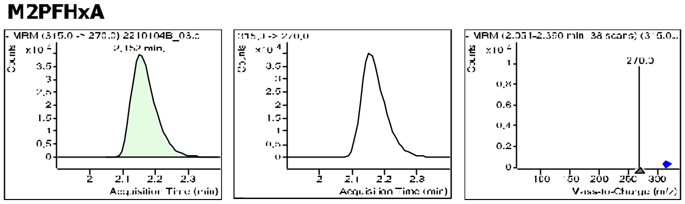

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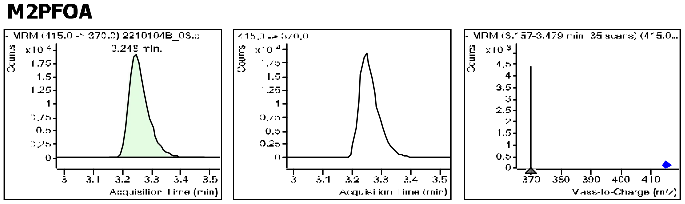

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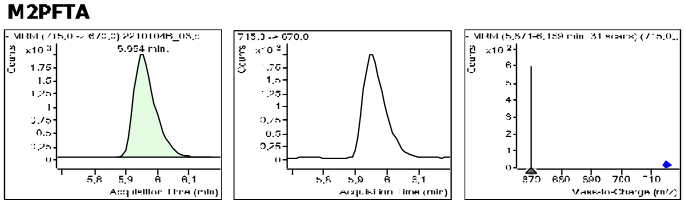

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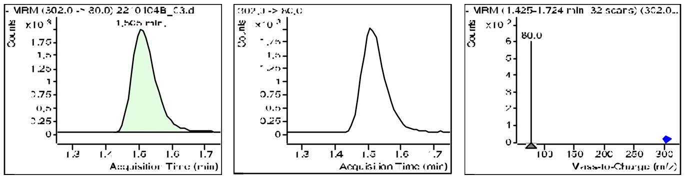

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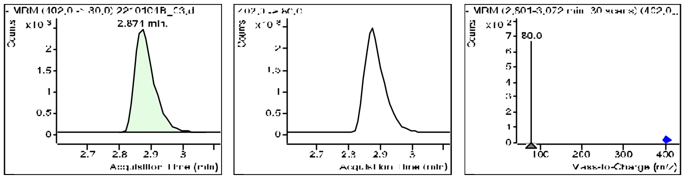

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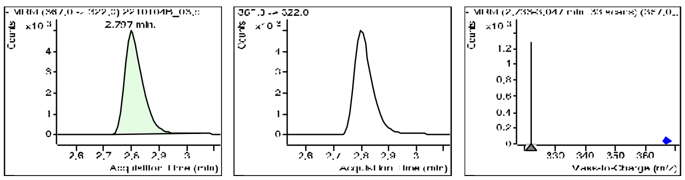

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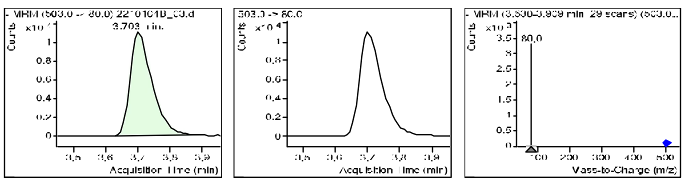

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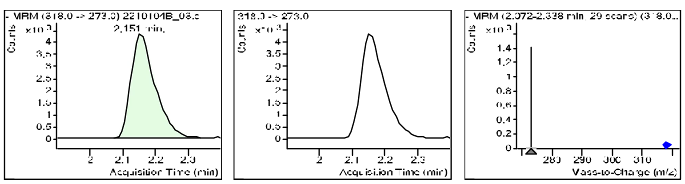

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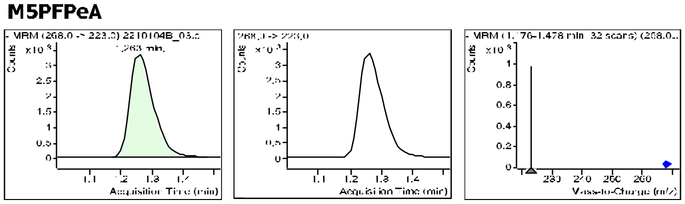

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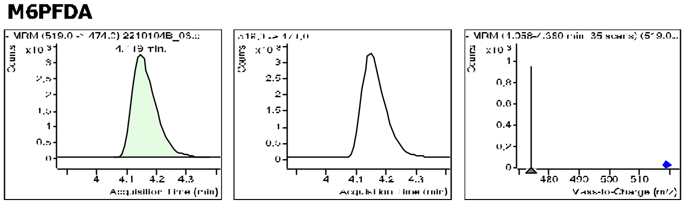

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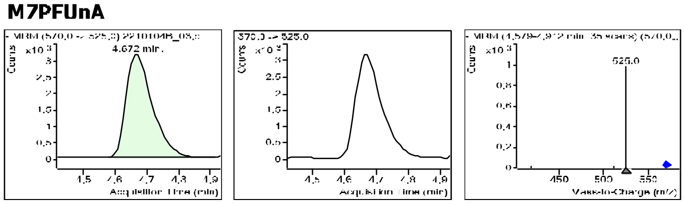

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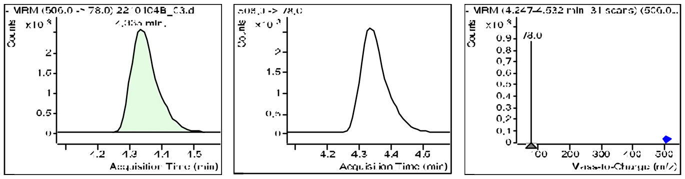

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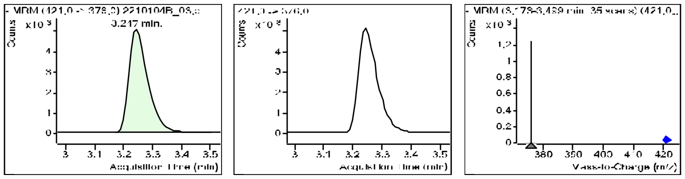

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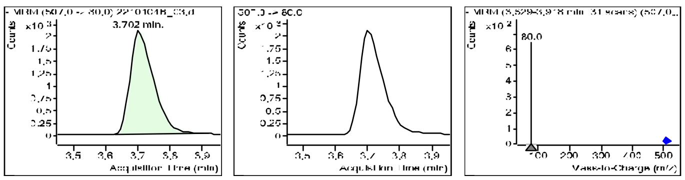

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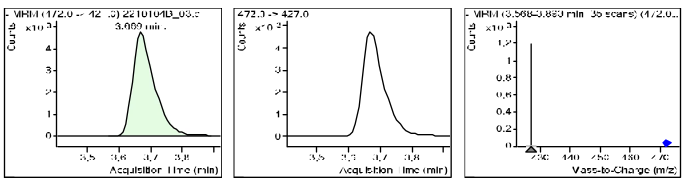

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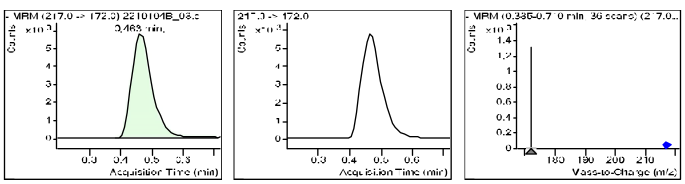

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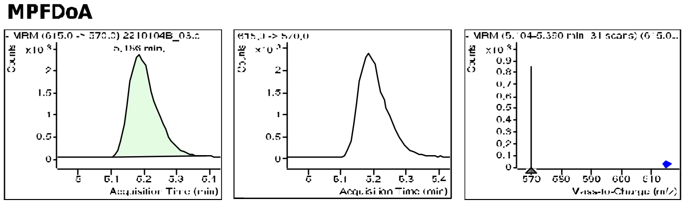

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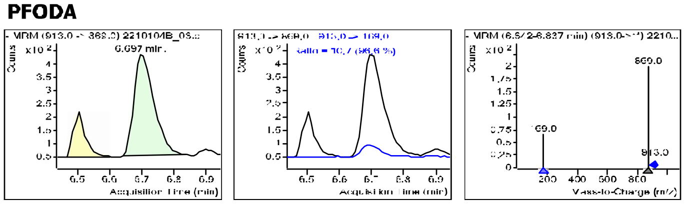

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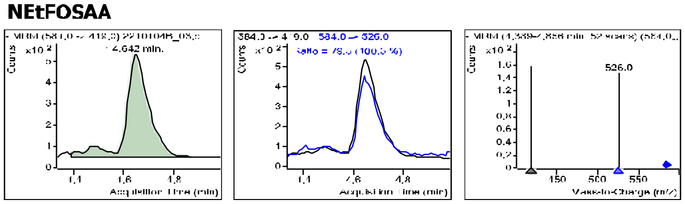

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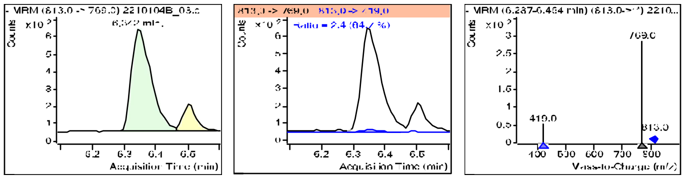

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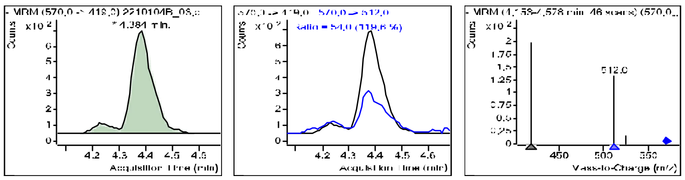

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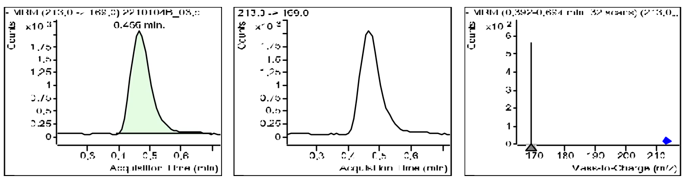

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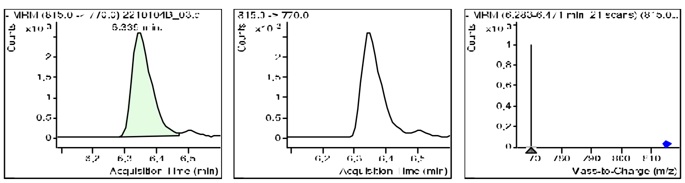

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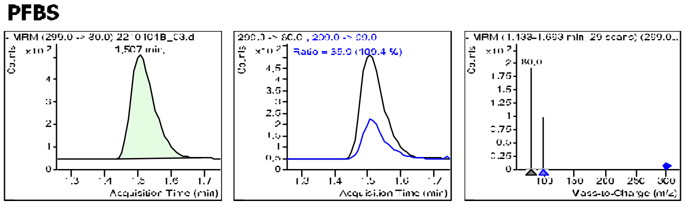

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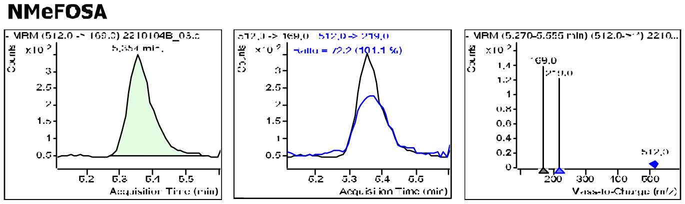

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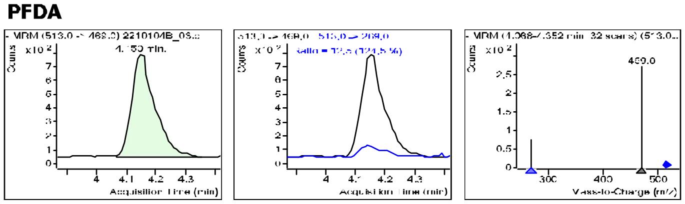

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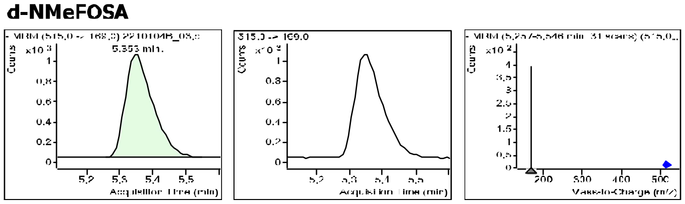

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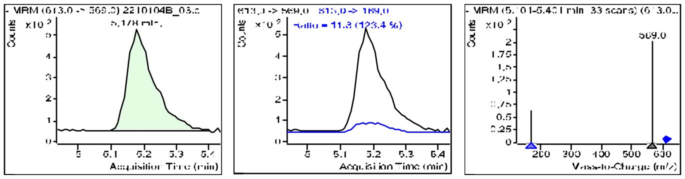

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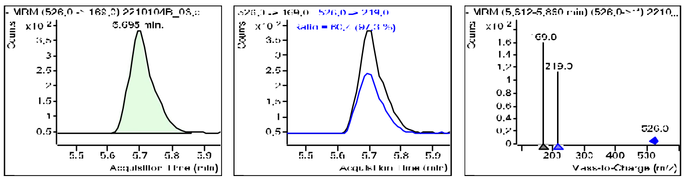

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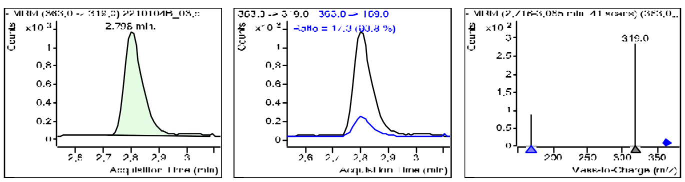

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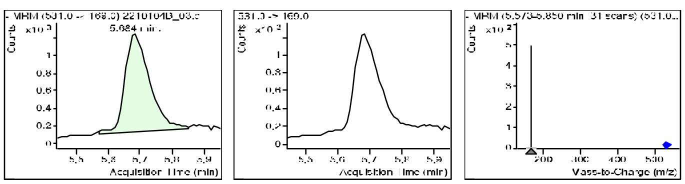

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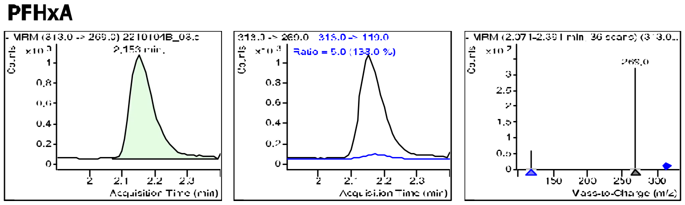

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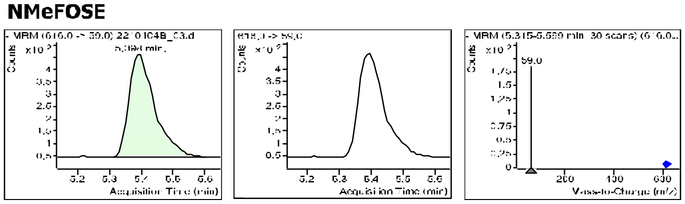

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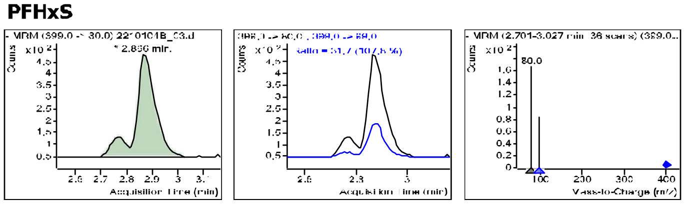

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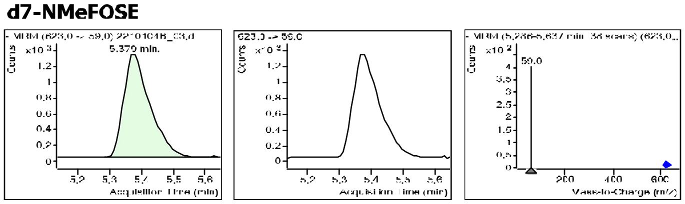

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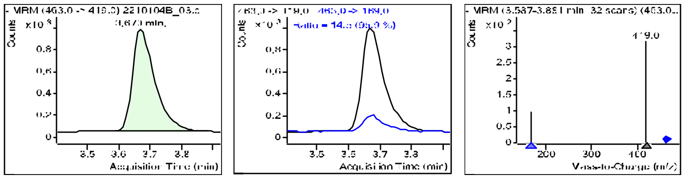

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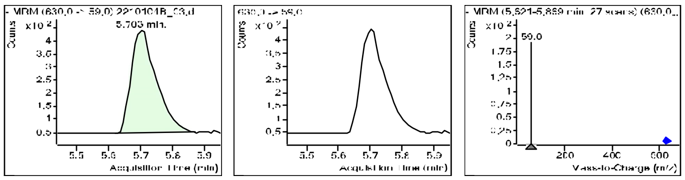

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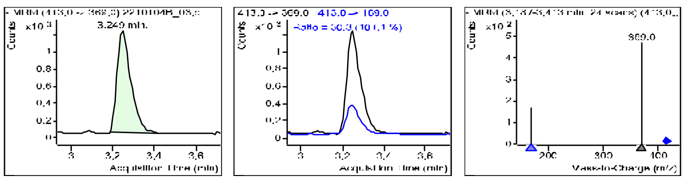

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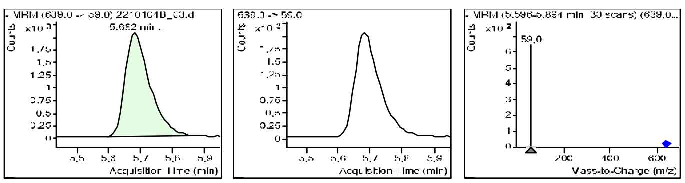

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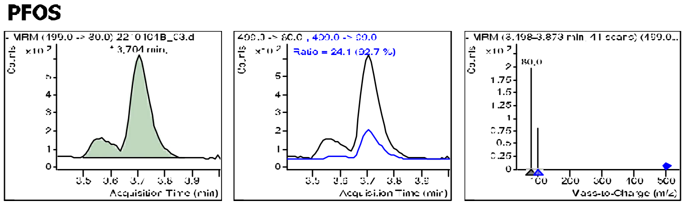

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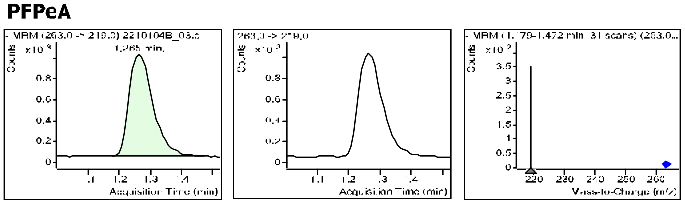

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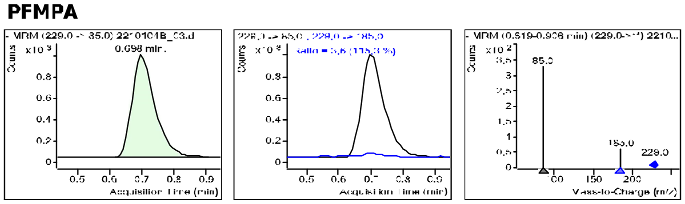

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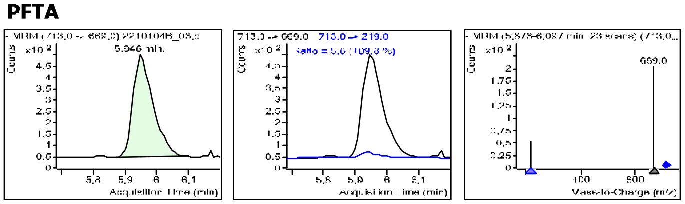

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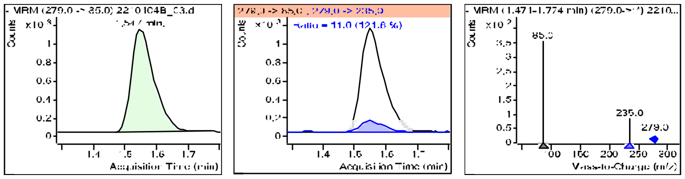

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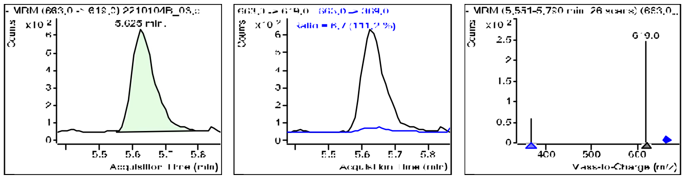

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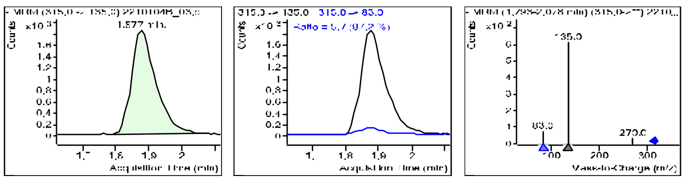

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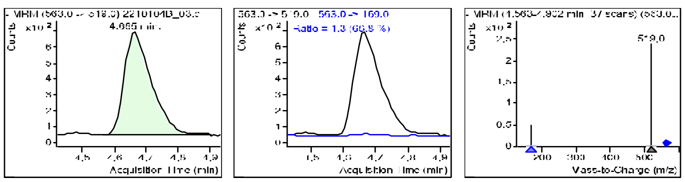

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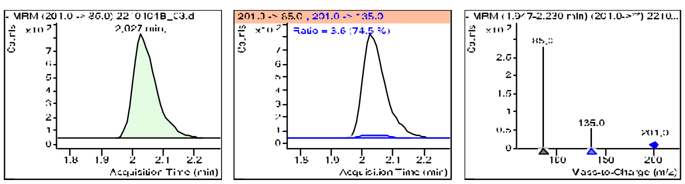
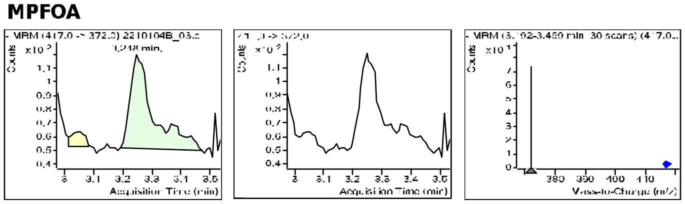


MPFOA



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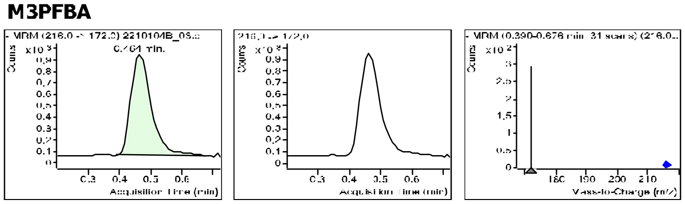
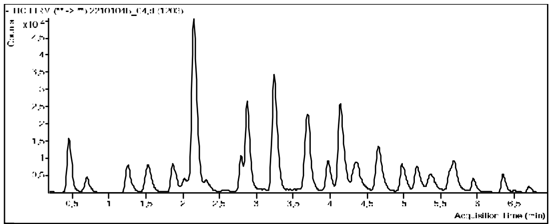


Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_04.d	**Position**	P1-A3	**Samp Name**	1203	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Calibration	**Comment**	MRA,QQQ2;Cal
Acq Date	1/4/2021 17:29						

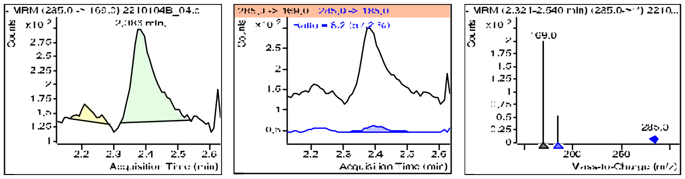
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	74336.243	4.149				107.05	21.4091	107.05	142424.56	1.42	
M2PFHxA	207650.027	2.152				106.90	42.7581	106.90	7340.04	1.59	
M2PFOA	87606.126	3.248				110.77	22.1538	110.77	3683.92	1.42	
M4PFOS	55599.130	3.703				109.99	21.9982	109.99	161.75	1.52	
MPFOA	260.785	3.257				0.00	23.3266	93.31	6.49	1.18	
M3PFBA	4000.892	0.464				0.00	5.4569	109.14	162.78	1.63	
HFPO-DA	852.523	2.386	M3HFPODA	664	2.384	99.23	8.4668	84.67	4.41	1.66	
4:2 FTS	3271.125	2.095	M2 4:2 FTS	2587	2.095	104.81	4.0063	85.51	139.41	1.56	
6:2 FTS	6437.328	3.217	M2 6:2 FTS	4880	3.216	107.96	4.0953	86.13	455.65	1.60	
ADONA	61355.420	2.887	M8PFOA	23073	3.247	105.12	3.9856	84.35	524.46	1.44	
8:2 FTS	7583.961	4.129	M2 8:2 FTS	4092	4.129	98.69	5.1594	107.49	5217.70	1.56	
FOSA	15244.180	4.335	M8FOSA	13814	4.335	102.39	4.0361	80.72	894.14	1.37	
9Cl-PF3ONS	43091.325	3.970	M8PFOS	10700	3.702	103.84	4.2084	90.21	1600.67	1.56	
PFDS	10826.778	4.676	M6PFDA	16850	4.149	108.22	3.9436	81.73	211.85	1.59	
11Cl-PF3OUdS	42018.711	4.979	M8PFOS	10700	3.702	103.84	4.3464	92.18	90.85	1.57	
PFHpS	10790.938	3.288	M8PFOA	23073	3.247	105.12	4.1501	87.10	419.13	1.42	
10:2 FTS	7363.561	5.183	M2 8:2 FTS	4092	4.129	98.69	4.9937	103.60	510.27	1.43	
PFNS	11031.920	4.172	M9PFNA	21337	3.669	103.22	4.0962	85.16	67.66	1.49	
PFDoS	13513.978	5.623	M8PFOS	10700	3.702	103.84	4.1896	86.56	745.38	1.37	
PFPeS	9293.459	2.323	M5PFHxA	20841	2.151	100.58	4.4345	94.25	98.02	1.50	
PFODA	6432.546	6.697	M2PFHxDA	11547	6.348	103.46	4.6803	93.61	25378.83	1.70	
NEtFOSAA	13161.617	4.651	d5-NEtFOSAA	11476	4.641	105.94	4.0554	81.11	INF	0.82	m
PFHxDA	10379.838	6.342	M2PFHxDA	11547	6.348	103.46	4.8946	97.89	404.90	1.73	
NMeFOSAA	14407.076	4.375	d3-NMeFOSAA	7968	4.365	103.25	4.3983	87.97	63.42	0.90	m
PFBA	38450.210	0.466	MPFBA	25509	0.463	104.06	4.0615	81.23	155.63	1.31	
PFBS	8996.201	1.507	M3PFBS	9690	1.505	105.88	3.6412	82.10	869.54	1.50	
NMeFOSA	5891.799	5.354	d-NMeFOSA	5768	5.353	95.92	4.9316	98.63	192.15	1.58	
PFDA	15950.945	4.150	M6PFDA	16850	4.149	108.22	4.0764	81.53	446.82	1.49	
PFDoA	12908.951	5.187	MPFDoA	13532	5.177	100.06	4.9831	99.66	396.10	1.48	
NEtFOSA	6291.918	5.695	d-NEtFOSA	6350	5.684	101.35	3.9387	78.77	15.68	1.43	
PFHpA	19789.090	2.798	M4PFHpA	21342	2.797	104.11	3.8963	77.93	78.92	1.42	
PFHxA	19829.209	2.153	M5PFHxA	20841	2.151	100.58	4.1699	83.40	613.83	1.46	
NMeFOSE	8709.206	5.388	d7-NMeFOSE	7275	5.379	99.52	4.0774	81.55	213.34	1.54	
PFHxS	10197.146	2.875	M3PFHxS	9702	2.874	101.61	3.8713	84.71	470.72	0.80	m
PFNA	19190.530	3.670	M9PFNA	21337	3.669	103.22	4.0636	81.27	677.35	1.52	
NEtFOSE	9636.742	5.703	d9-NEtFOSE	9901	5.682	100.41	4.7477	94.95	294.13	1.40	
PFOA	21723.609	3.240	M8PFOA	23073	3.247	105.12	4.3309	86.62	359.77	1.70	
PFOS	13315.296	3.704	M8PFOS	10700	3.702	103.84	3.9068	84.20	INF	0.78	m
PFPeA	22502.710	1.265	M5PFPeA	17771	1.263	104.68	3.9647	79.29	1595.73	1.33	
PFMPA	19466.667	0.698	M5PFPeA	17771	1.263	104.68	3.9200	78.40	586.13	1.36	
PFTA	7628.801	5.946	M2PFTA	9200	5.954	97.27	4.8108	96.22	156.00	1.72	
PFMBA	22962.442	1.547	M5PFHxA	20841	2.151	100.58	4.4266	88.53	289.84	1.56	
PFTrDA	10522.434	5.625	MPFDoA	13532	5.177	100.06	5.1381	102.76	130.09	1.60	
PFEESA	37674.793	1.876	M3PFHxS	9702	2.874	101.61	4.4426	99.83	494.29	1.30	
PFUnA	14767.910	4.665	M7PFUnA	17240	4.662	103.26	4.0775	81.55	INF	1.57	
NFDHA	16312.406	2.027	M4PFHpA	21342	2.797	104.11	3.8668	77.34	905.36	1.43	

HFPO-DA



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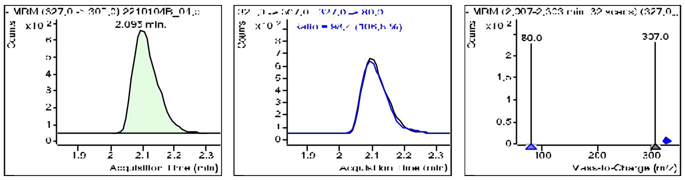

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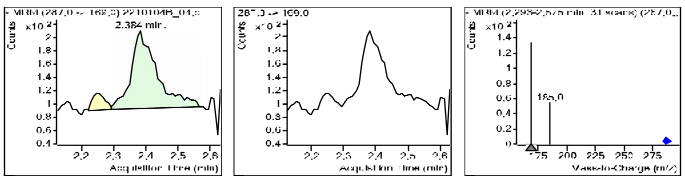

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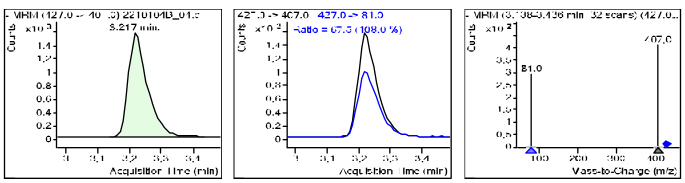
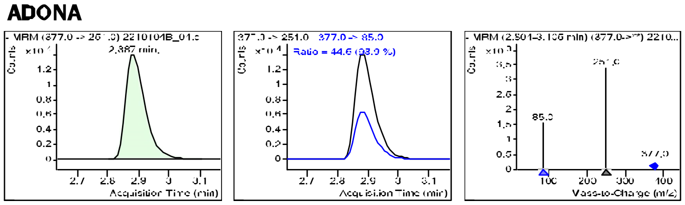
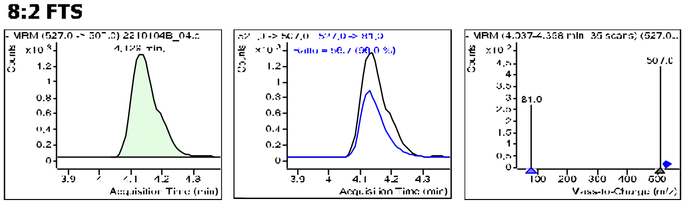


ADONA



8:2 FTS



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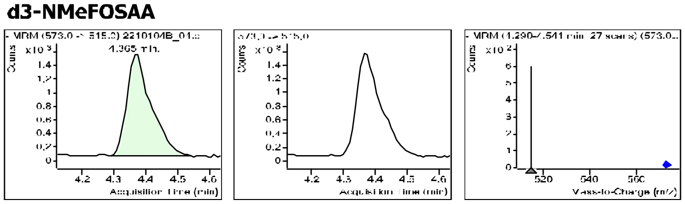

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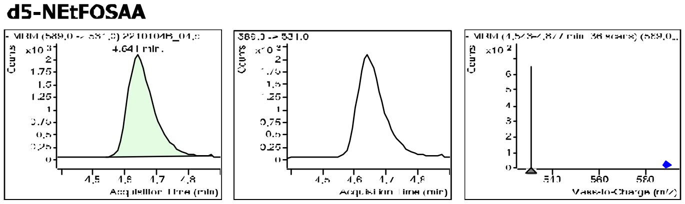

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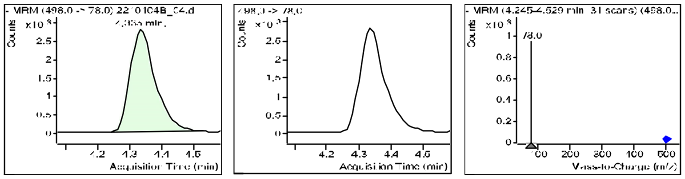

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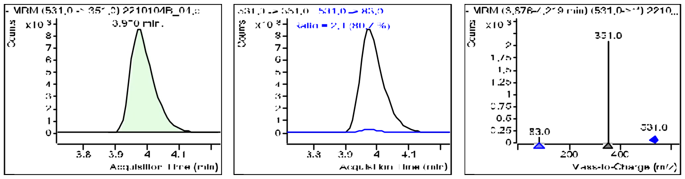

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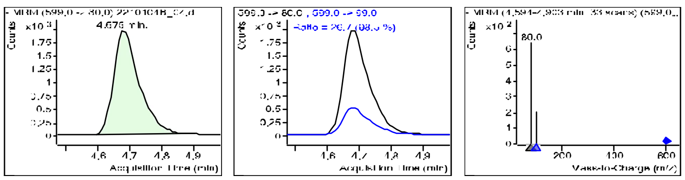

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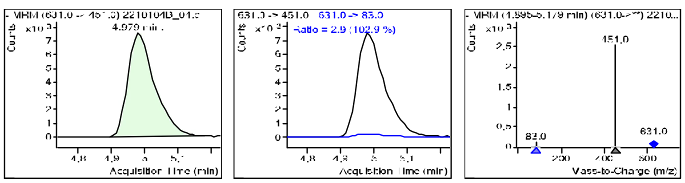

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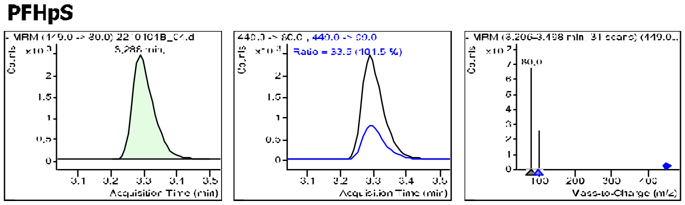

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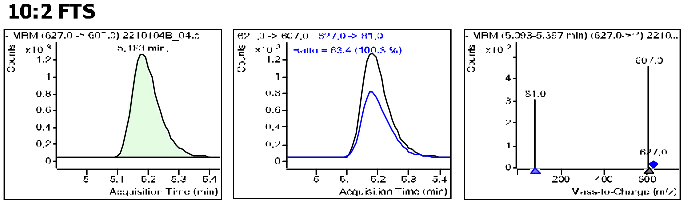

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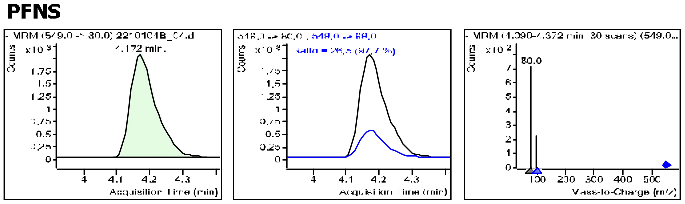

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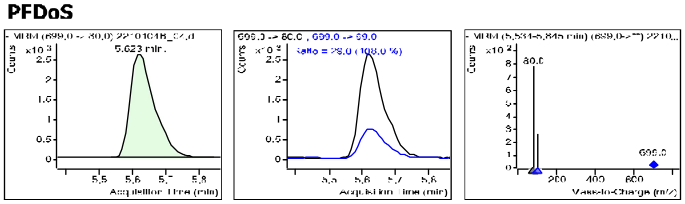

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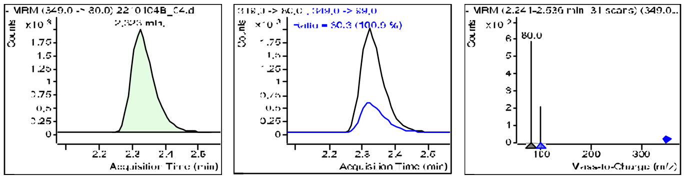

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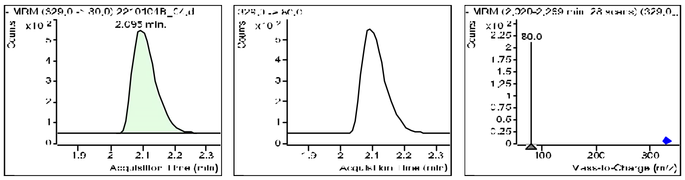
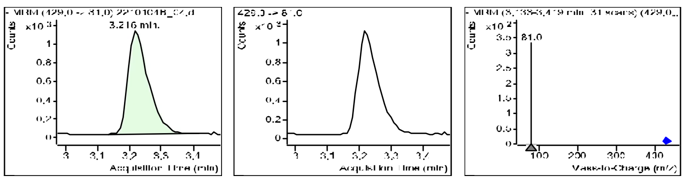


M2 6:2 FTS



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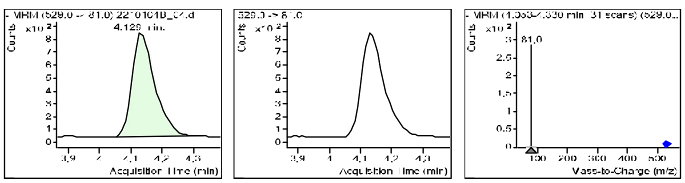

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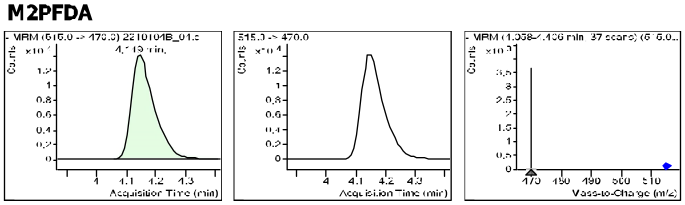

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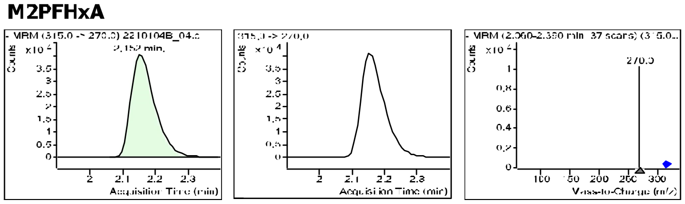

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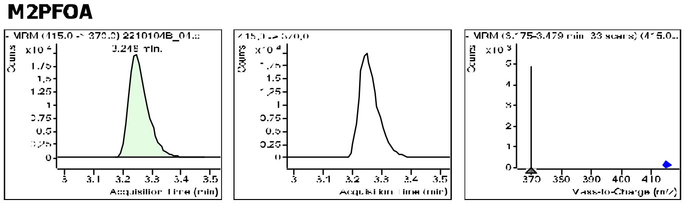

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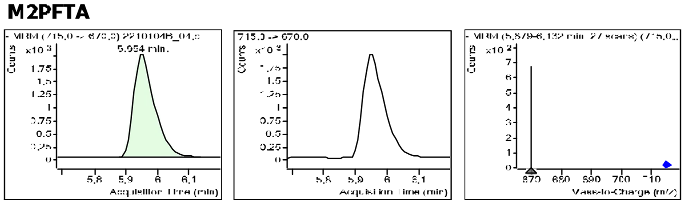

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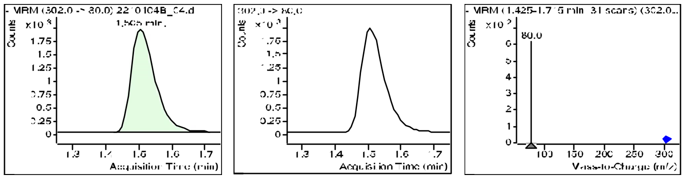

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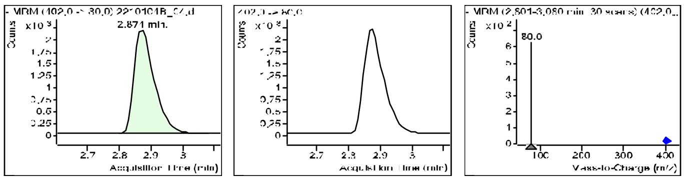

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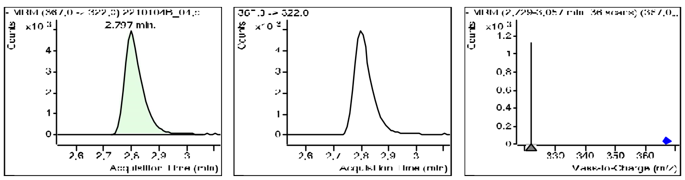

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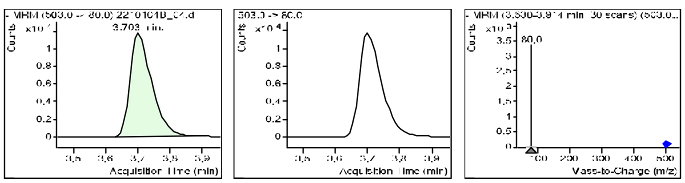

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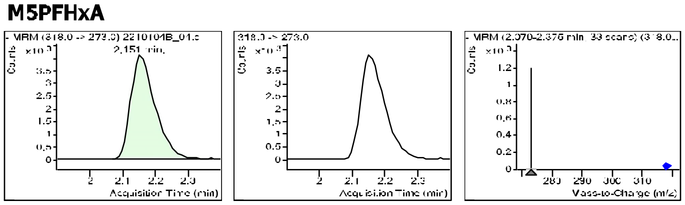

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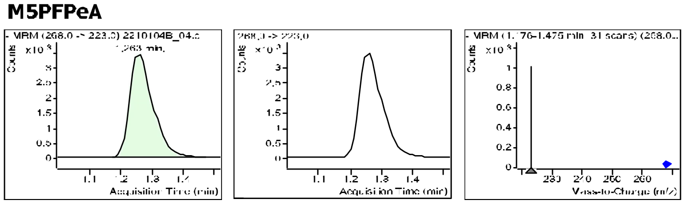

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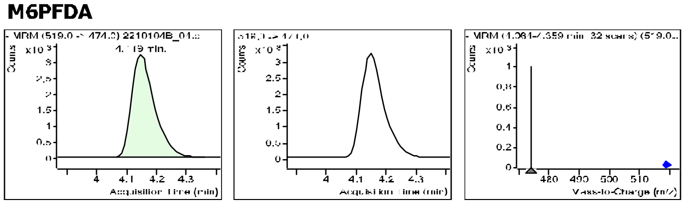

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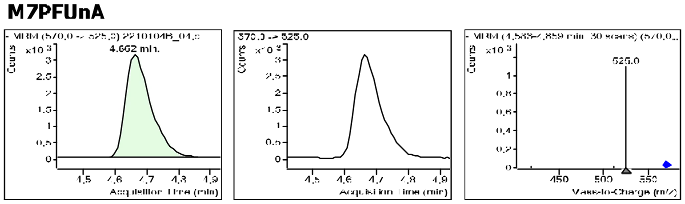

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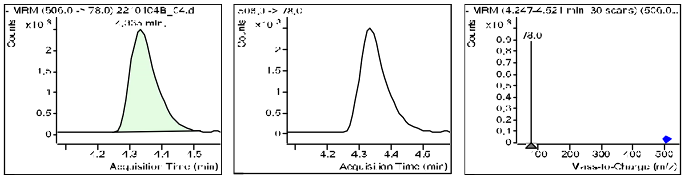

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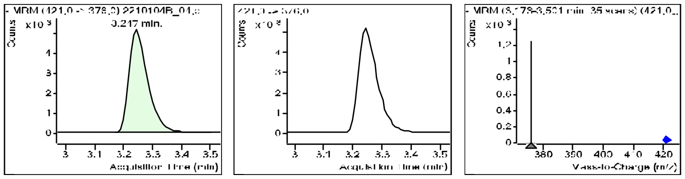

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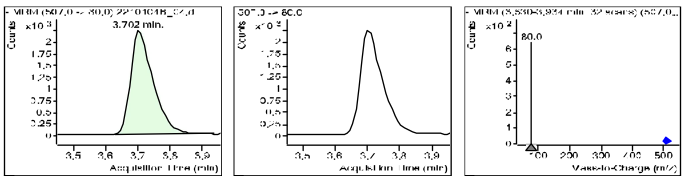

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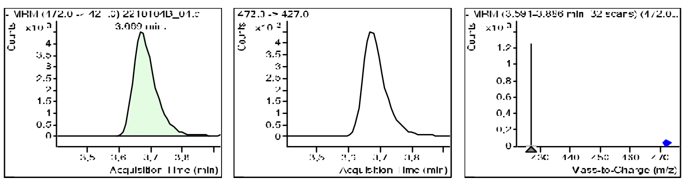

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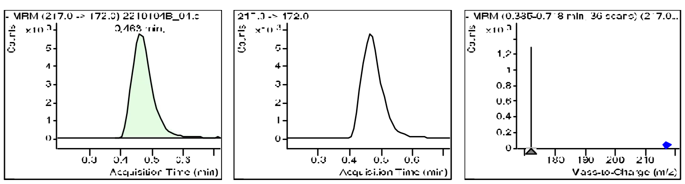

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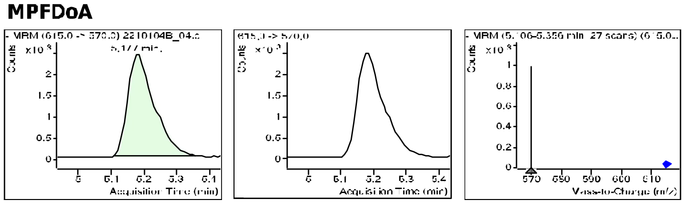

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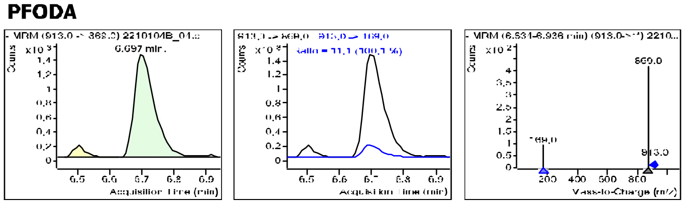

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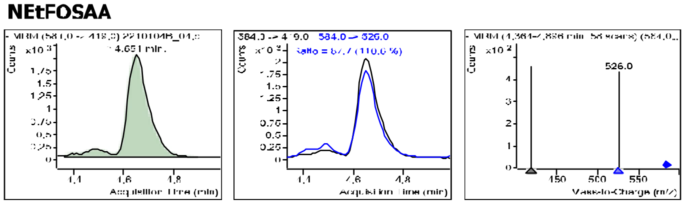

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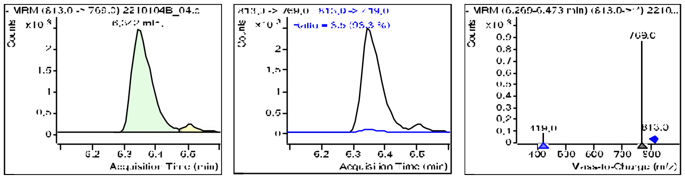

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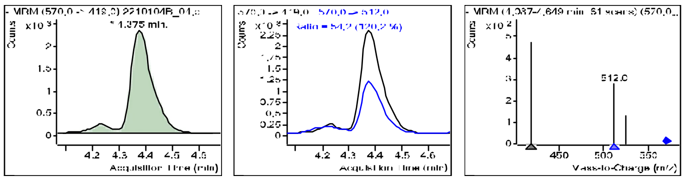

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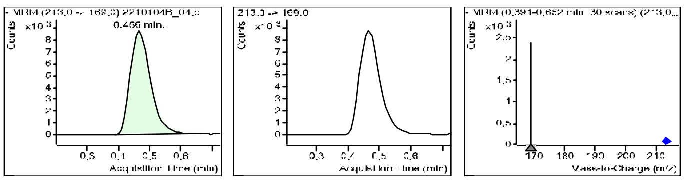

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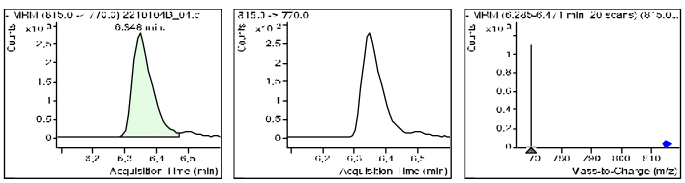

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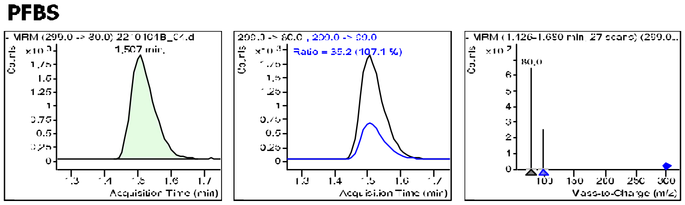

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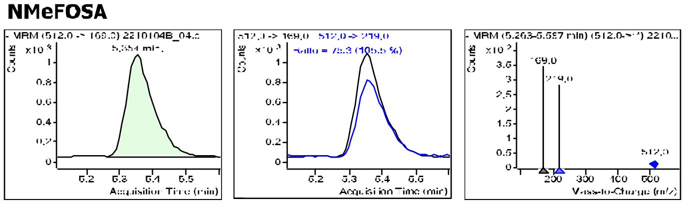

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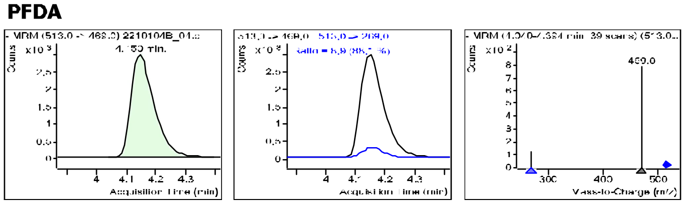

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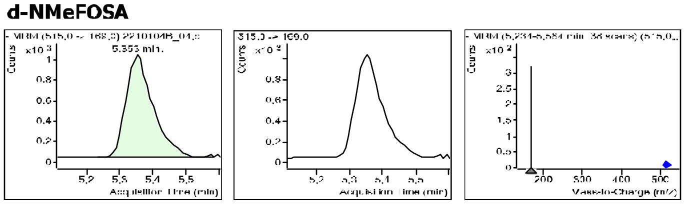

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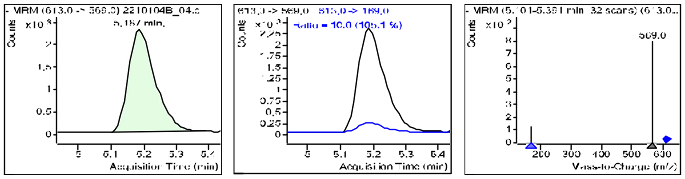

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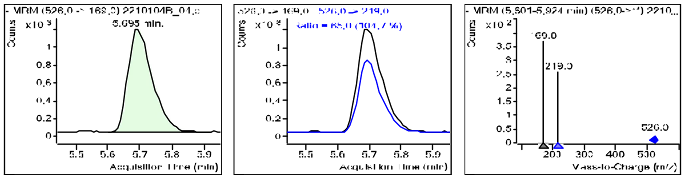

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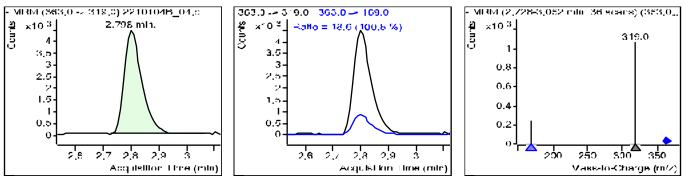

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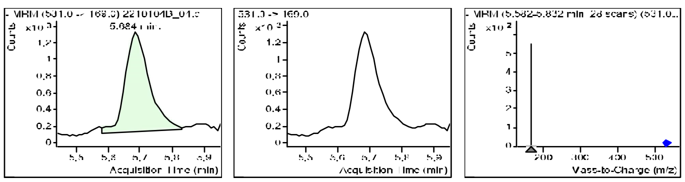

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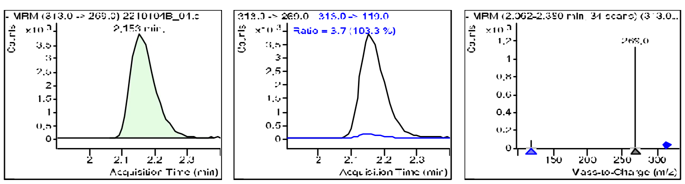

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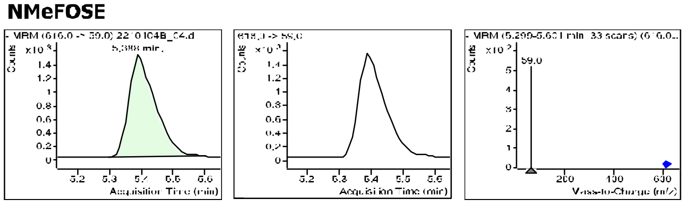

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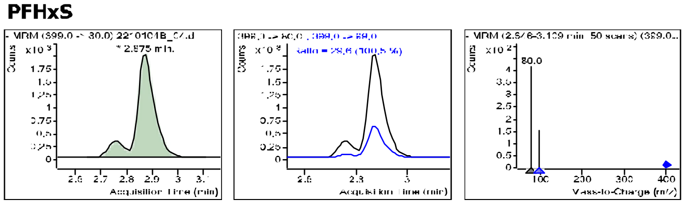

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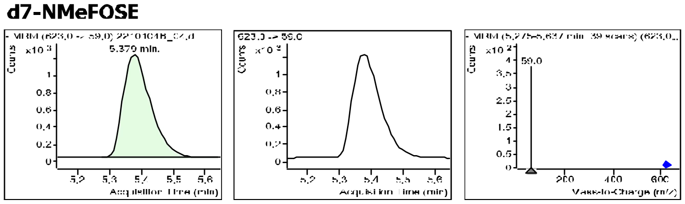

Quantitative Analysis Sample Report

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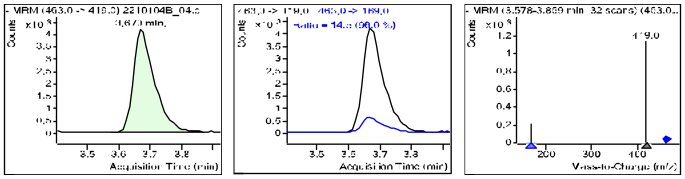

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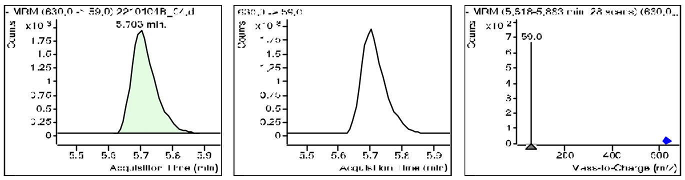

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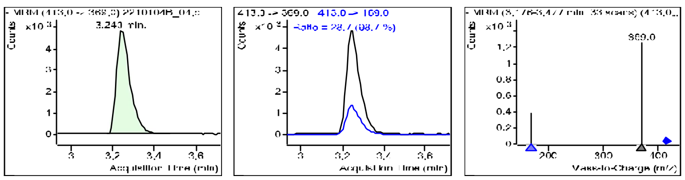

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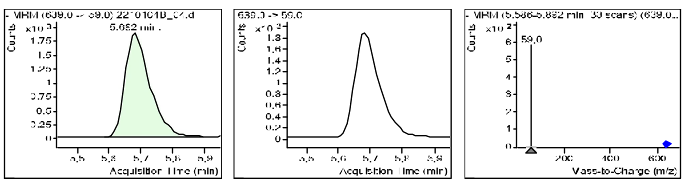

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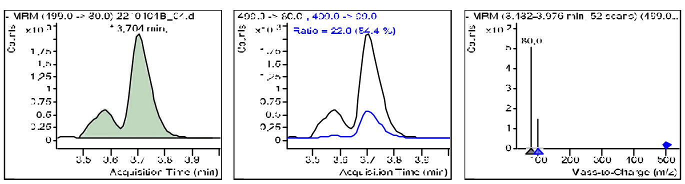

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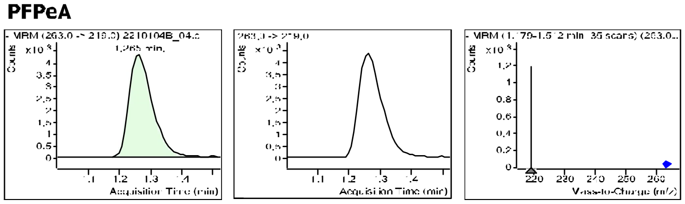

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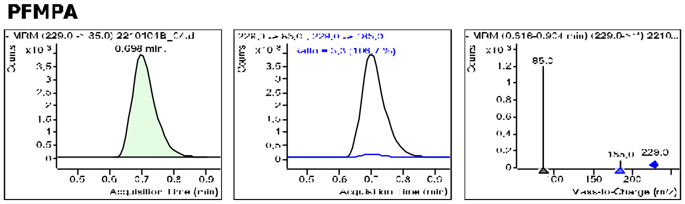

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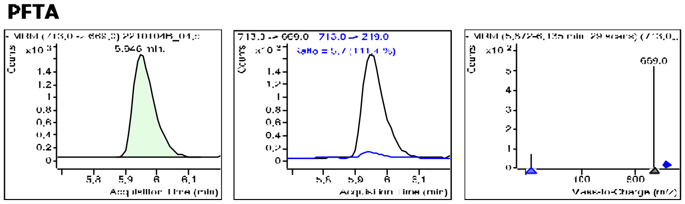

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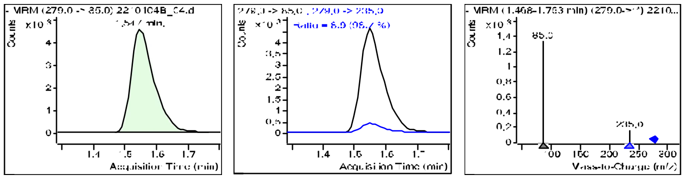

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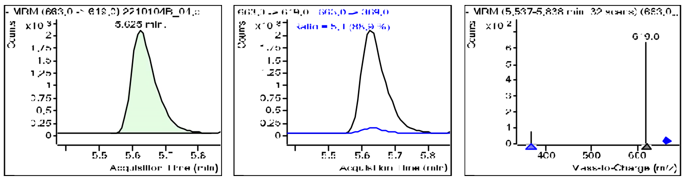

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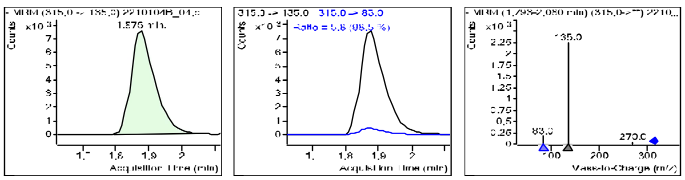

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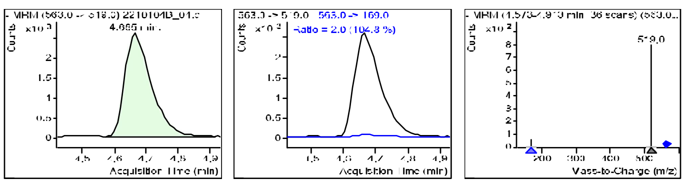

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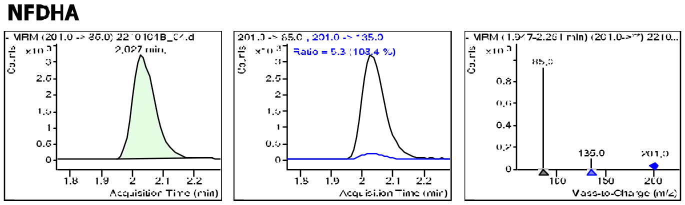

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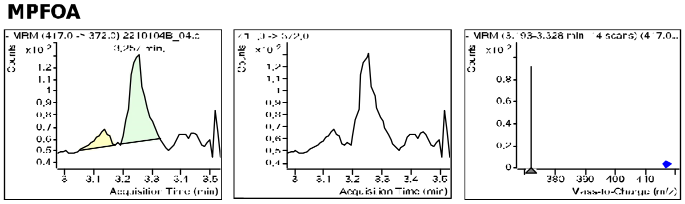

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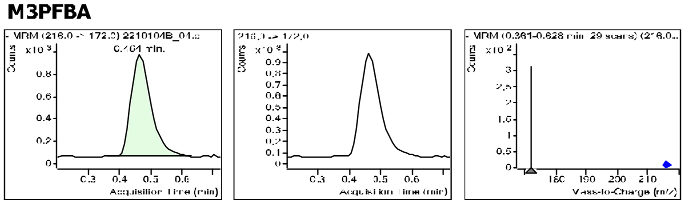

Quantitative Analysis Sample Report

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Last Calib Update 1/5/2021 14:27

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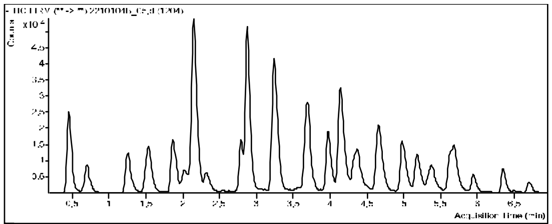
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Calibration	**Comment**	MRA,QQQ2;Cal
Acq Date	1/4/2021 17:42						

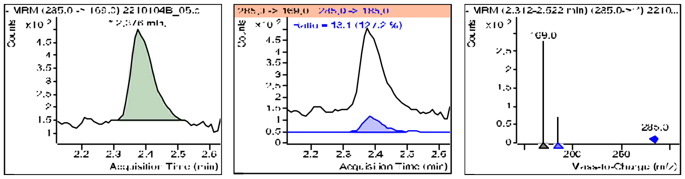
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	74992.174	4.149				107.99	21.5980	107.99	1723.00	1.42	
M2PFHxA	198751.124	2.152				102.31	40.9257	102.31	2615.04	1.59	
M2PFOA	82679.694	3.248				104.54	20.9080	104.54	2402.09	1.42	
M4PFOS	52828.369	3.703				104.51	20.9019	104.51	4085.93	1.52	
MPFOA	261.377	3.238				0.00	23.3796	93.52	7.99	3.70	
M3PFBA	3750.010	0.464				0.00	5.1148	102.30	38.05	1.52	
HFPO-DA	1697.622	2.376	M3HFPODA	651	2.384	97.35	17.1846	85.92	14.17	1.58	m
4:2 FTS	6823.245	2.095	M2 4:2 FTS	2622	2.095	106.23	8.2456	88.00	527.65	1.64	
6:2 FTS	13732.680	3.226	M2 6:2 FTS	4679	3.225	103.51	9.1127	95.82	1183.15	1.42	
ADONA	129526.814	2.887	M8PFOA	22855	3.247	104.13	8.4942	89.89	9835.48	1.44	
8:2 FTS	14464.663	4.138	M2 8:2 FTS	4083	4.128	98.47	9.8631	102.74	77.32	1.42	
FOSA	29848.975	4.335	M8FOSA	13500	4.335	100.07	8.0864	80.86	1287.46	1.50	
9Cl-PF3ONS	89694.662	3.970	M8PFOS	10156	3.702	98.57	9.2285	98.91	3979.16	1.56	
PFDS	21007.123	4.685	M6PFDA	15157	4.149	97.34	8.5066	88.15	118.09	1.39	
11Cl-PF3OUdS	84796.132	4.979	M8PFOS	10156	3.702	98.57	9.2404	97.99	5805.30	1.57	
PFHpS	21867.769	3.288	M8PFOA	22855	3.247	104.13	8.4904	89.09	2504.39	1.60	
10:2 FTS	15103.372	5.183	M2 8:2 FTS	4083	4.128	98.47	10.2663	106.50	160.55	1.43	
PFNS	22046.085	4.172	M9PFNA	21148	3.669	102.30	8.2591	85.85	1616.87	1.49	
PFDoS	27564.711	5.623	M8PFOS	10156	3.702	98.57	9.0078	93.00	1093.39	1.37	
PFPeS	19006.200	2.323	M5PFHxA	21054	2.161	101.61	8.9773	95.40	671.83	1.50	
PFODA	12350.605	6.697	M2PFHxDA	11171	6.348	100.09	9.2890	92.89	1446.22	1.60	
NEtFOSAA	27537.940	4.651	d5-NEtFOSAA	10554	4.641	97.43	9.2263	92.26	37.46	0.88	m
PFHxDA	20076.150	6.342	M2PFHxDA	11171	6.348	100.09	9.7858	97.86	883.91	1.63	
NMeFOSAA	28814.778	4.384	d3-NMeFOSAA	7393	4.374	95.79	9.4816	94.82	37.11	1.05	m
PFBA	80167.086	0.466	MPFBA	25001	0.463	101.98	8.6403	86.40	270.41	1.31	
PFBS	17888.485	1.507	M3PFBS	9204	1.505	100.57	7.6228	85.94	135.19	1.36	
NMeFOSA	11701.624	5.364	d-NMeFOSA	6082	5.344	101.13	9.2900	92.90	167.62	1.28	
PFDA	30892.942	4.141	M6PFDA	15157	4.149	97.34	8.7770	87.77	696.69	1.66	
PFDoA	24806.757	5.187	MPFDoA	12794	5.186	94.60	10.1287	101.29	465.33	1.55	
NEtFOSA	12783.469	5.695	d-NEtFOSA	6515	5.684	103.99	7.7992	77.99	52.99	1.50	
PFHpA	40936.365	2.798	M4PFHpA	21024	2.797	102.56	8.1822	81.82	269.88	1.42	
PFHxA	41550.419	2.153	M5PFHxA	21054	2.161	101.61	8.6492	86.49	1607.08	1.62	
NMeFOSE	18682.596	5.398	d7-NMeFOSE	7171	5.379	98.10	8.8732	88.73	1839.70	1.47	
PFHxS	20323.935	2.866	M3PFHxS	10096	2.874	105.73	7.4149	81.13	396.84	0.83	m
PFNA	39779.425	3.670	M9PFNA	21148	3.669	102.30	8.4986	84.99	1551.72	1.52	
NEtFOSE	19912.927	5.703	d9-NEtFOSE	10054	5.682	101.96	9.6610	96.61	299.72	1.40	
PFOA	44148.897	3.240	M8PFOA	22855	3.247	104.13	8.8856	88.86	338.77	1.70	
PFOS	26926.660	3.704	M8PFOS	10156	3.702	98.57	8.3231	89.69	201.49	0.79	m
PFPeA	44607.938	1.265	M5PFPeA	17092	1.263	100.68	8.1714	81.71	2789.11	1.33	
PFMPA	40611.322	0.698	M5PFPeA	17092	1.263	100.68	8.5025	85.02	2083.59	1.36	
PFTA	15412.851	5.946	M2PFTA	9145	5.954	96.70	9.7773	97.77	532.69	1.52	
PFMBA	46608.528	1.547	M5PFHxA	21054	2.161	101.61	8.8940	88.94	87.36	1.48	
PFTrDA	20434.843	5.625	MPFDoA	12794	5.186	94.60	10.5543	105.54	104.04	1.60	
PFEESA	76620.398	1.876	M3PFHxS	10096	2.874	105.73	8.6826	97.56	2880.54	1.30	
PFUnA	29653.967	4.665	M7PFUnA	16783	4.662	100.52	8.4105	84.11	215.07	1.57	
NFDHA	32715.629	2.036	M4PFHpA	21024	2.797	102.56	7.8726	78.73	123.86	1.25	

HFPO-DA



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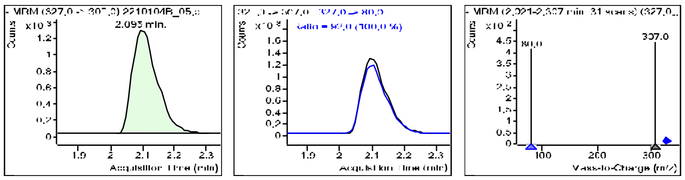

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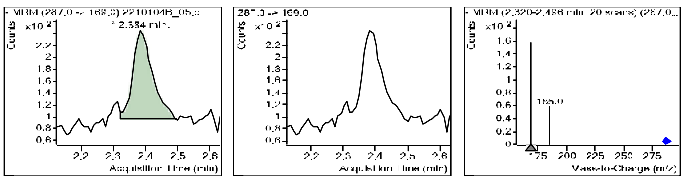
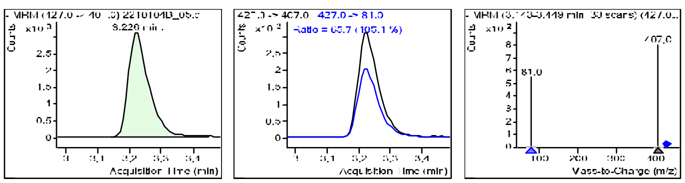
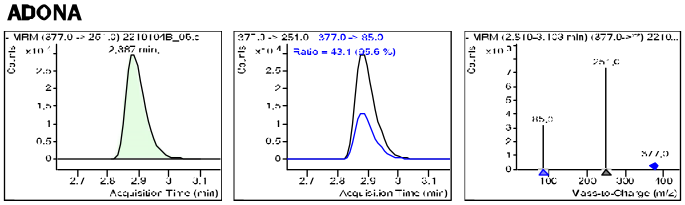


6:2 FTS



ADONA



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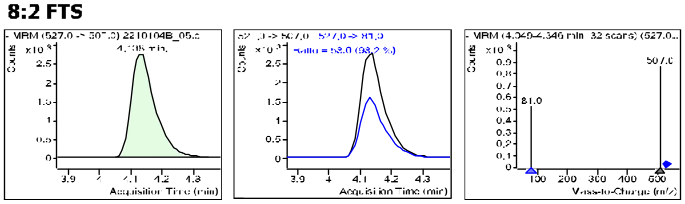

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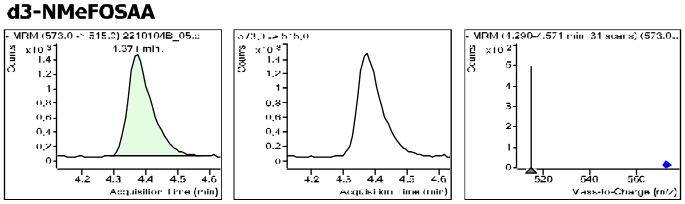

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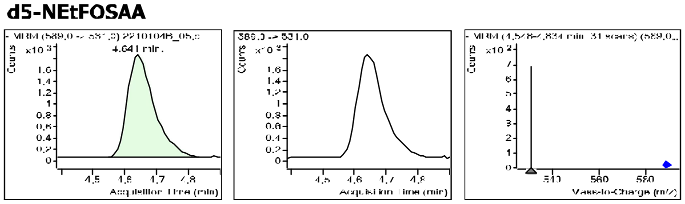
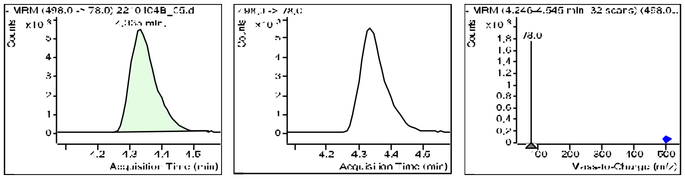


FOSA



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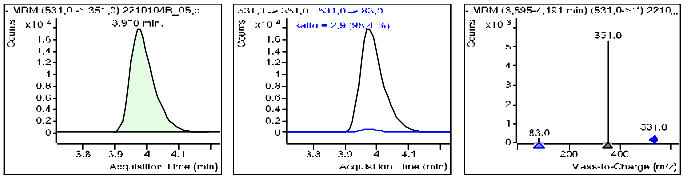

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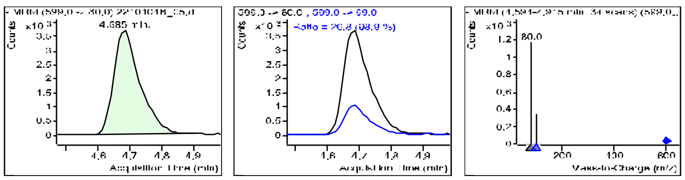

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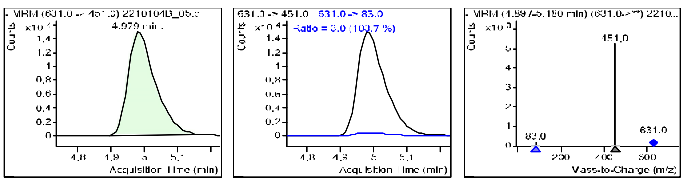

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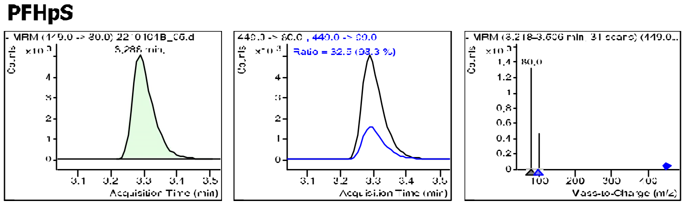
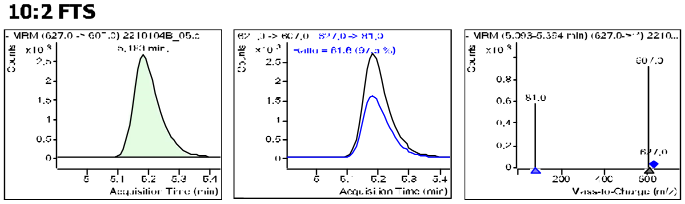


10:2 FTS



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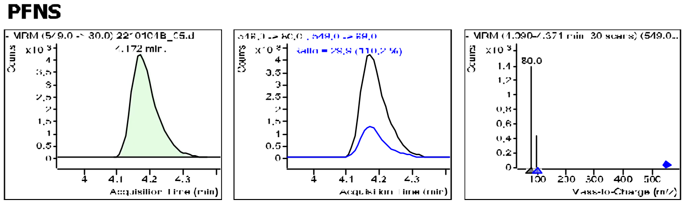

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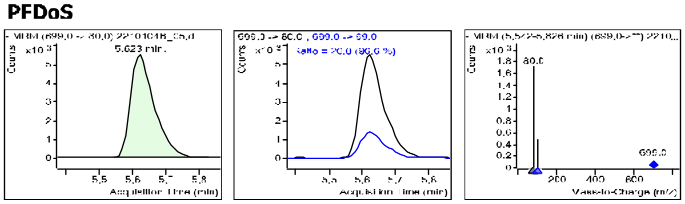

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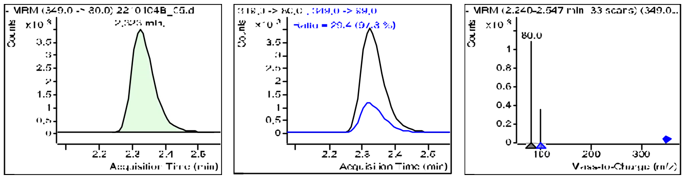

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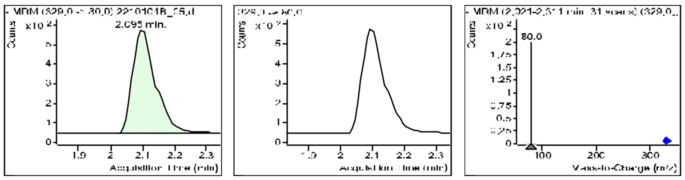
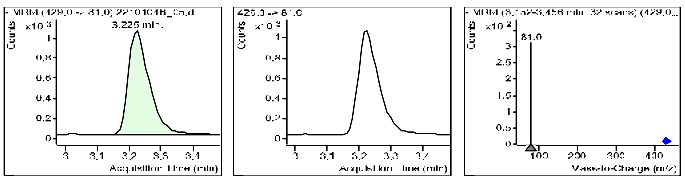
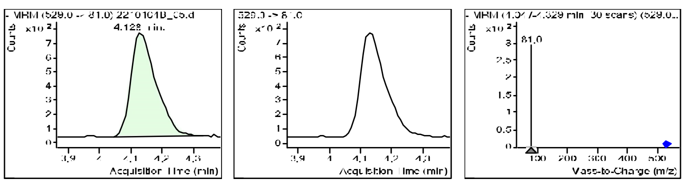


M2 6:2 FTS



M2 8:2 FTS



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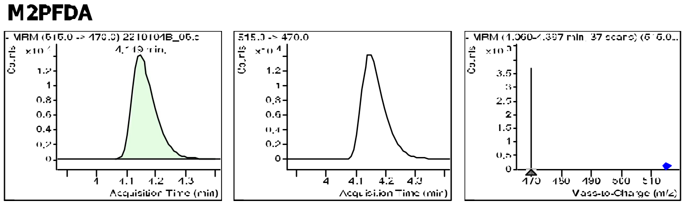

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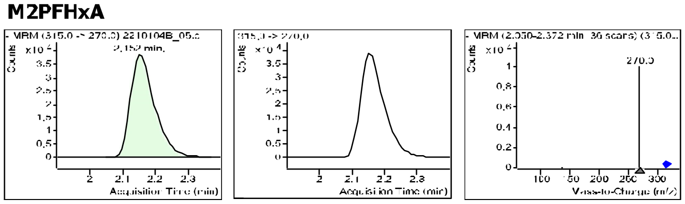

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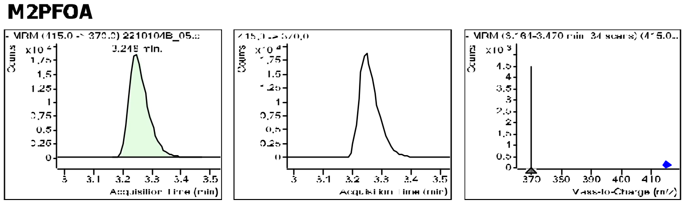

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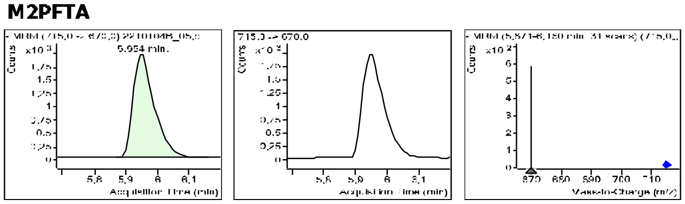

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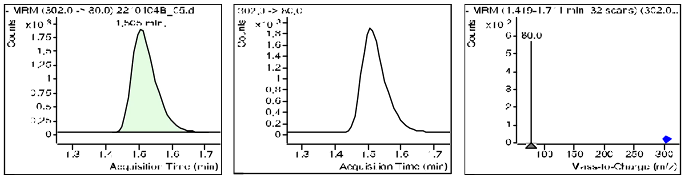

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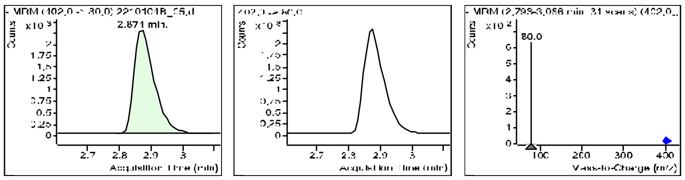

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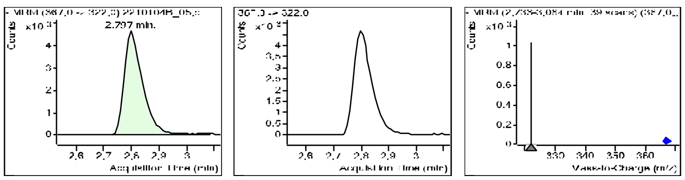

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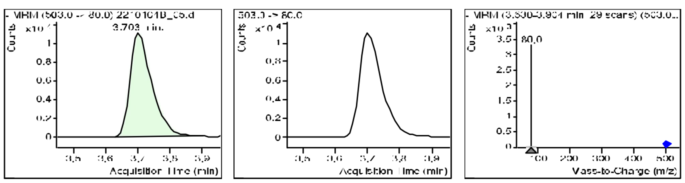

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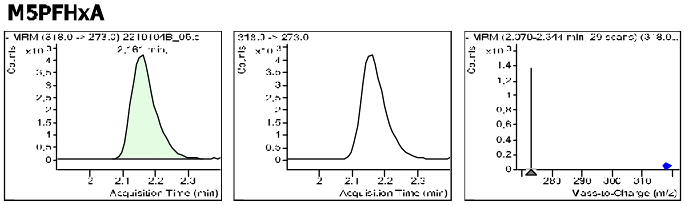

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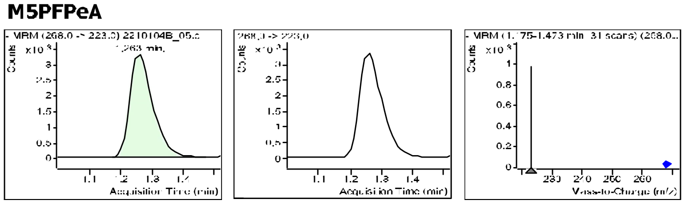

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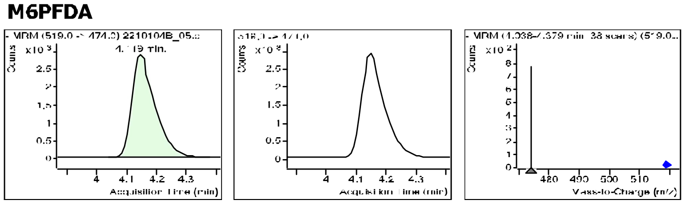

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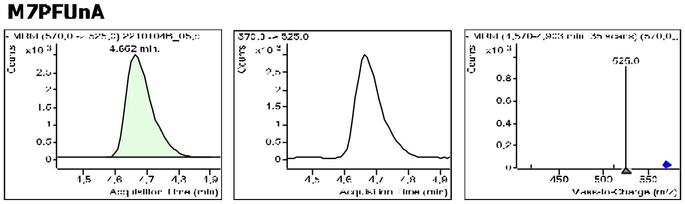

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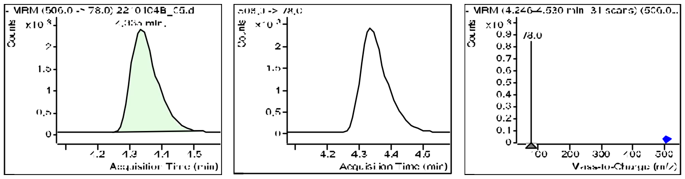

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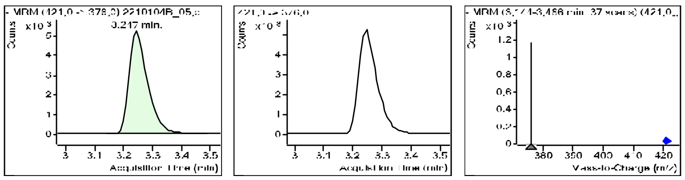

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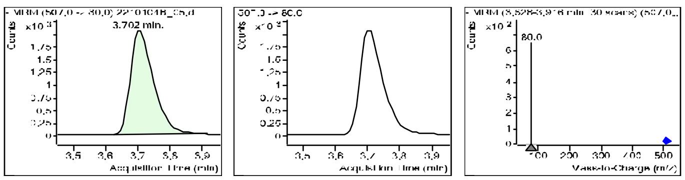

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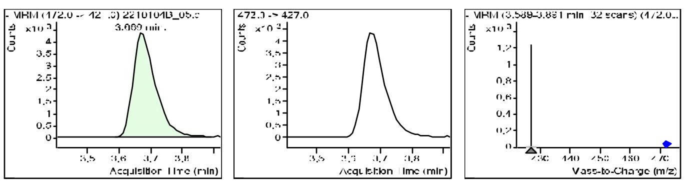

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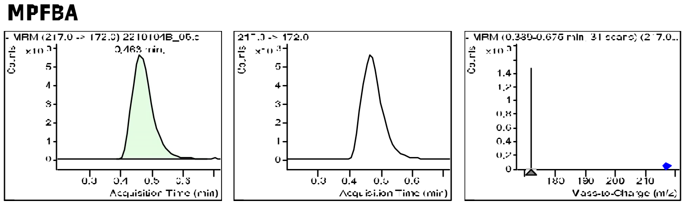

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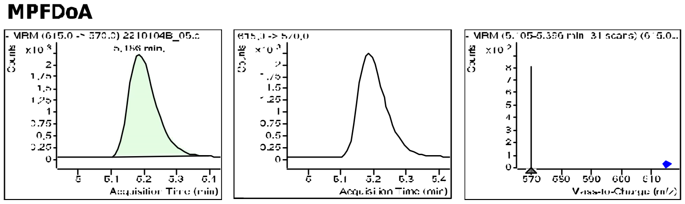

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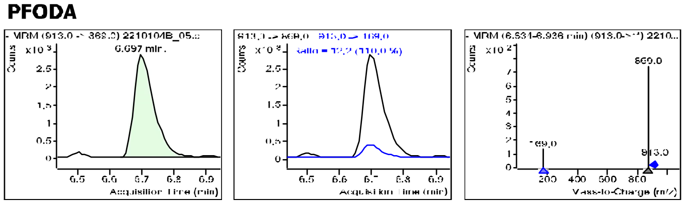

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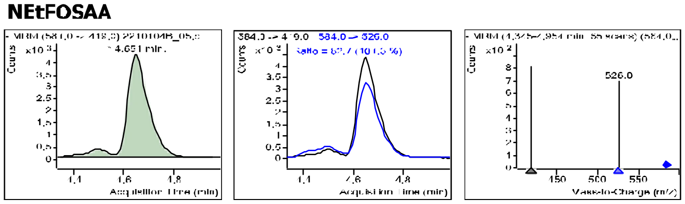

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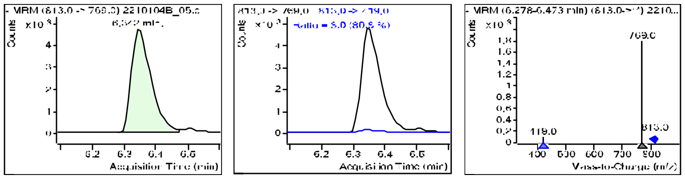

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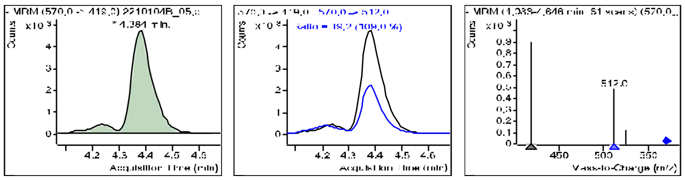

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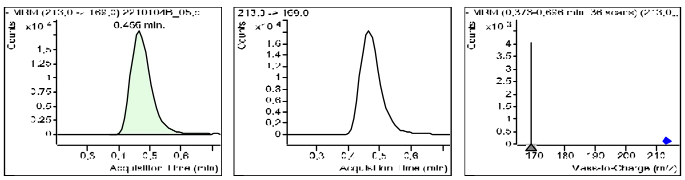

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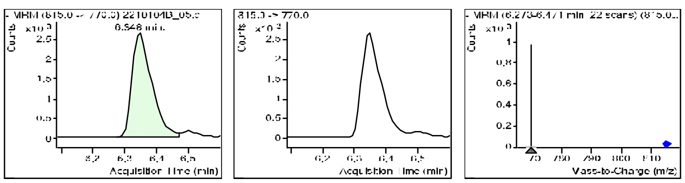

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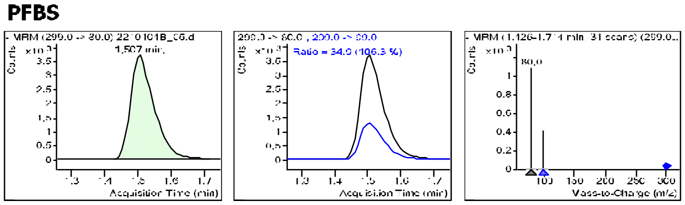

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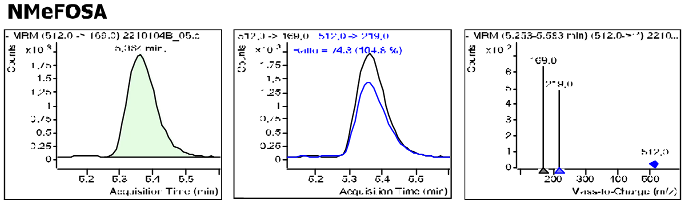

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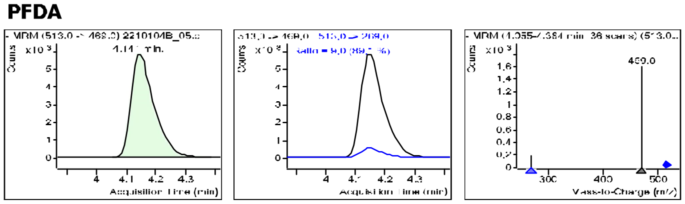

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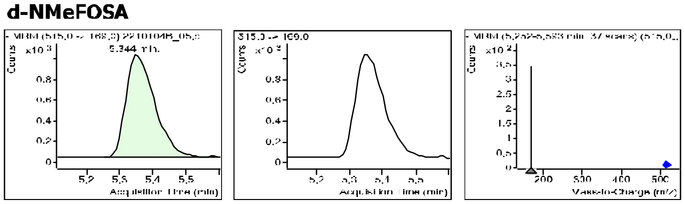

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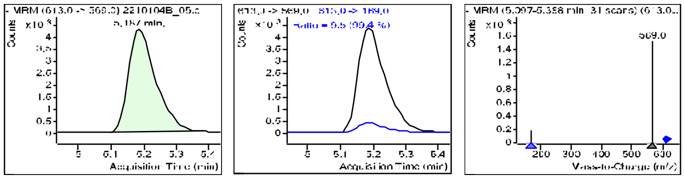

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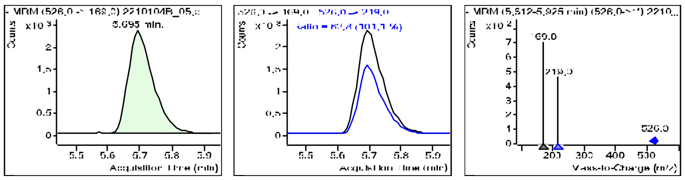

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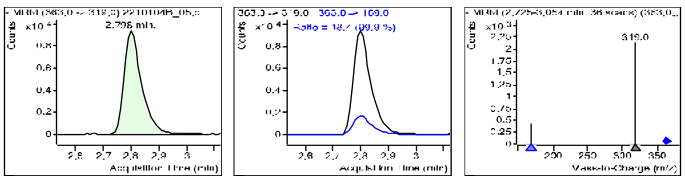

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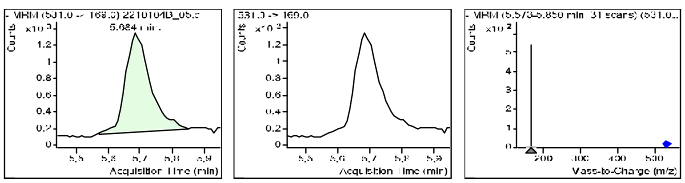

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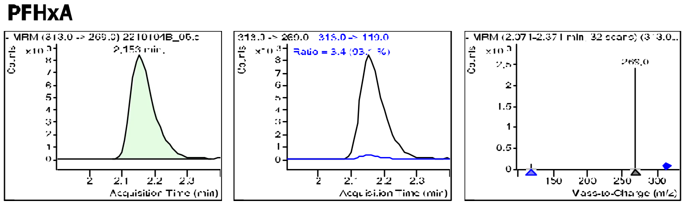

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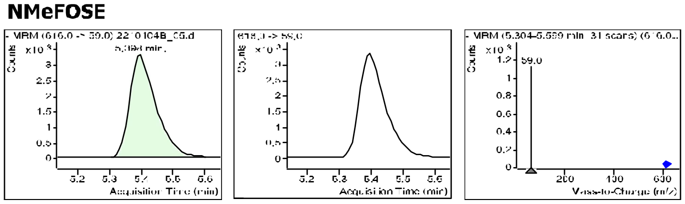

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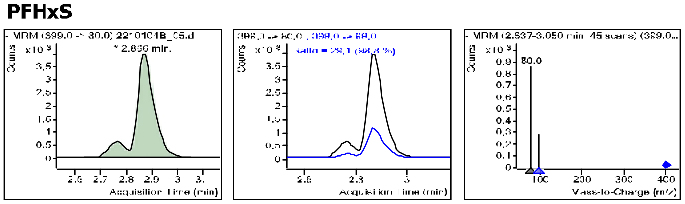

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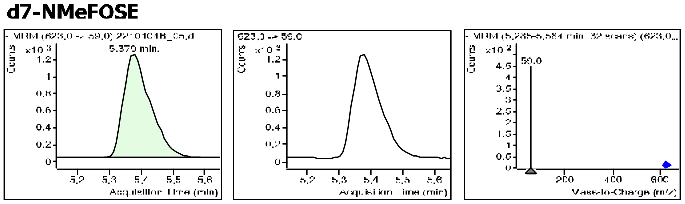

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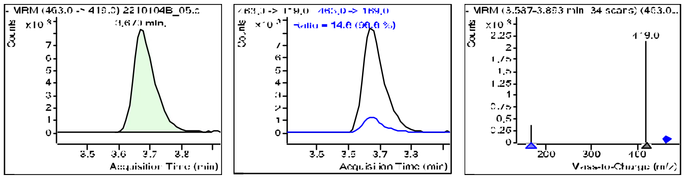

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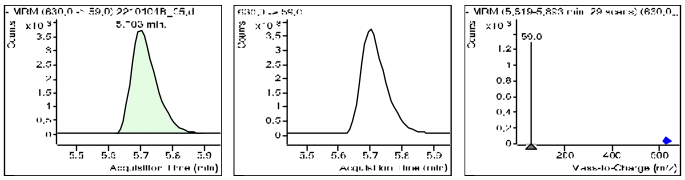

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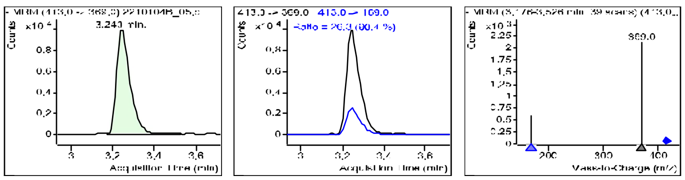

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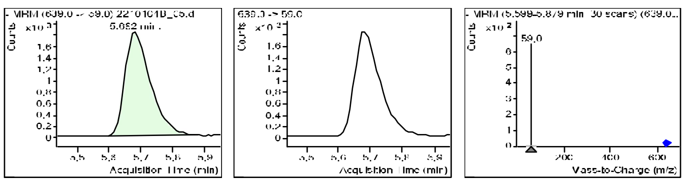

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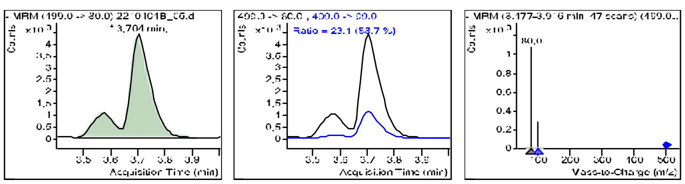

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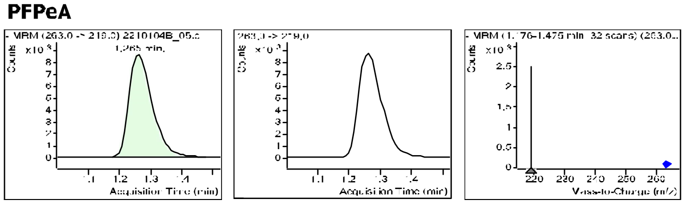

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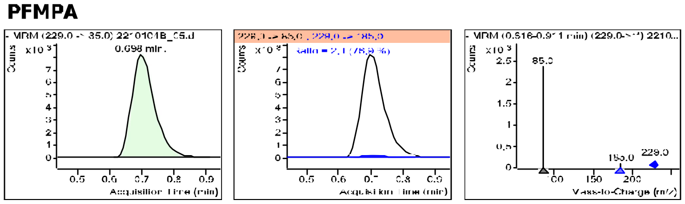

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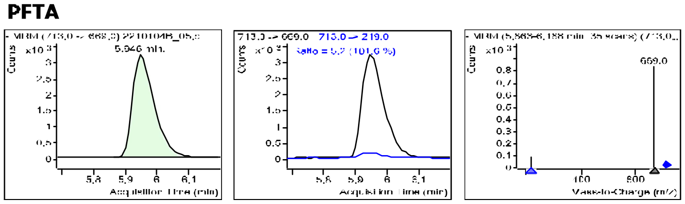

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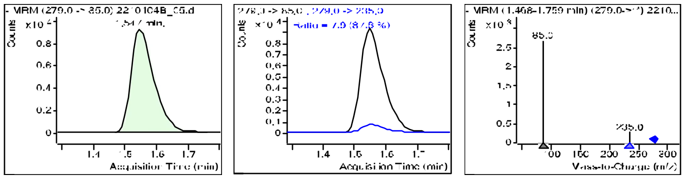

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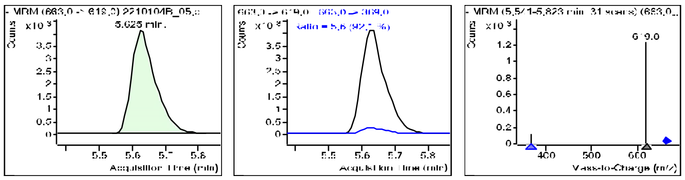

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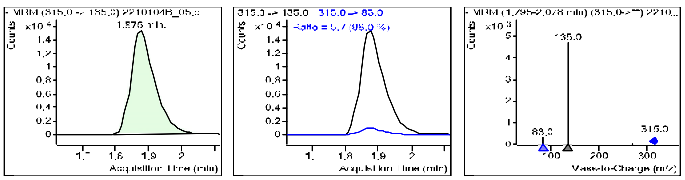

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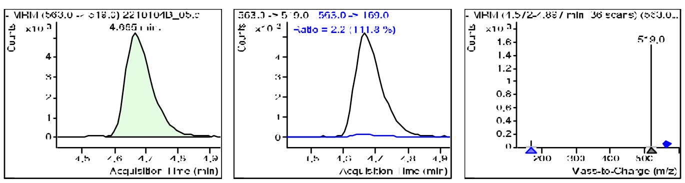

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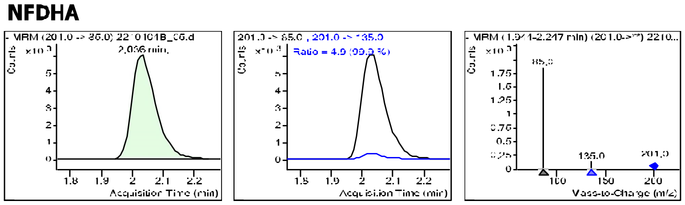

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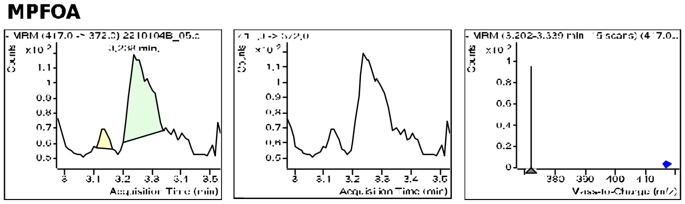

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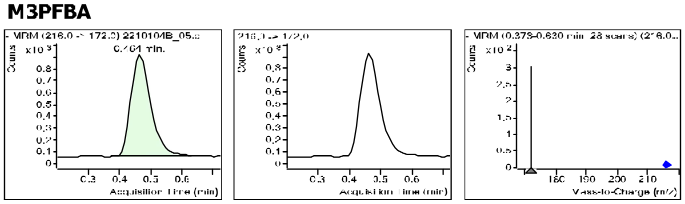

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

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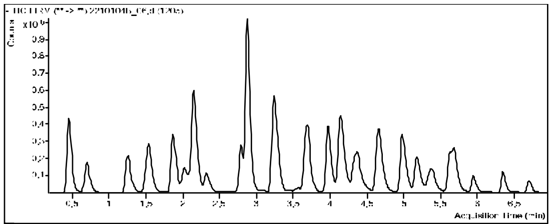
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Calibration	**Comment**	MRA,QQQ2;Cal
Acq Date	1/4/2021 17:55						

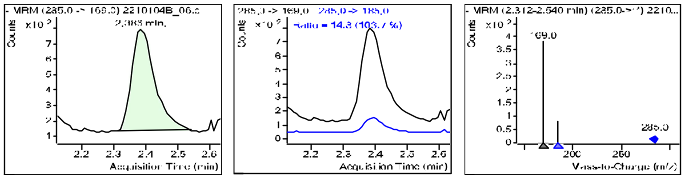
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	64921.511	4.149				93.49	18.6976	93.49	197.34	1.49	
M2PFHxA	181436.392	2.152				93.40	37.3604	93.40	7357.64	1.59	
M2PFOA	73467.359	3.248				92.89	18.5784	92.89	2655.39	1.42	
M4PFOS	48670.246	3.703				96.28	19.2567	96.28	1347.75	1.60	
MPFOA	231.682	3.266				0.00	20.7234	82.89	6.83	0.89	
M3PFBA	3621.964	0.464				0.00	4.9401	98.80	18.02	1.65	
HFPO-DA	3318.357	2.386	M3HFPODA	667	2.384	99.68	32.8052	82.01	5.48	1.50	
4:2 FTS	13208.375	2.104	M2 4:2 FTS	2523	2.104	102.24	16.5849	88.50	1154.95	1.41	
6:2 FTS	26097.677	3.226	M2 6:2 FTS	4337	3.225	95.94	18.6839	98.23	118.01	1.42	
ADONA	265111.101	2.887	M8PFOA	21916	3.247	99.85	18.1303	95.93	9603.21	1.44	
8:2 FTS	28787.591	4.129	M2 8:2 FTS	4129	4.128	99.58	19.4093	101.09	2045.21	1.49	
FOSA	62733.618	4.335	M8FOSA	13770	4.335	102.07	16.6618	83.31	276.64	1.50	
9Cl-PF3ONS	187980.451	3.970	M8PFOS	10428	3.702	101.21	18.8364	100.95	636.05	1.56	
PFDS	43888.387	4.676	M6PFDA	16026	4.149	102.93	16.8081	87.09	1487.10	1.59	
11Cl-PF3OUdS	179583.953	4.979	M8PFOS	10428	3.702	101.21	19.0593	101.06	9236.88	1.50	
PFHpS	40212.680	3.288	M8PFOA	21916	3.247	99.85	16.2817	85.42	1439.02	1.50	
10:2 FTS	29791.317	5.183	M2 8:2 FTS	4129	4.128	99.58	20.0230	103.85	1388.58	1.43	
PFNS	45791.294	4.172	M9PFNA	21293	3.669	103.00	17.0379	88.55	1557.28	1.49	
PFDoS	56099.821	5.623	M8PFOS	10428	3.702	101.21	17.8447	92.17	2816.53	1.37	
PFPeS	36548.616	2.323	M5PFHxA	19991	2.151	96.48	18.1815	96.61	200.54	1.50	
PFODA	26056.943	6.697	M2PFHxDA	10100	6.348	90.49	21.6761	108.38	977.30	1.70	
NEtFOSAA	53164.604	4.651	d5-NEtFOSAA	10983	4.641	101.39	17.1165	85.58	INF	0.83	m
PFHxDA	38439.302	6.342	M2PFHxDA	10100	6.348	90.49	20.7236	103.62	969.20	1.63	
NMeFOSAA	60705.837	4.375	d3-NMeFOSAA	7685	4.374	99.57	19.2166	96.08	INF	1.14	m
PFBA	162538.008	0.466	MPFBA	23430	0.463	95.58	18.6923	93.46	427.26	1.31	
PFBS	38102.169	1.507	M3PFBS	9118	1.514	99.63	16.3894	92.39	3071.08	1.50	
NMeFOSA	23989.084	5.354	d-NMeFOSA	5670	5.353	94.29	20.4283	102.14	101.11	1.44	
PFDA	63543.640	4.141	M6PFDA	16026	4.149	102.93	17.0743	85.37	2129.56	1.74	
PFDoA	51421.139	5.178	MPFDoA	12956	5.186	95.79	20.7334	103.67	2147.57	1.55	
NEtFOSA	25572.665	5.695	d-NEtFOSA	6015	5.684	96.01	16.8995	84.50	829.77	1.43	
PFHpA	82933.133	2.798	M4PFHpA	20102	2.797	98.06	17.3363	86.68	4039.77	1.42	
PFHxA	84279.890	2.153	M5PFHxA	19991	2.151	96.48	18.4771	92.39	2622.01	1.63	
NMeFOSE	39062.008	5.398	d7-NMeFOSE	7351	5.379	100.56	18.0986	90.49	292.47	1.35	
PFHxS	41025.858	2.866	M3PFHxS	10080	2.865	105.57	14.9911	82.01	1749.79	0.85	m
PFNA	81880.752	3.670	M9PFNA	21293	3.669	103.00	17.3742	86.87	2619.83	1.52	
NEtFOSE	39773.564	5.703	d9-NEtFOSE	9581	5.682	97.16	20.2496	101.25	749.94	1.40	
PFOA	87765.109	3.249	M8PFOA	21916	3.247	99.85	18.4207	92.10	3228.56	1.42	
PFOS	54498.763	3.704	M8PFOS	10428	3.702	101.21	16.4063	88.40	419.44	0.79	m
PFPeA	94561.013	1.265	M5PFPeA	16933	1.263	99.74	17.4847	87.42	5232.57	1.33	
PFMPA	83095.878	0.698	M5PFPeA	16933	1.263	99.74	17.5607	87.80	3123.05	1.36	
PFTA	32026.109	5.946	M2PFTA	9421	5.944	99.61	19.7222	98.61	1361.69	1.52	
PFMBA	97622.979	1.547	M5PFHxA	19991	2.151	96.48	19.6198	98.10	285.58	1.56	
PFTrDA	40352.686	5.625	MPFDoA	12956	5.186	95.79	20.5814	102.91	INF	1.60	
PFEESA	157866.801	1.876	M3PFHxS	10080	2.865	105.57	17.9172	100.66	5566.08	1.43	
PFUnA	59368.012	4.665	M7PFUnA	16444	4.672	98.49	17.1856	85.93	1861.10	1.57	
NFDHA	68202.809	2.027	M4PFHpA	20102	2.797	98.06	17.1646	85.82	2893.48	1.43	

HFPO-DA



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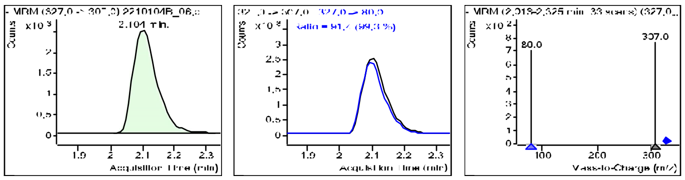

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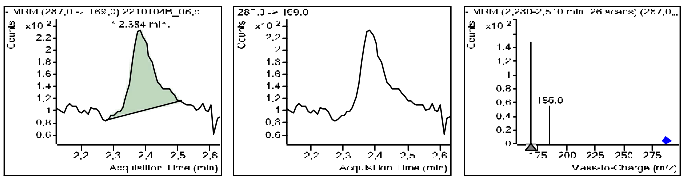
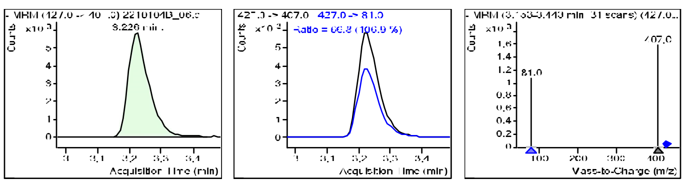


6:2 FTS



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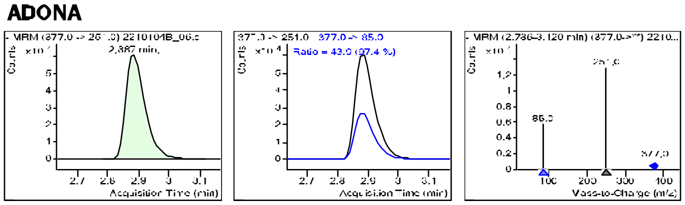

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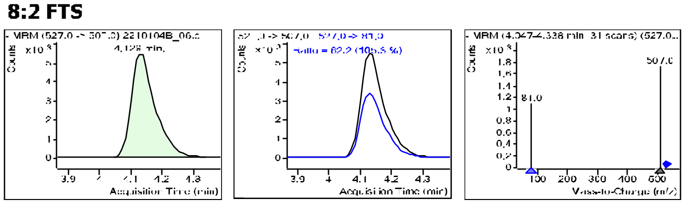

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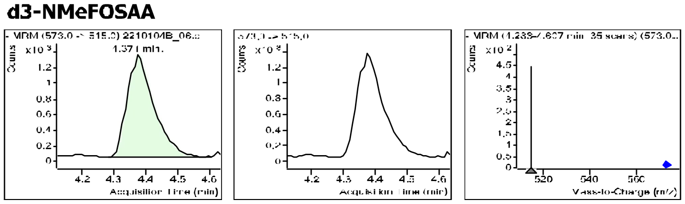

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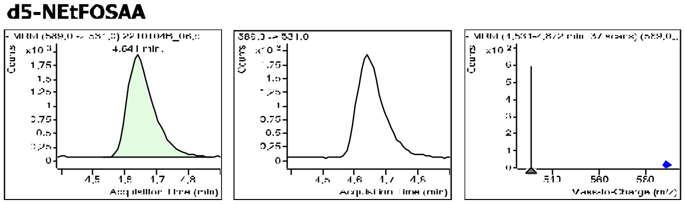

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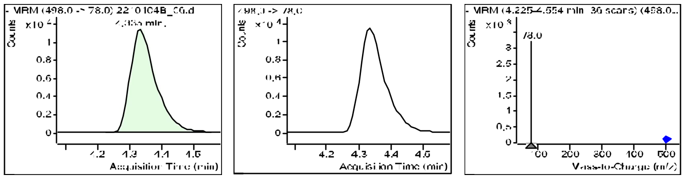

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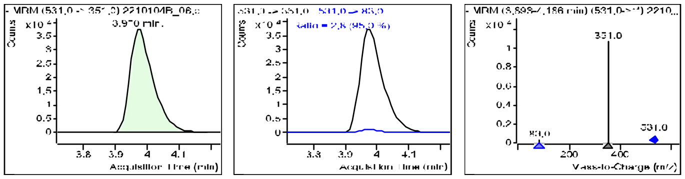

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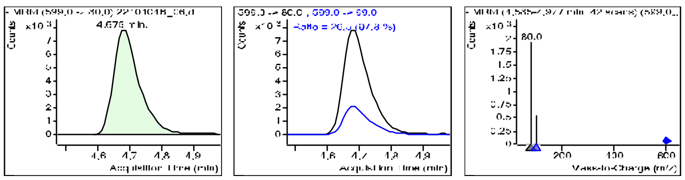

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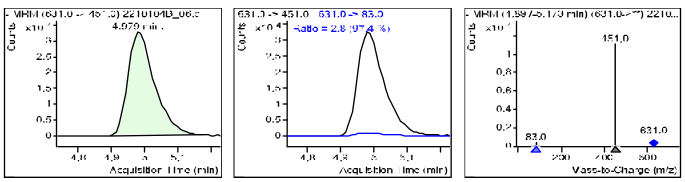

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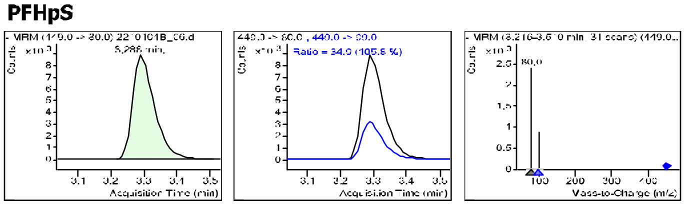
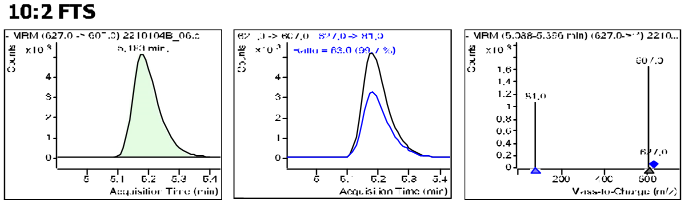


10:2 FTS



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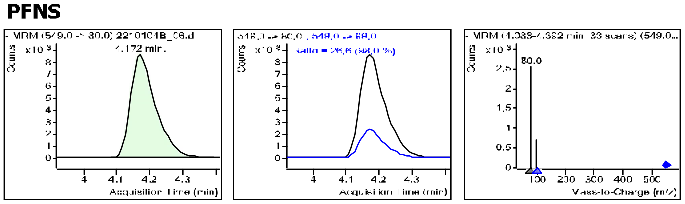

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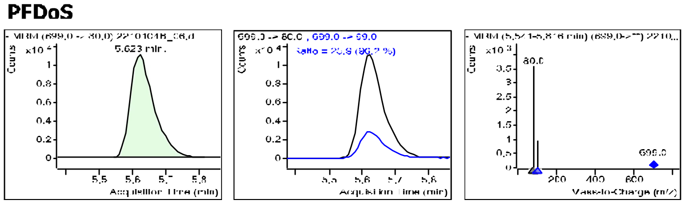

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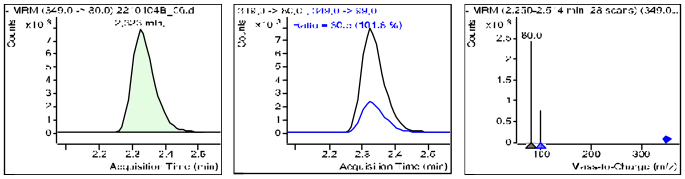

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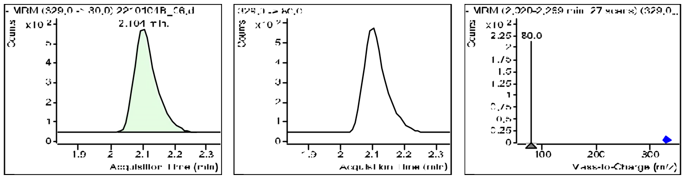

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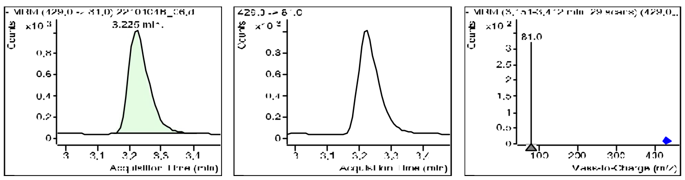

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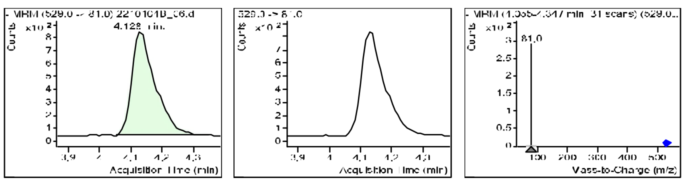

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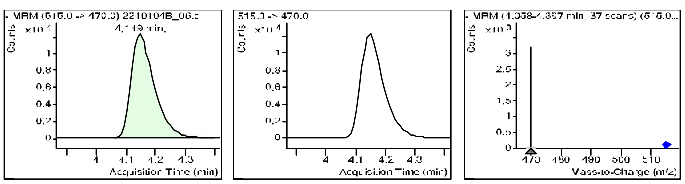

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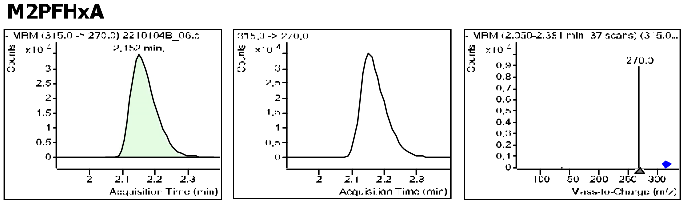

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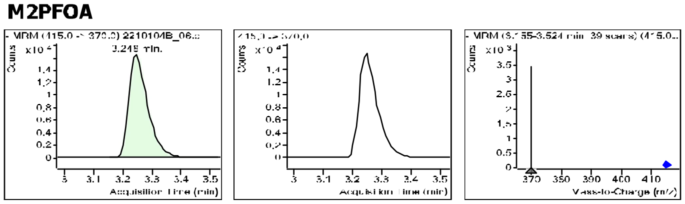

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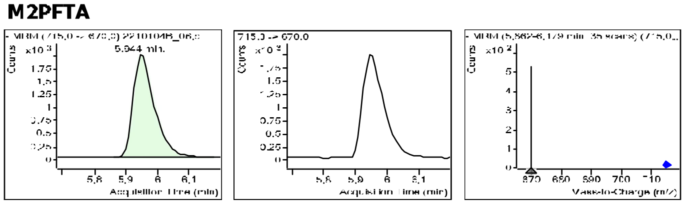

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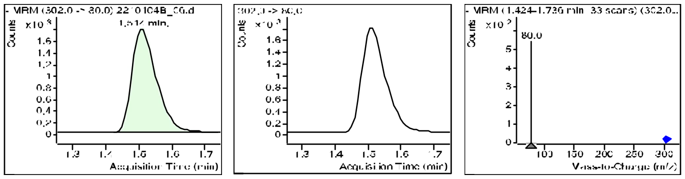

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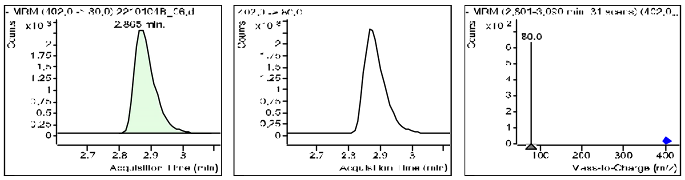

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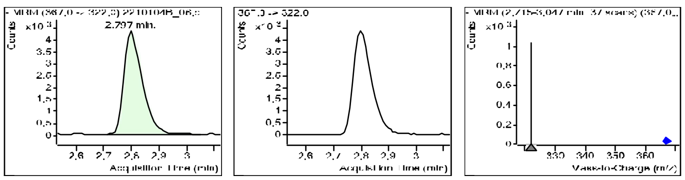

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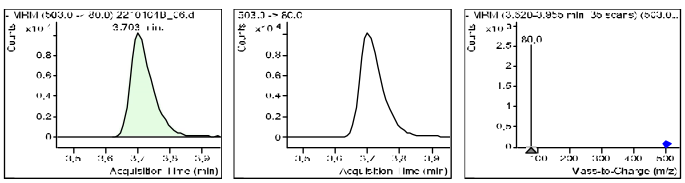

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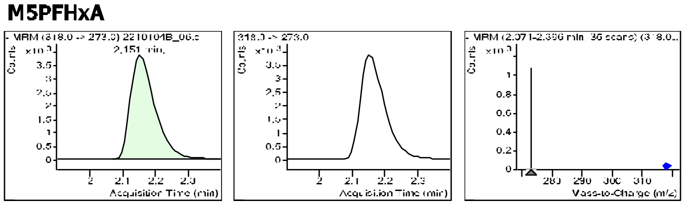

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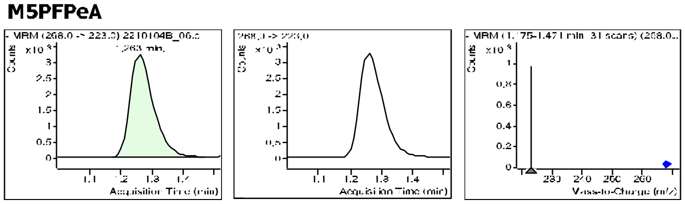

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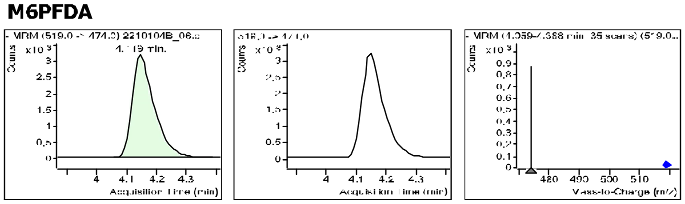

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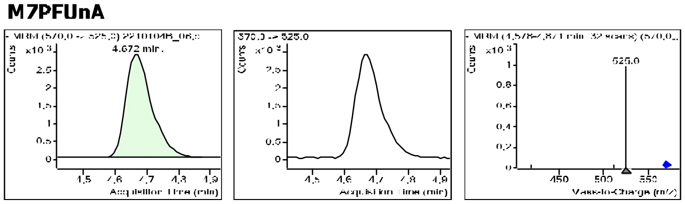

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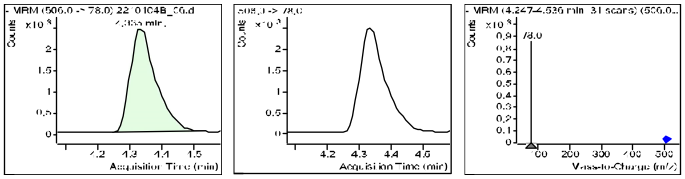

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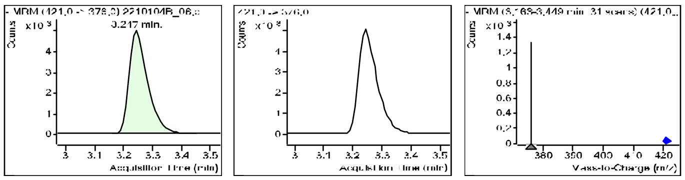

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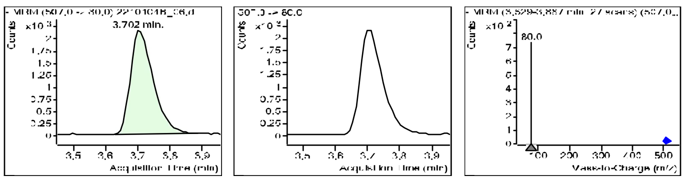

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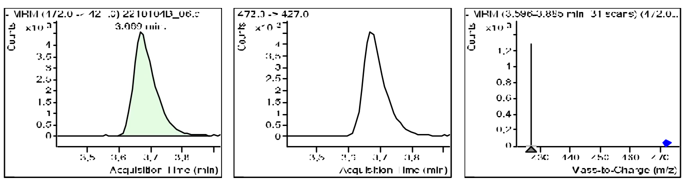

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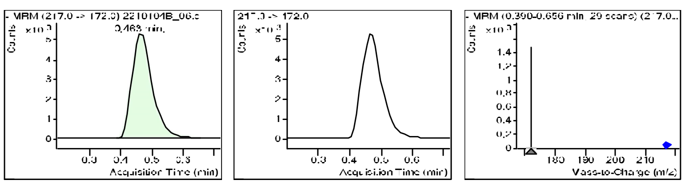

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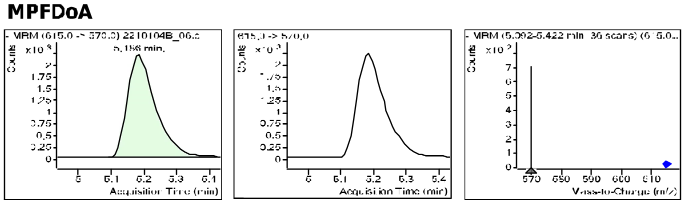

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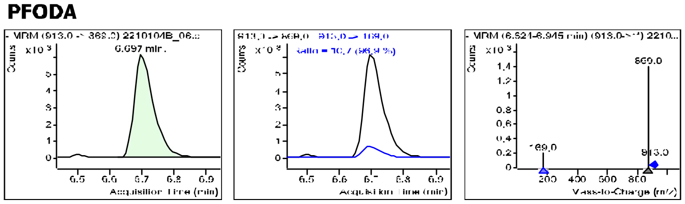

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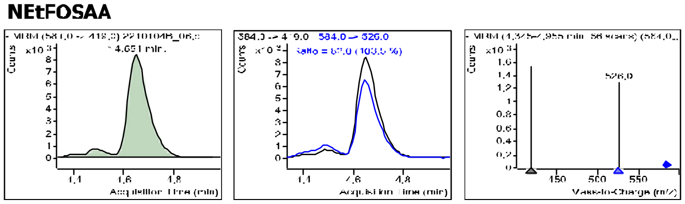

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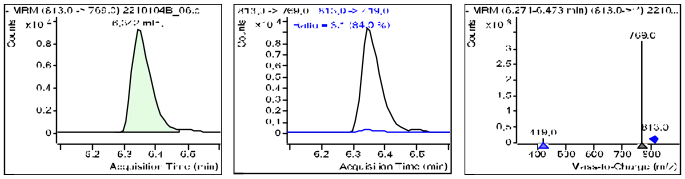

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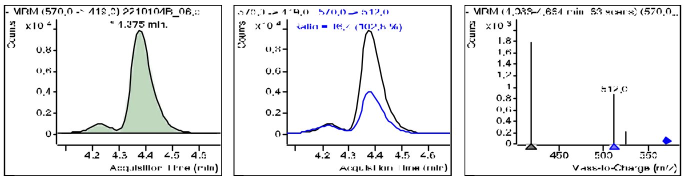

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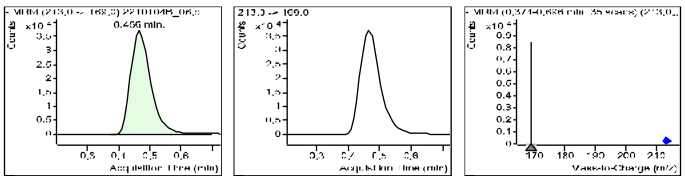

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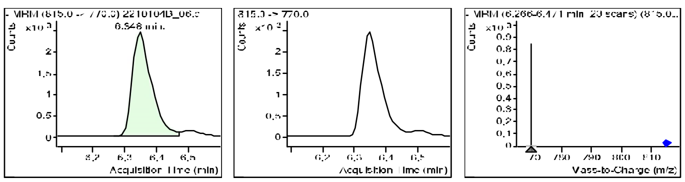

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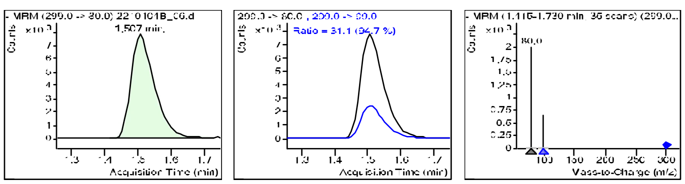

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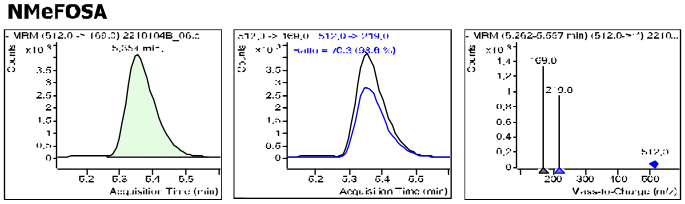

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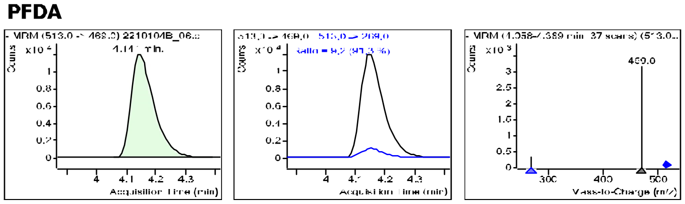

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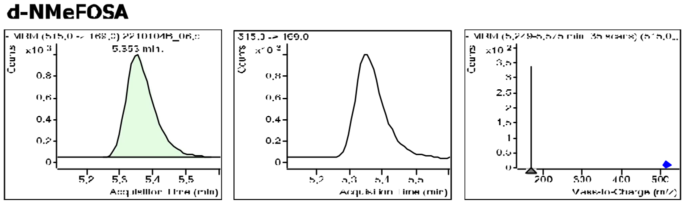

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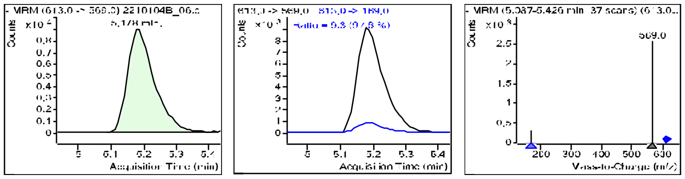

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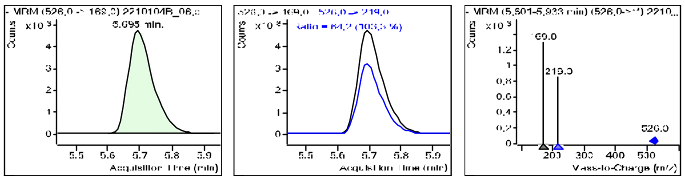

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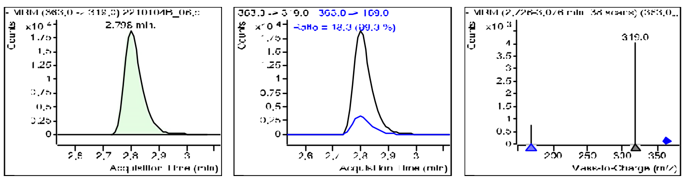

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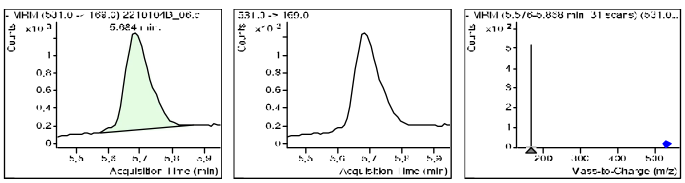

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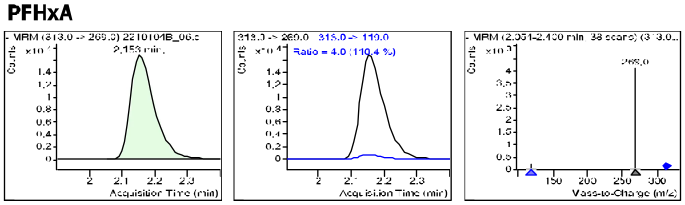

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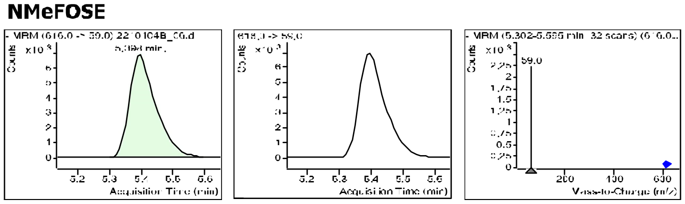

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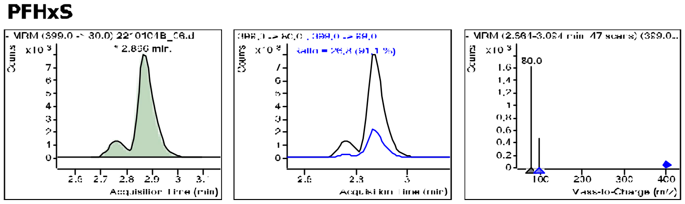

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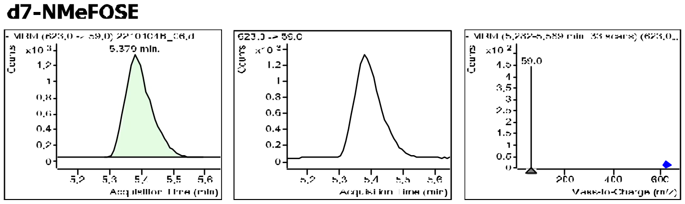

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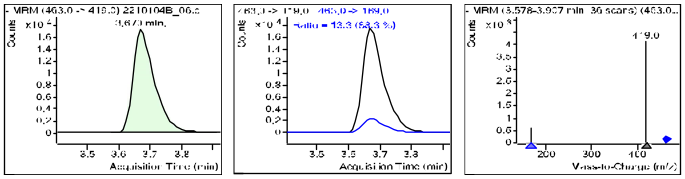

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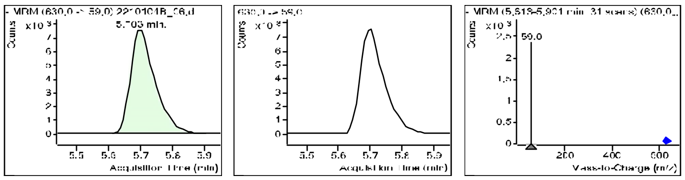

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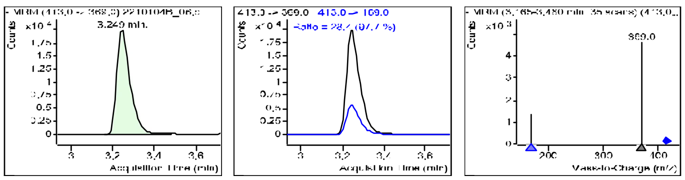

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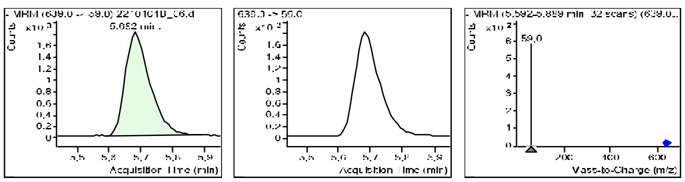

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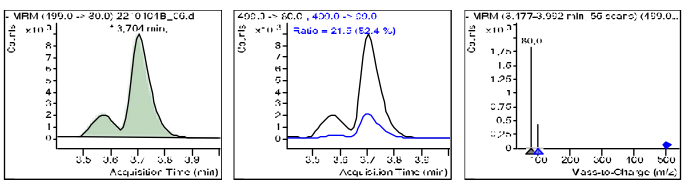

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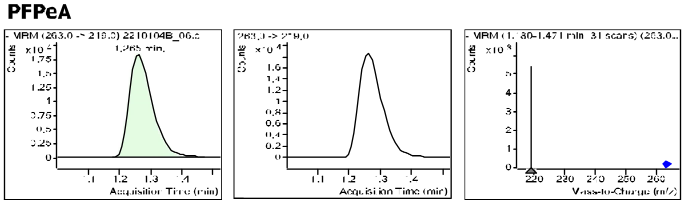

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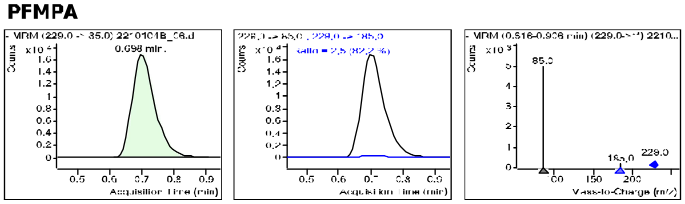

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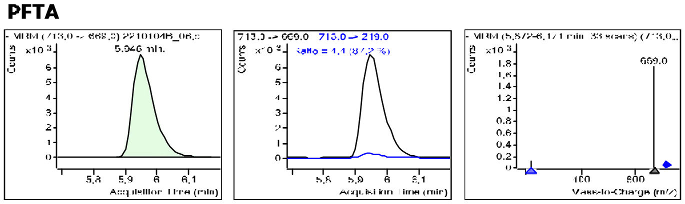

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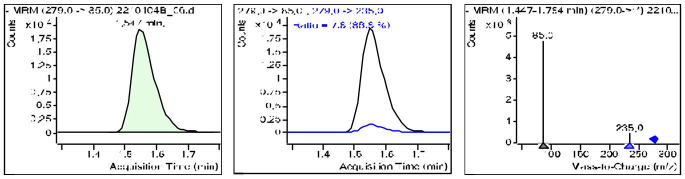

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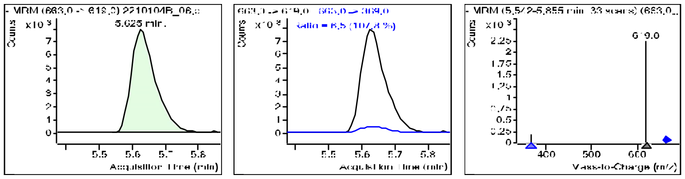

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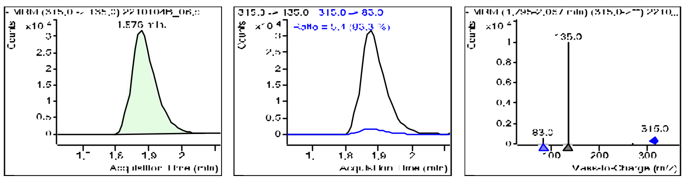

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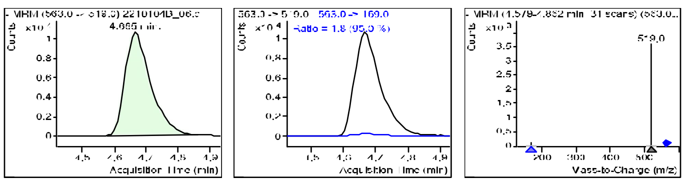

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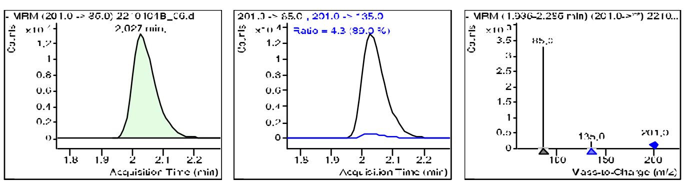

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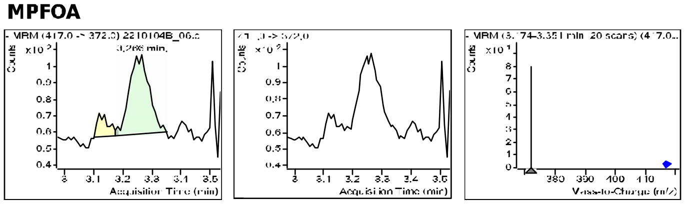

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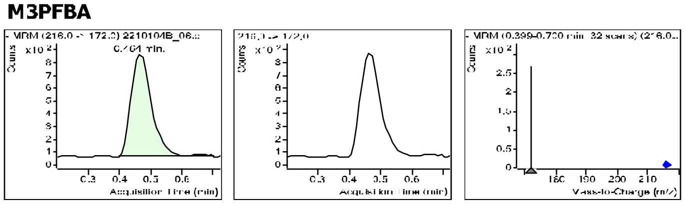
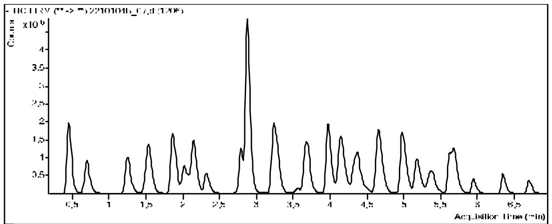


Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_07.d	**Position**	P1-A6	**Samp Name**	1206	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Calibration	**Comment**	MRA,QQQ2;Cal
Acq Date	1/4/2021 18:08						

Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
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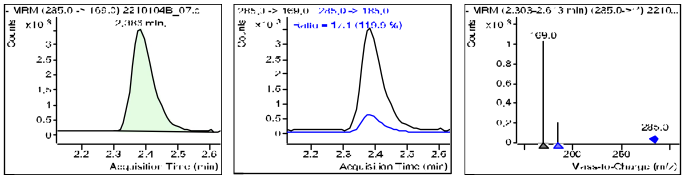
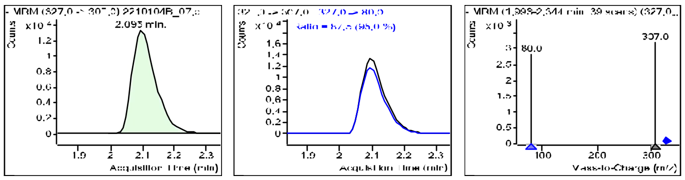
M2PFHxA	200281.702	2.152				103.10	41.2409	103.10	5544.62	1.59	
M2PFOA	78627.381	3.248				99.42	19.8832	99.42	3769.15	1.42	
M4PFOS	49323.496	3.703				97.58	19.5152	97.58	376.17	1.52	
MPFOA	318.519	3.257				0.00	28.4909	113.96	9.97	1.96	
M3PFBA	3524.304	0.464				0.00	4.8069	96.14	40.68	1.56	
HFPO-DA	16332.271	2.386	M3HFPODA	778	2.374	116.29	138.4029	69.20	INF	1.42	
4:2 FTS	68530.310	2.095	M2 4:2 FTS	2165	2.104	87.73	100.2819	107.02	2533.66	1.56	
6:2 FTS	130886.481	3.217	M2 6:2 FTS	4267	3.216	94.39	95.2411	100.15	5498.47	1.70	
ADONA	1308175.831	2.887	M8PFOA	20681	3.247	94.22	94.8040	100.32	68470.83	1.44	
8:2 FTS	139007.070	4.129	M2 8:2 FTS	4035	4.138	97.31	95.9140	99.91	13933.94	1.49	
FOSA	340190.510	4.335	M8FOSA	13502	4.335	100.08	92.1508	92.15	INF	1.50	
9Cl-PF3ONS	964745.093	3.970	M8PFOS	10218	3.702	99.17	98.6620	105.75	40384.45	1.65	
PFDS	228697.487	4.676	M6PFDA	14446	4.149	92.78	97.1600	100.68	15610.40	1.59	
11Cl-PF3OUdS	937077.727	4.979	M8PFOS	10218	3.702	99.17	101.5003	107.64	41780.51	1.57	
PFHpS	227395.256	3.288	M8PFOA	20681	3.247	94.22	97.5670	102.38	15162.74	1.60	
10:2 FTS	142262.715	5.183	M2 8:2 FTS	4035	4.138	97.31	97.8523	101.51	158.24	1.43	
PFNS	230499.243	4.172	M9PFNA	19962	3.669	96.57	91.4821	95.10	8107.66	1.49	
PFDoS	286614.052	5.623	M8PFOS	10218	3.702	99.17	93.0457	96.12	551.70	1.37	
PFPeS	196176.808	2.323	M5PFHxA	20530	2.151	99.08	95.0260	100.98	175.79	1.50	
PFODA	135974.116	6.697	M2PFHxDA	11453	6.348	102.61	99.7519	99.75	3818.05	1.70	
NEtFOSAA	284190.443	4.651	d5-NEtFOSAA	10000	4.641	92.31	100.4951	100.50	INF	1.04	m
PFHxDA	210081.651	6.342	M2PFHxDA	11453	6.348	102.61	99.8815	99.88	451.45	1.63	
NMeFOSAA	323211.119	4.375	d3-NMeFOSAA	8048	4.374	104.28	97.6997	97.70	151.57	1.50	m
PFBA	849227.679	0.466	MPFBA	24048	0.463	98.09	95.1570	95.16	2055.12	1.40	
PFBS	191956.684	1.507	M3PFBS	9158	1.505	100.07	82.2074	92.68	15915.64	1.36	
NMeFOSA	130886.566	5.354	d-NMeFOSA	6557	5.353	109.04	96.3793	96.38	INF	1.58	
PFDA	324917.212	4.150	M6PFDA	14446	4.149	92.78	96.8499	96.85	18957.77	1.42	
PFDoA	277690.819	5.187	MPFDoA	13980	5.186	103.37	103.7581	103.76	13050.39	1.48	
NEtFOSA	141552.692	5.695	d-NEtFOSA	6624	5.684	105.73	84.9398	84.94	12150.86	1.43	
PFHpA	443510.653	2.798	M4PFHpA	19728	2.797	96.23	94.4703	94.47	13587.61	1.42	
PFHxA	447275.808	2.153	M5PFHxA	20530	2.151	99.08	95.4818	95.48	INF	1.46	
NMeFOSE	197557.358	5.398	d7-NMeFOSE	7253	5.379	99.22	92.7741	92.77	INF	1.47	
PFHxS	208098.642	2.866	M3PFHxS	8586	2.865	89.93	89.2674	97.67	8166.41	0.85	m
PFNA	421076.044	3.670	M9PFNA	19962	3.669	96.57	95.3053	95.31	13774.11	1.52	
NEtFOSE	212678.586	5.703	d9-NEtFOSE	9310	5.682	94.41	111.4325	111.43	7556.93	1.40	
PFOA	454438.988	3.249	M8PFOA	20681	3.247	94.22	101.0750	101.07	8996.12	1.42	
PFOS	284613.660	3.704	M8PFOS	10218	3.702	99.17	87.4444	94.23	INF	0.79	m
PFPeA	503591.016	1.253	M5PFPeA	17219	1.263	101.43	91.5682	91.57	297.04	1.61	
PFMPA	439725.934	0.698	M5PFPeA	17219	1.263	101.43	91.3828	91.38	39175.84	1.36	
PFTA	167015.988	5.946	M2PFTA	9691	5.954	102.46	99.9871	99.99	399.15	1.52	
PFMBA	499712.843	1.547	M5PFHxA	20530	2.151	99.08	97.7909	97.79	32013.25	1.48	
PFTrDA	211194.681	5.625	MPFDoA	13980	5.186	103.37	99.8199	99.82	INF	1.59	
PFEESA	812030.756	1.876	M3PFHxS	8586	2.865	89.93	108.1932	121.57	30242.98	1.30	
PFUnA	317241.383	4.665	M7PFUnA	16274	4.662	97.47	92.7911	92.79	2831.50	1.57	
NFDHA	361563.510	2.027	M4PFHpA	19728	2.797	96.23	92.7211	92.72	2375.88	1.43	

HFPO-DA



4:2 FTS



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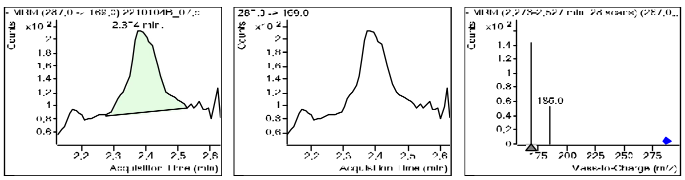

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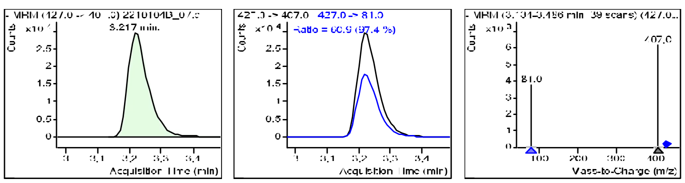

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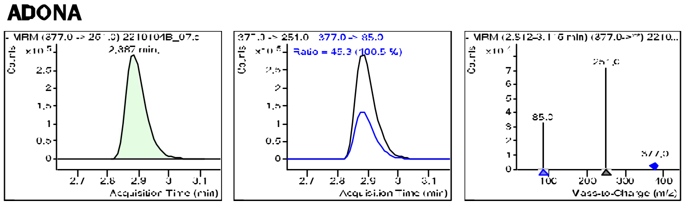
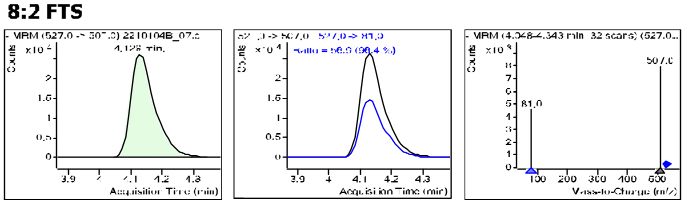


8:2 FTS



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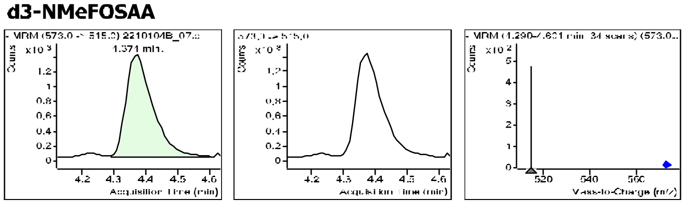

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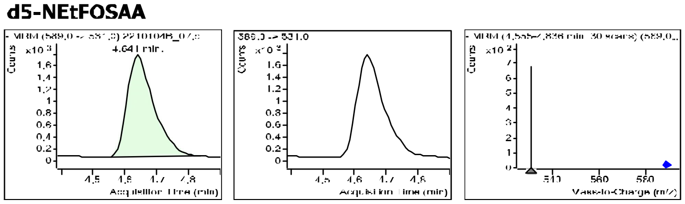

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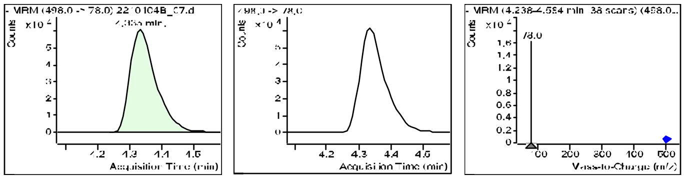

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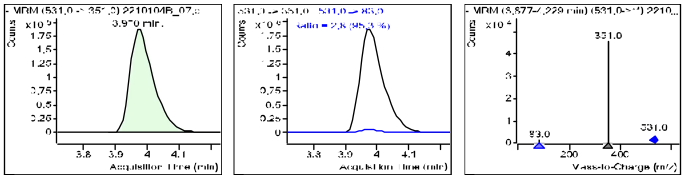

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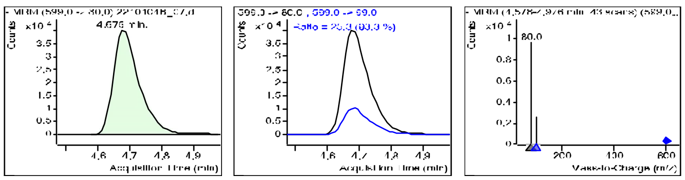

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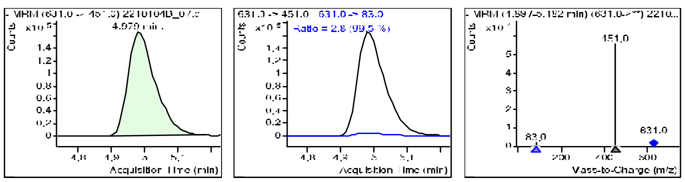

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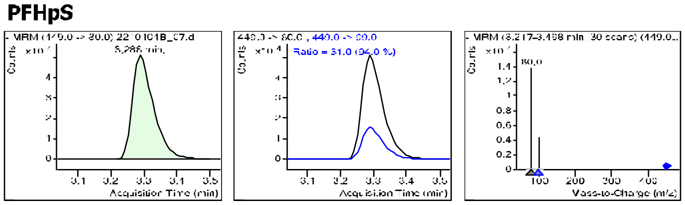
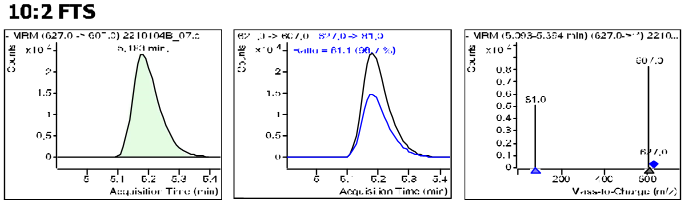


10:2 FTS



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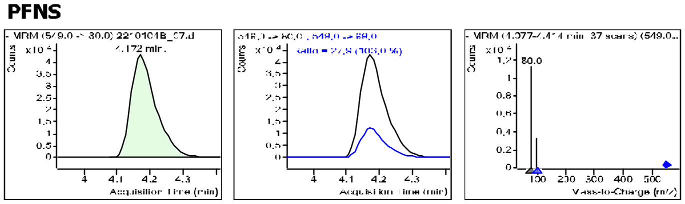

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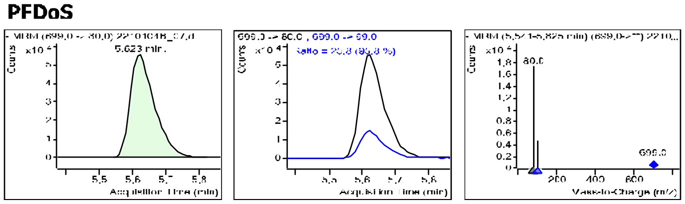

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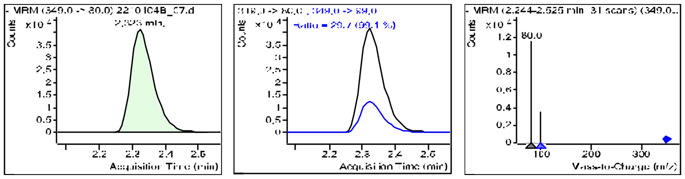

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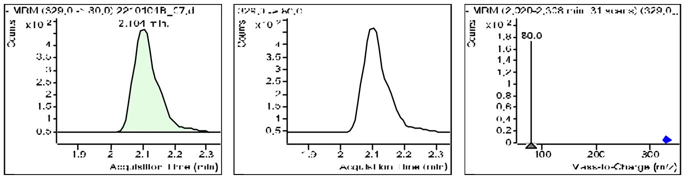

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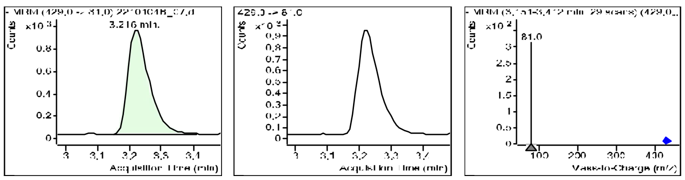

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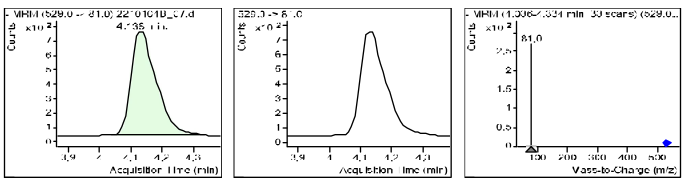

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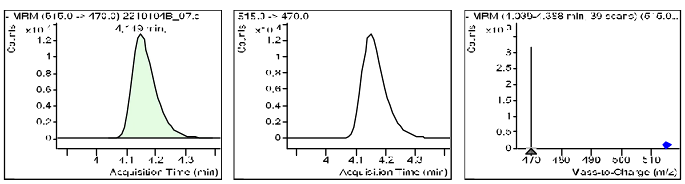

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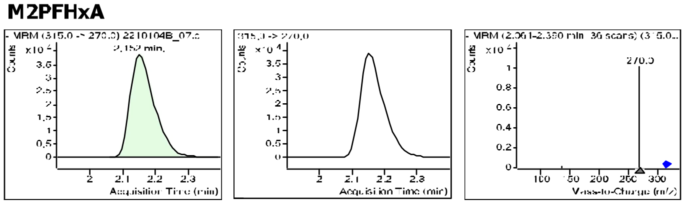

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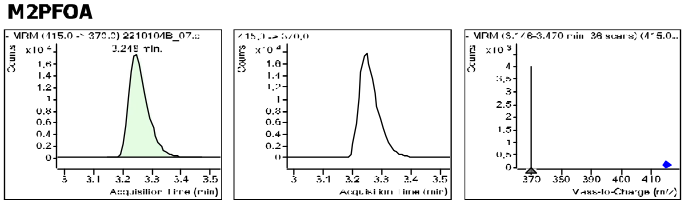

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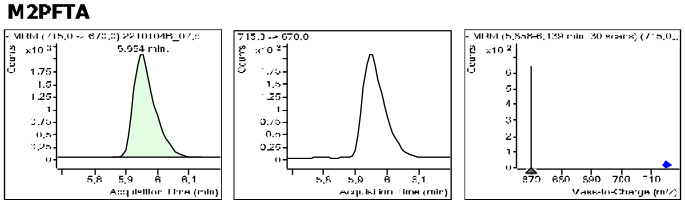

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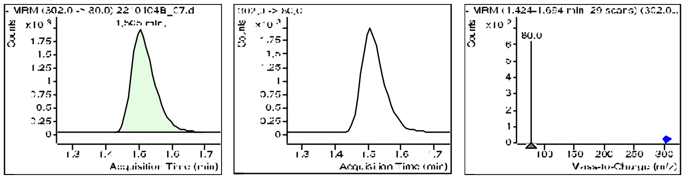

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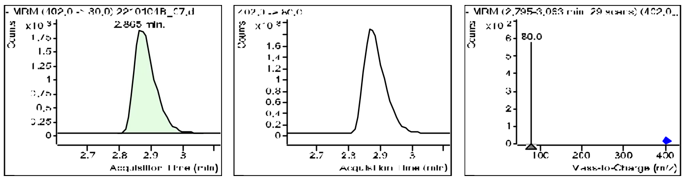

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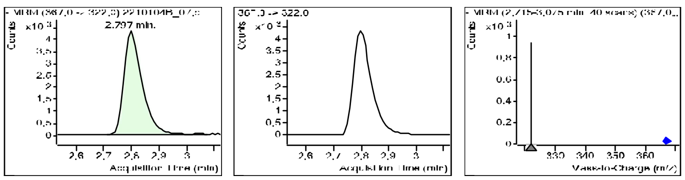

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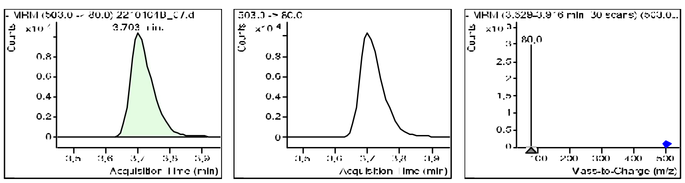

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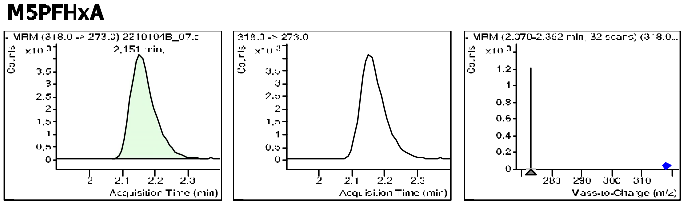

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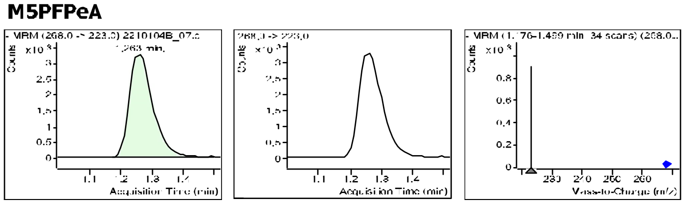

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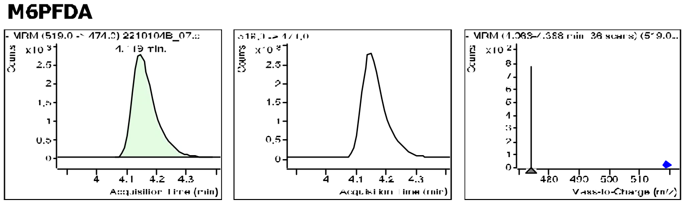

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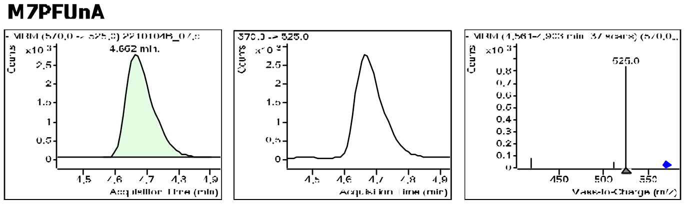

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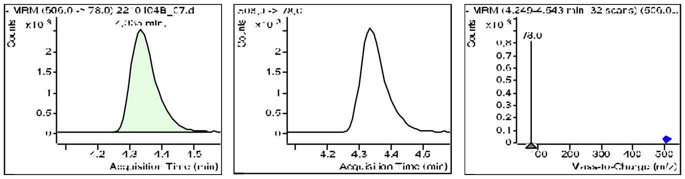

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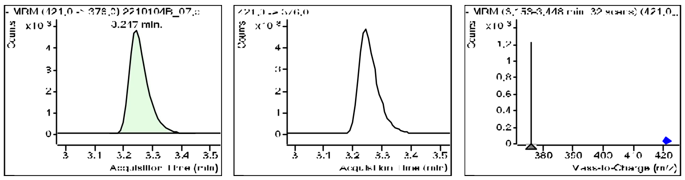

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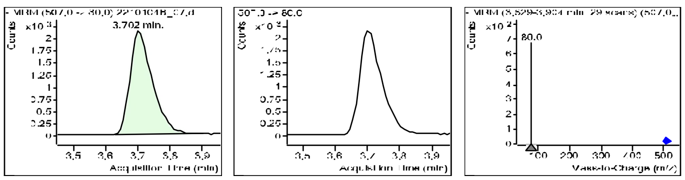

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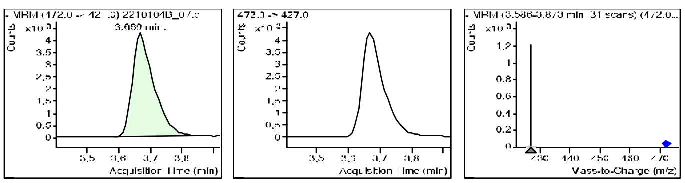

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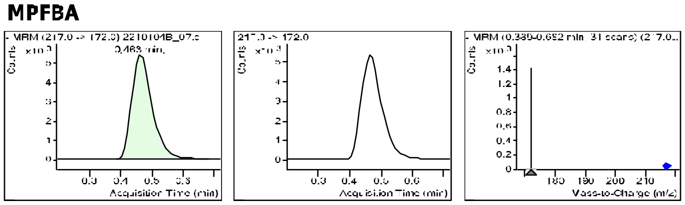

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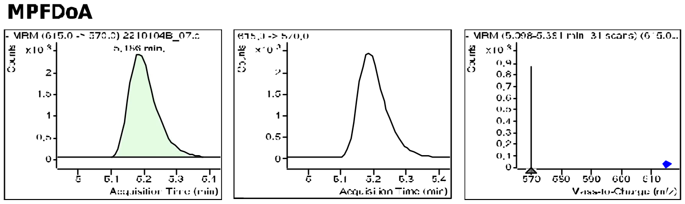

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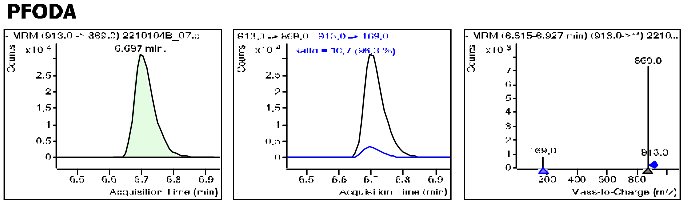

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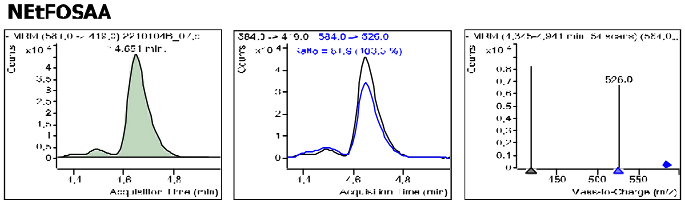

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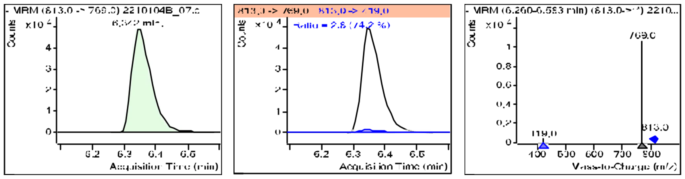

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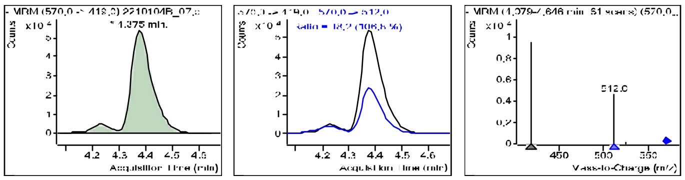

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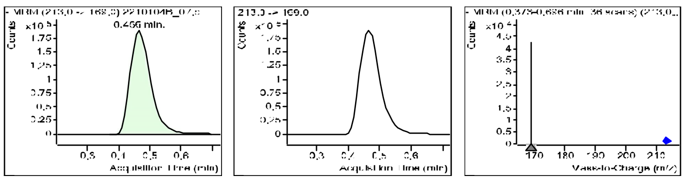

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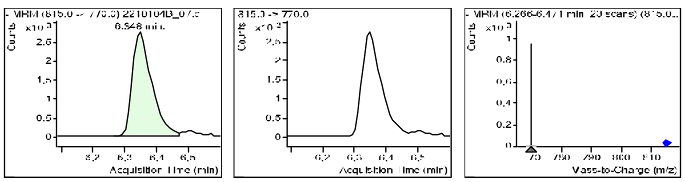

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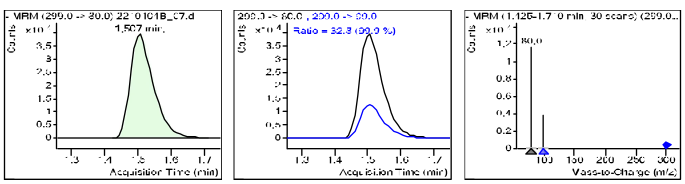

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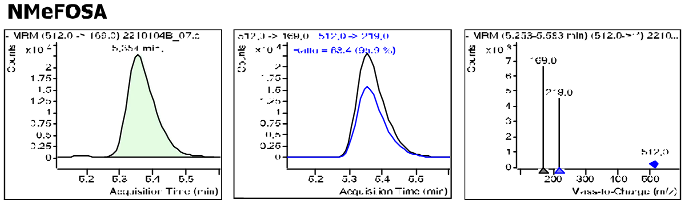

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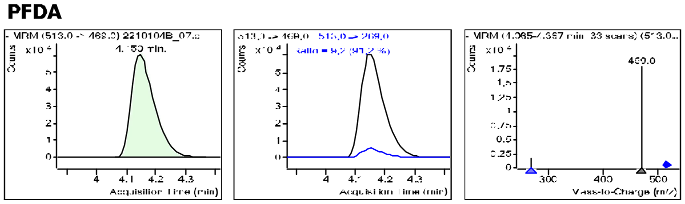

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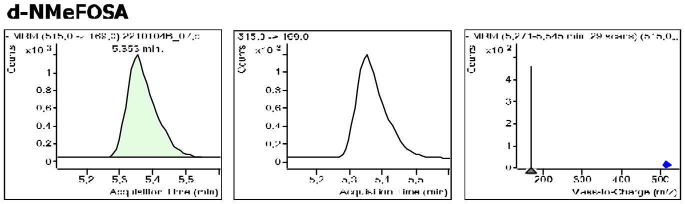

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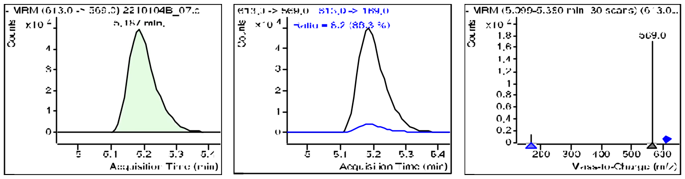

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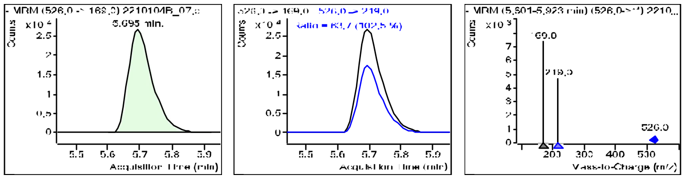

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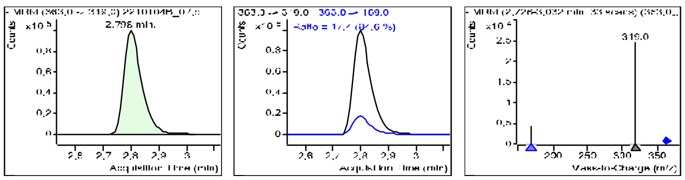

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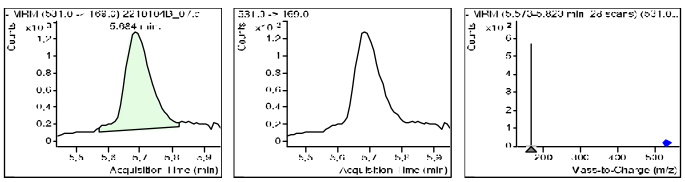

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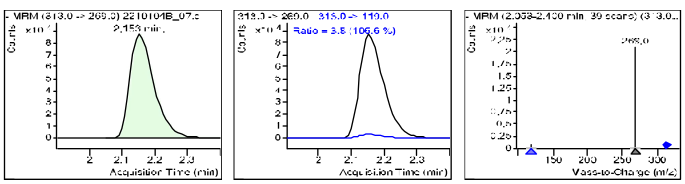

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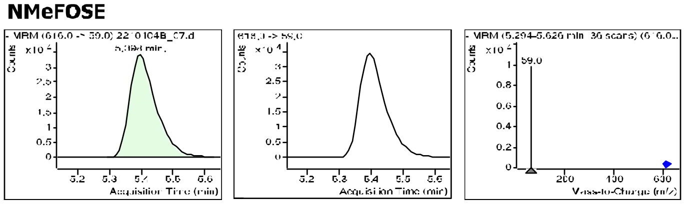

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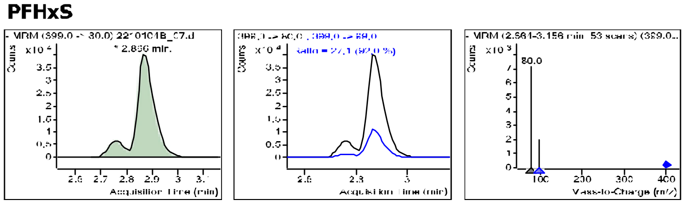

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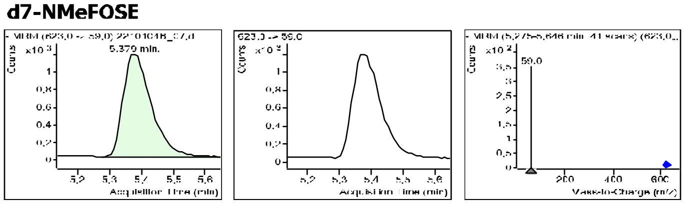

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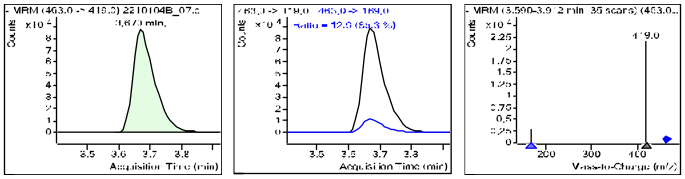

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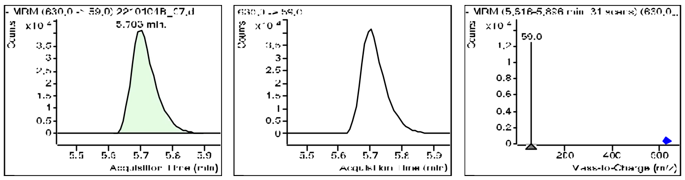

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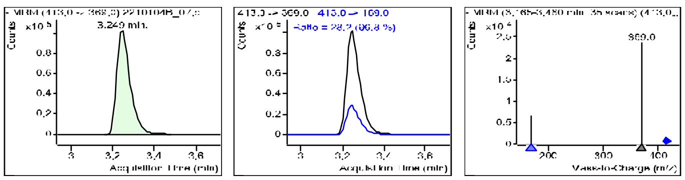

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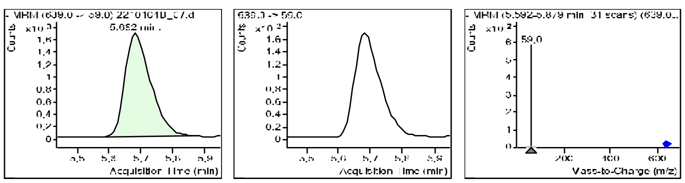

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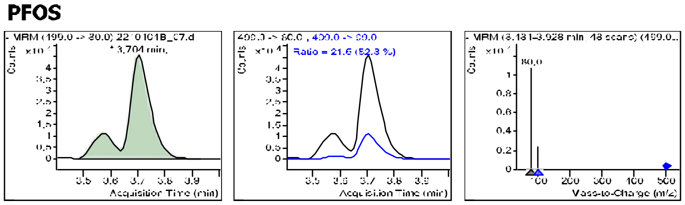

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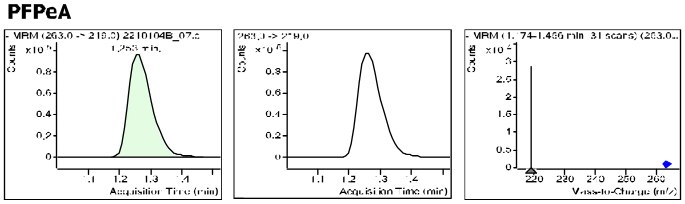

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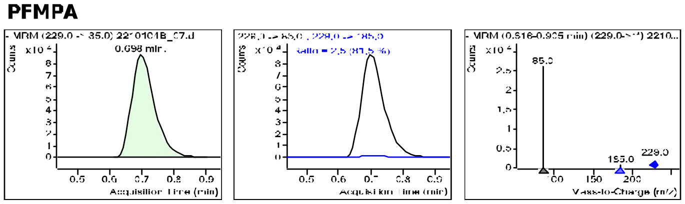

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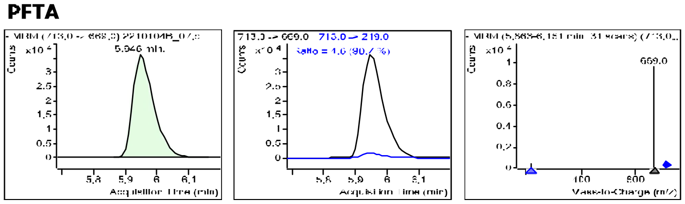

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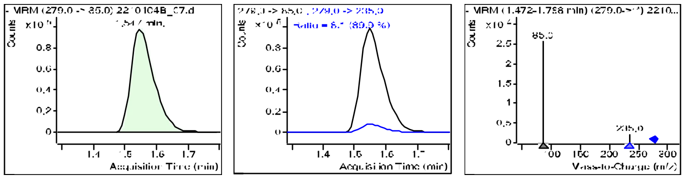

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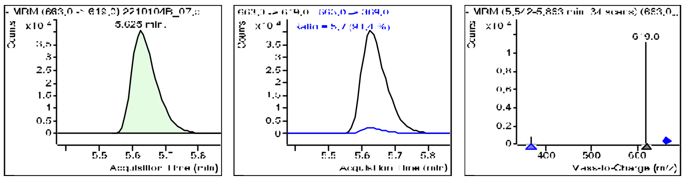

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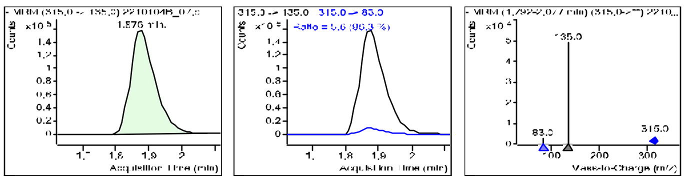

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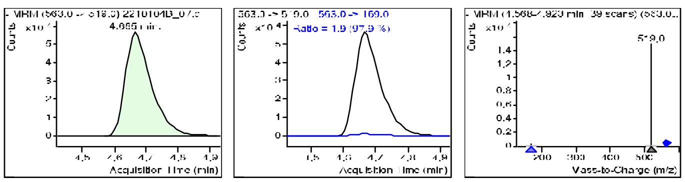

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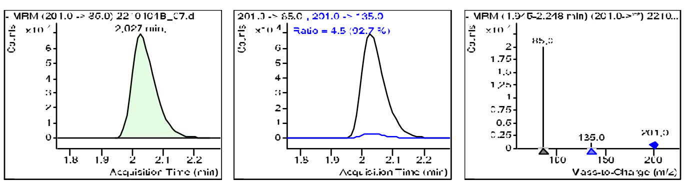

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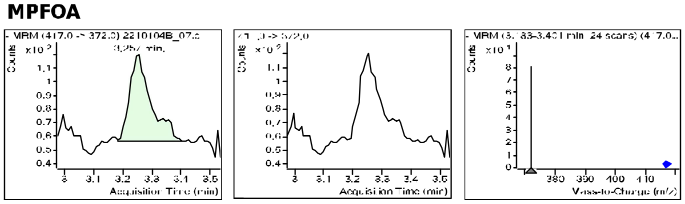

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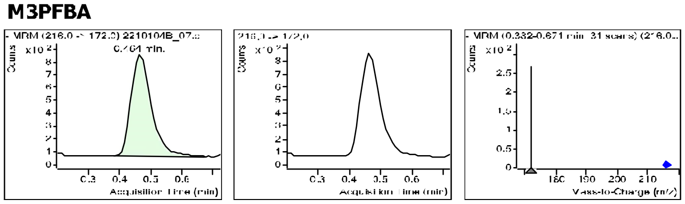
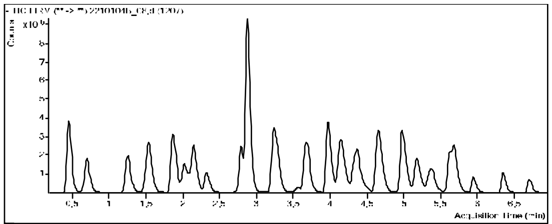


Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_08.d	**Position**	P1-A7	**Samp Name**	1207	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Calibration	**Comment**	MRA,QQQ2;Cal
Acq Date	1/4/2021 18:21						

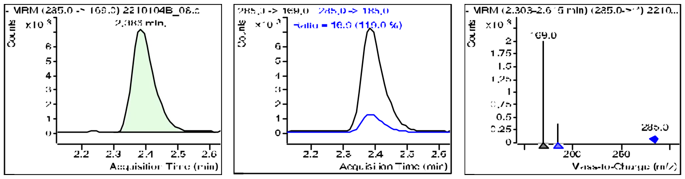
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	60228.122	4.149				86.73	17.3459	86.73	2573.17	1.42	
M2PFHxA	177841.062	2.152				91.55	36.6200	91.55	5226.61	1.59	
M2PFOA	67599.982	3.248				85.47	17.0946	85.47	3004.73	1.42	
M4PFOS	44718.062	3.703				88.47	17.6930	88.47	2009.37	1.52	
MPFOA	267.450	3.248				0.00	23.9228	95.69	6.02	2.79	
M3PFBA	3302.832	0.464				0.00	4.5048	90.10	69.27	1.53	
HFPO-DA	34681.228	2.386	M3HFPODA	530	2.393	79.17	431.6795	107.92	INF	1.50	
4:2 FTS	137570.915	2.095	M2 4:2 FTS	2364	2.104	95.77	184.3978	98.40	294.18	1.56	
6:2 FTS	238506.295	3.217	M2 6:2 FTS	4106	3.226	90.83	180.3577	94.83	3573.06	1.70	
ADONA	2563249.762	2.887	M8PFOA	20328	3.247	92.61	188.9932	100.00	2085.12	1.44	
8:2 FTS	256528.289	4.129	M2 8:2 FTS	4067	4.129	98.09	175.5969	91.46	53331.55	1.49	
FOSA	691234.342	4.335	M8FOSA	12370	4.325	91.69	204.3805	102.19	INF	1.37	
9Cl-PF3ONS	1918659.163	3.970	M8PFOS	9436	3.702	91.58	212.4790	113.87	828.06	1.65	
PFDS	447857.732	4.676	M6PFDA	13572	4.139	87.17	202.5249	104.94	12004.70	1.59	
11Cl-PF3OUdS	1858315.284	4.979	M8PFOS	9436	3.702	91.58	217.9677	115.57	72918.30	1.57	
PFHpS	434819.432	3.288	M8PFOA	20328	3.247	92.61	189.8126	99.59	3934.43	1.70	
10:2 FTS	281321.632	5.183	M2 8:2 FTS	4067	4.129	98.09	191.9639	99.57	12522.77	1.43	
PFNS	458452.929	4.172	M9PFNA	18620	3.669	90.07	195.0672	101.39	13308.57	1.49	
PFDoS	556629.788	5.623	M8PFOS	9436	3.702	91.58	195.6797	101.07	19072.32	1.45	
PFPeS	379680.330	2.323	M5PFHxA	20102	2.151	97.02	187.8299	99.80	10089.06	1.50	
PFODA	280200.408	6.706	M2PFHxDA	12565	6.348	112.58	187.3570	93.68	8418.67	1.42	
NEtFOSAA	551944.118	4.642	d5-NEtFOSAA	9753	4.632	90.03	200.1054	100.05	INF	1.57	m
PFHxDA	435000.813	6.351	M2PFHxDA	12565	6.348	112.58	188.5052	94.25	1590.34	1.63	
NMeFOSAA	656993.432	4.375	d3-NMeFOSAA	7941	4.365	102.89	201.2700	100.63	INF	1.09	m
PFBA	1699385.753	0.466	MPFBA	22596	0.463	92.17	202.6461	101.32	70397.32	1.40	
PFBS	383551.724	1.507	M3PFBS	8318	1.505	90.88	180.8648	101.95	15212.51	1.36	
NMeFOSA	269716.258	5.354	d-NMeFOSA	6453	5.353	107.31	201.8049	100.90	INF	1.38	
PFDA	636522.536	4.150	M6PFDA	13572	4.139	87.17	201.9539	100.98	14928.35	1.49	
PFDoA	563371.793	5.187	MPFDoA	14860	5.186	109.87	198.0430	99.02	7066.99	1.36	
NEtFOSA	294579.249	5.695	d-NEtFOSA	5630	5.684	89.87	207.9777	103.99	15420.39	1.43	
PFHpA	884894.819	2.798	M4PFHpA	18304	2.797	89.29	203.1514	101.58	34468.35	1.42	
PFHxA	928817.708	2.153	M5PFHxA	20102	2.151	97.02	202.5011	101.25	26194.63	1.46	
NMeFOSE	416809.385	5.398	d7-NMeFOSE	6963	5.379	95.25	203.8840	101.94	15018.17	1.35	
PFHxS	408253.245	2.866	M3PFHxS	8159	2.874	85.45	184.3010	100.82	14374.41	0.87	m
PFNA	835405.379	3.670	M9PFNA	18620	3.669	90.07	202.7106	101.36	INF	1.52	
NEtFOSE	450551.808	5.703	d9-NEtFOSE	9310	5.682	94.42	236.0648	118.03	25925.77	1.40	
PFOA	882475.367	3.249	M8PFOA	20328	3.247	92.61	199.6941	99.85	12056.92	1.42	
PFOS	566752.999	3.704	M8PFOS	9436	3.702	91.58	188.5605	101.60	INF	0.79	m
PFPeA	1013293.662	1.265	M5PFPeA	15507	1.263	91.34	204.5869	102.29	38907.16	1.33	
PFMPA	886884.976	0.698	M5PFPeA	15507	1.263	91.34	204.6564	102.33	38969.60	1.36	
PFTA	343087.191	5.946	M2PFTA	9950	5.954	105.20	200.0505	100.03	14067.43	1.52	
PFMBA	1006764.775	1.547	M5PFHxA	20102	2.151	97.02	201.2138	100.61	48541.59	1.56	
PFTrDA	415141.190	5.625	MPFDoA	14860	5.186	109.87	184.6009	92.30	5178.76	1.60	
PFEESA	1562891.532	1.876	M3PFHxS	8159	2.874	85.45	219.1445	123.11	57307.32	1.37	
PFUnA	632043.370	4.665	M7PFUnA	14749	4.662	88.34	203.9901	102.00	9155.70	1.57	
NFDHA	738290.848	2.027	M4PFHpA	18304	2.797	89.29	204.0602	102.03	29881.62	1.43	

HFPO-DA



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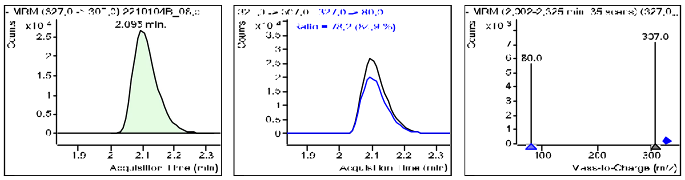

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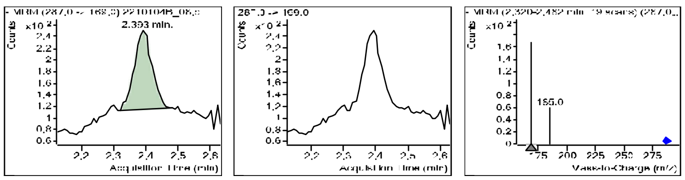

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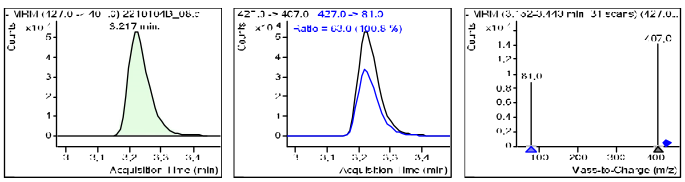

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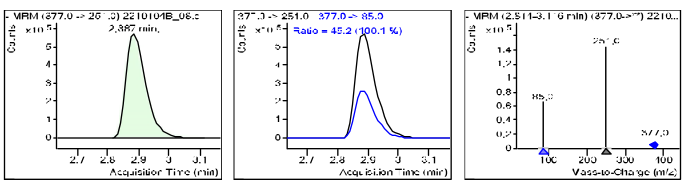

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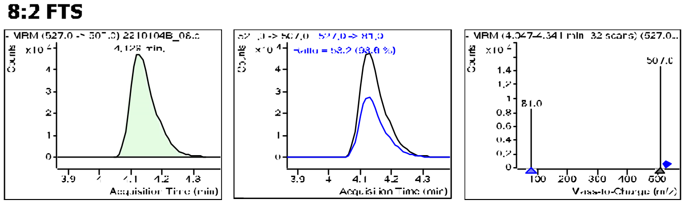

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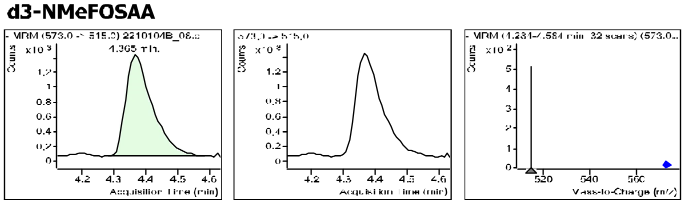

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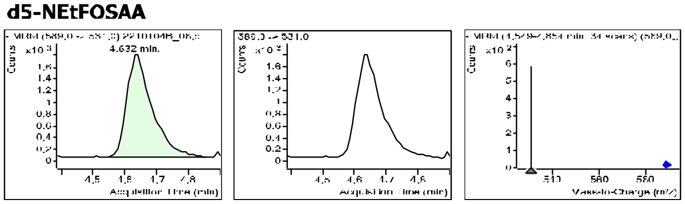

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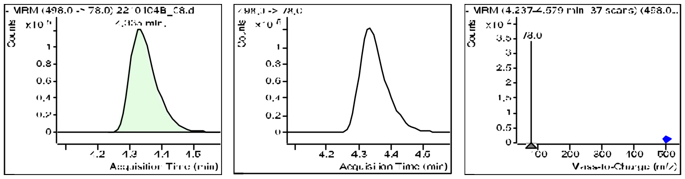

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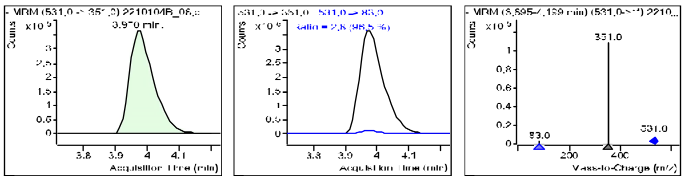

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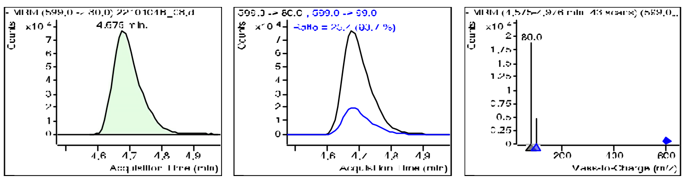

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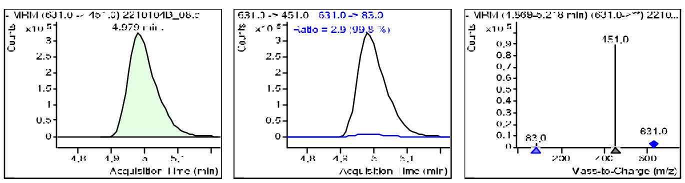

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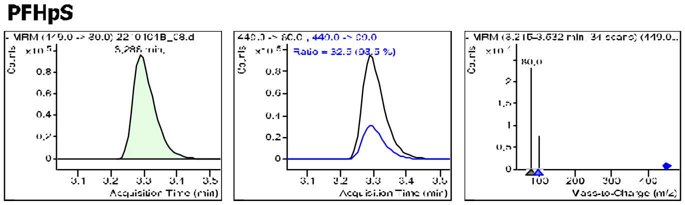

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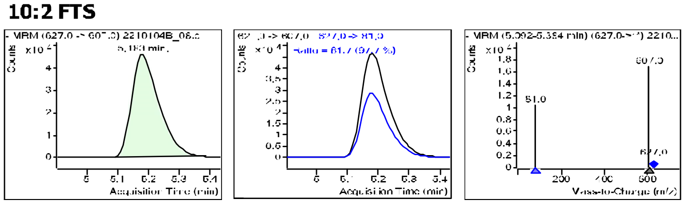

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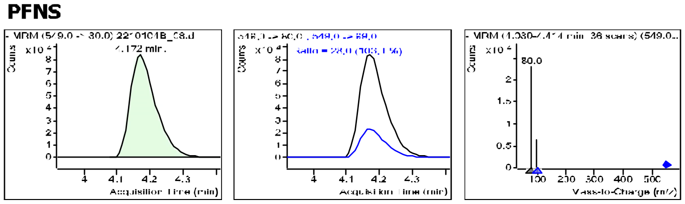

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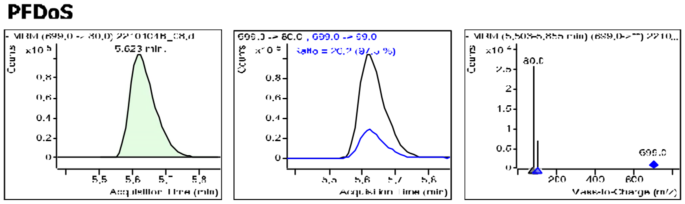

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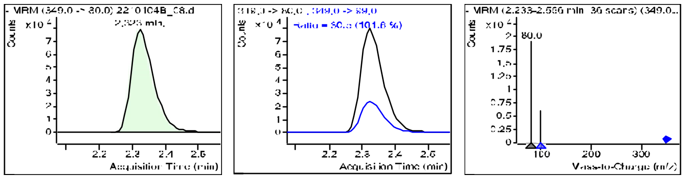

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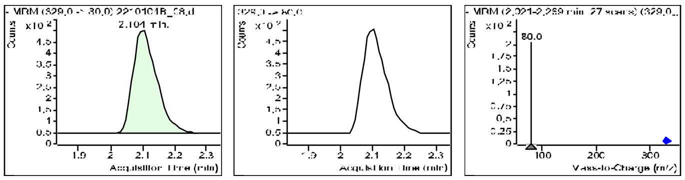
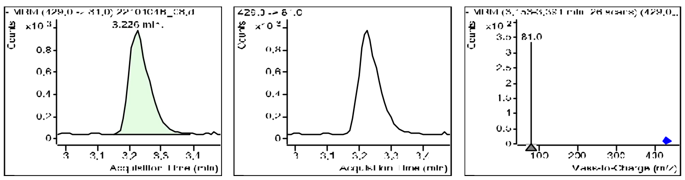
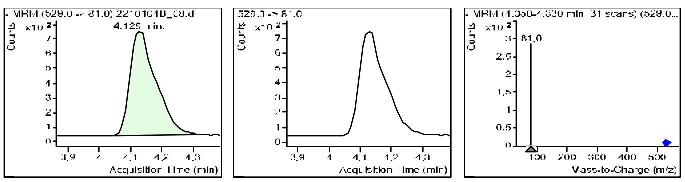


M2 6:2 FTS



M2 8:2 FTS



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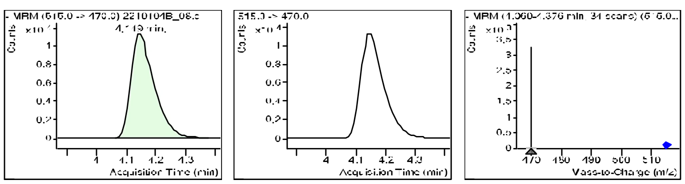

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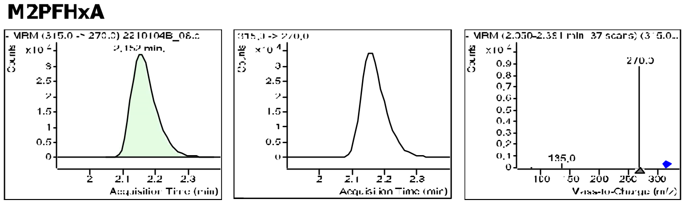

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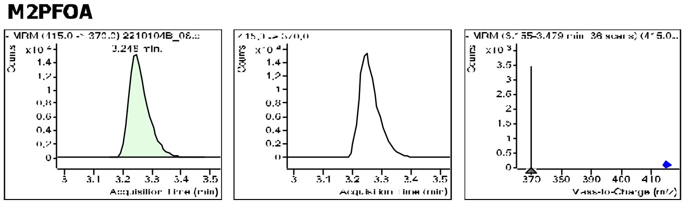

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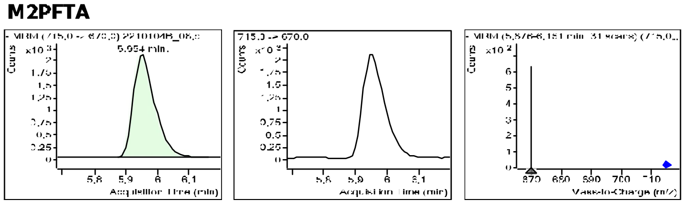

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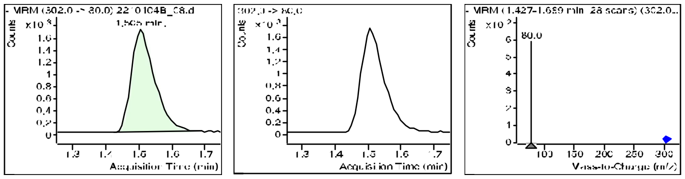

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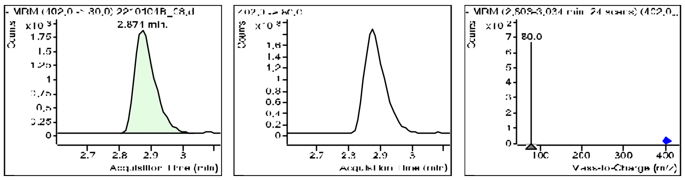

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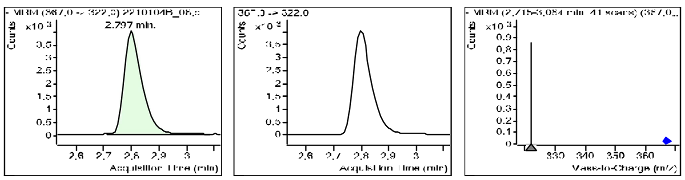

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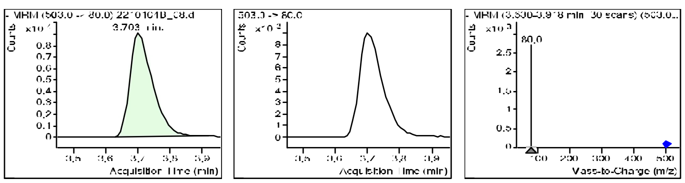

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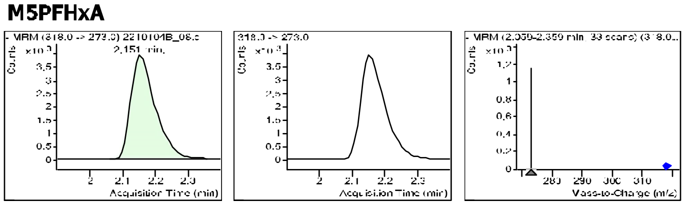

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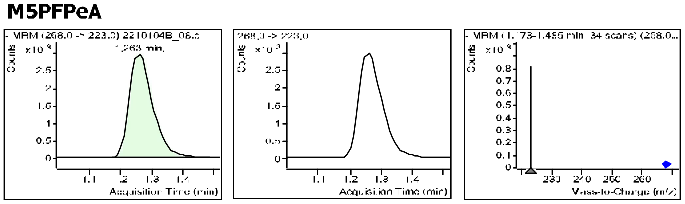

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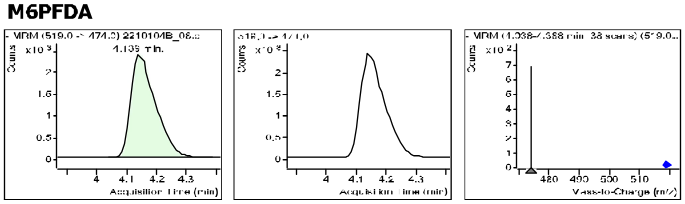

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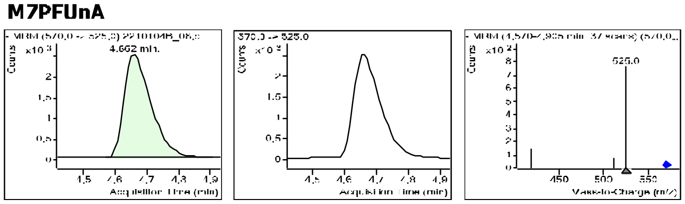

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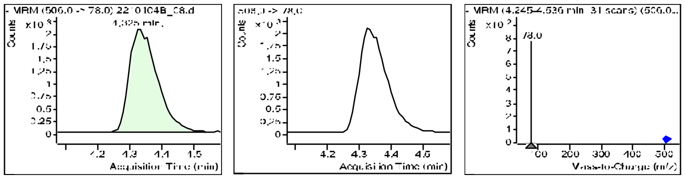

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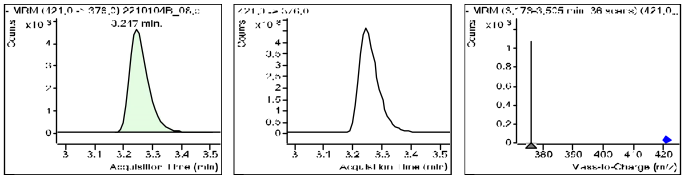

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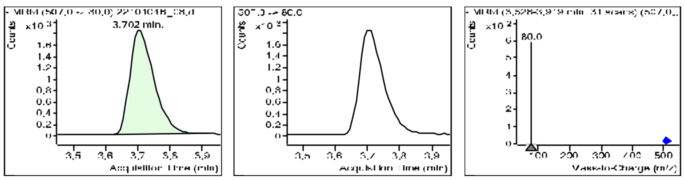

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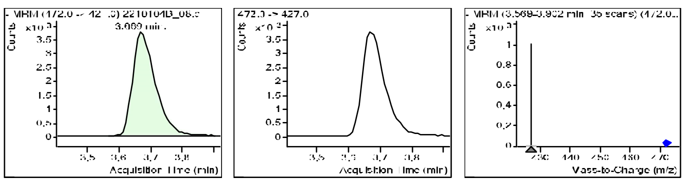

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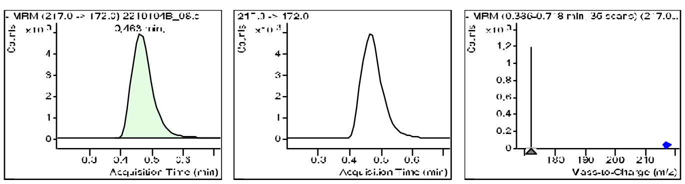

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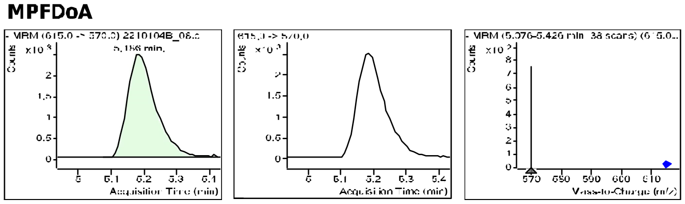

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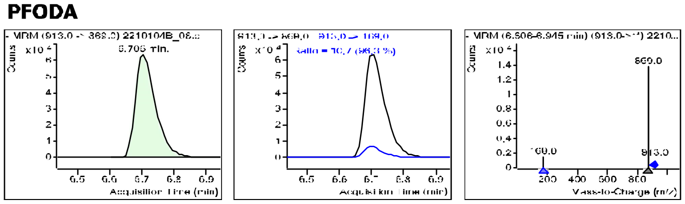

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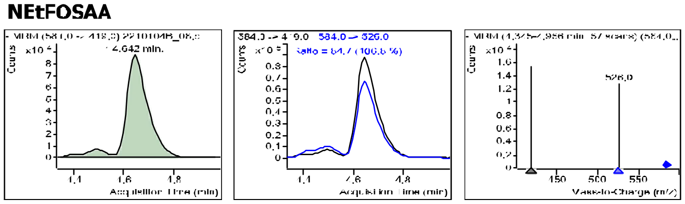

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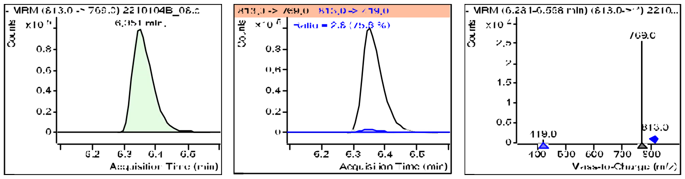

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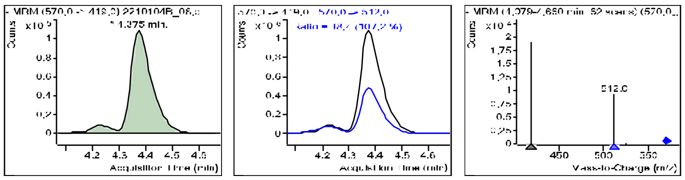

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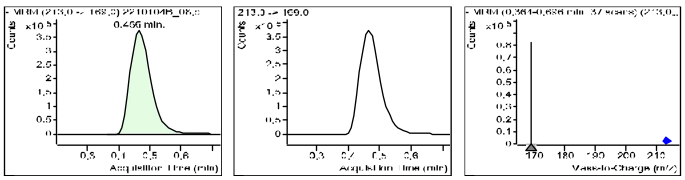

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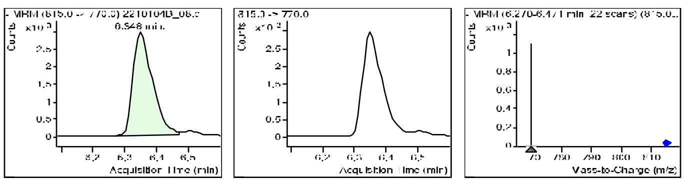

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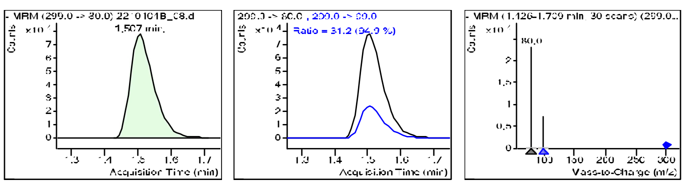

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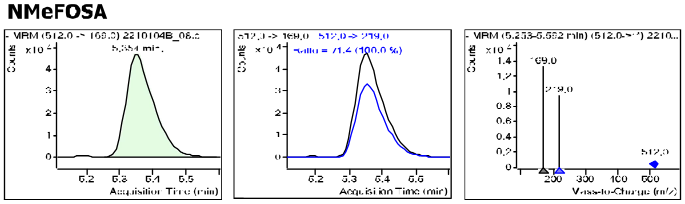

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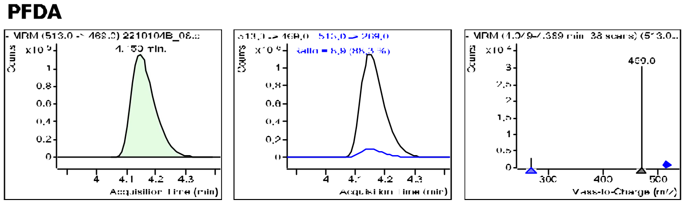

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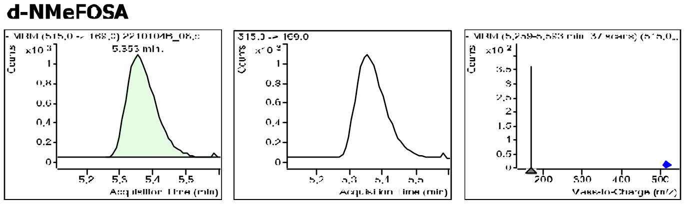

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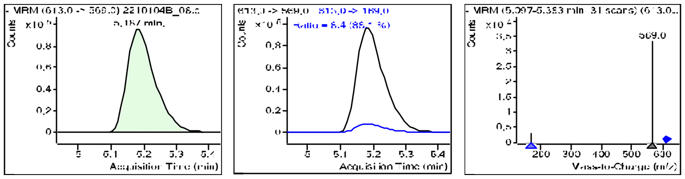

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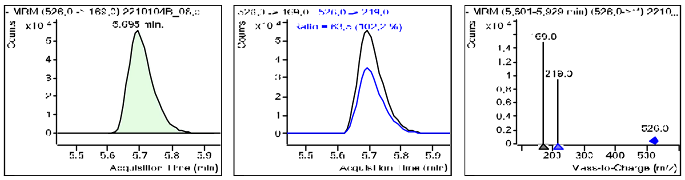

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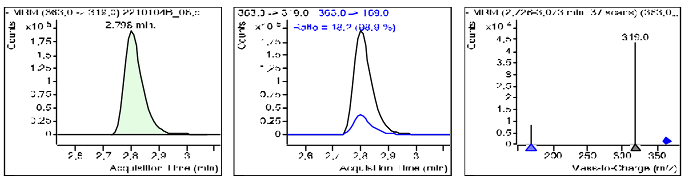

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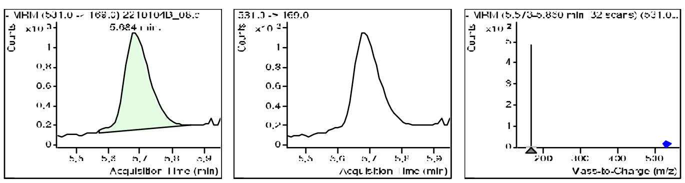

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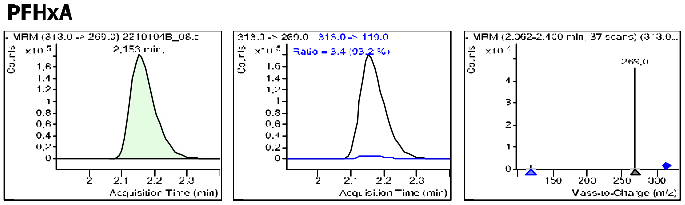

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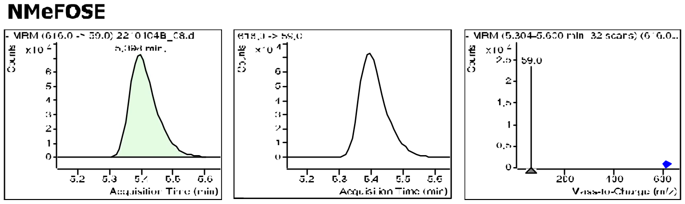

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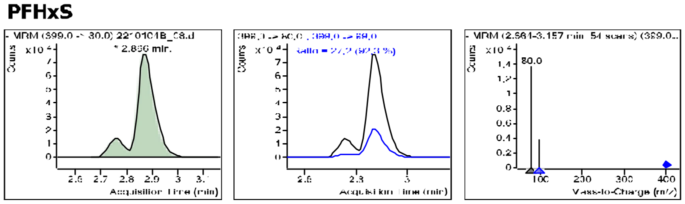

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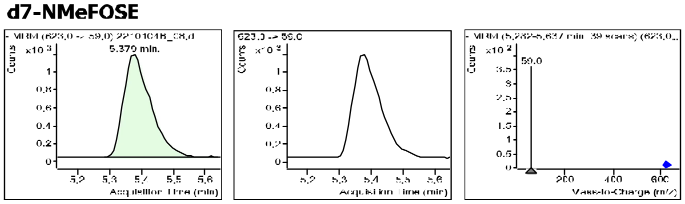

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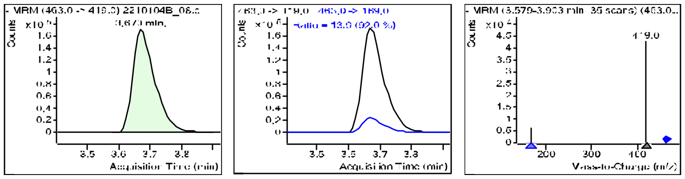

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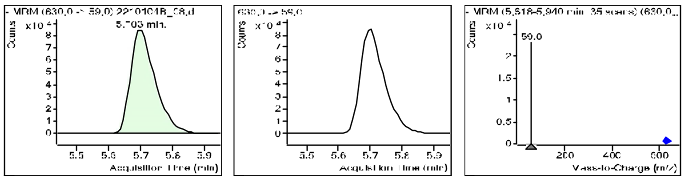

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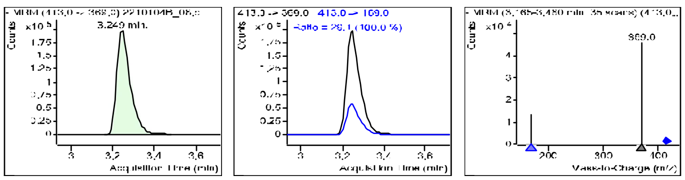

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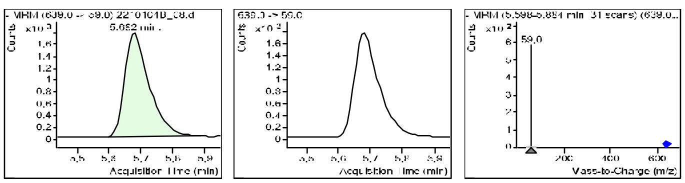

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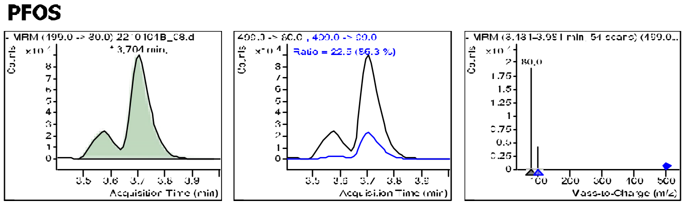

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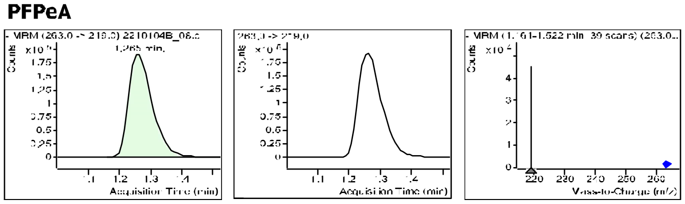

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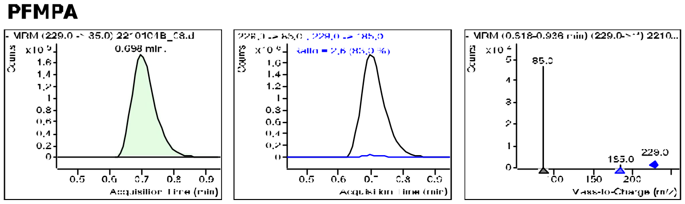

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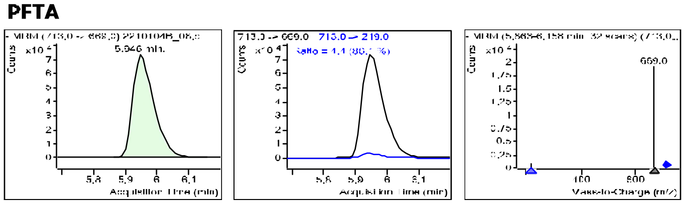

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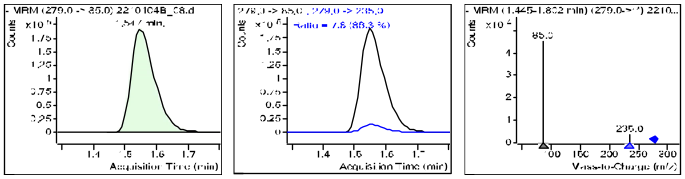

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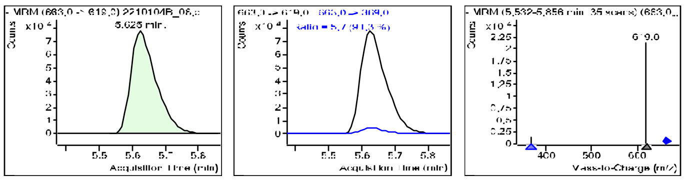

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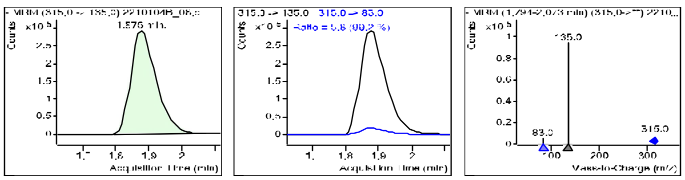

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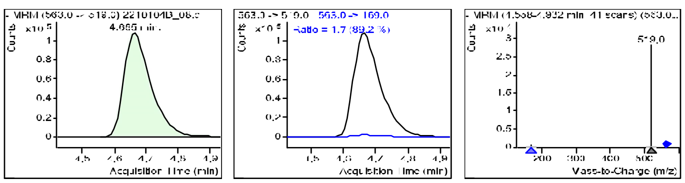

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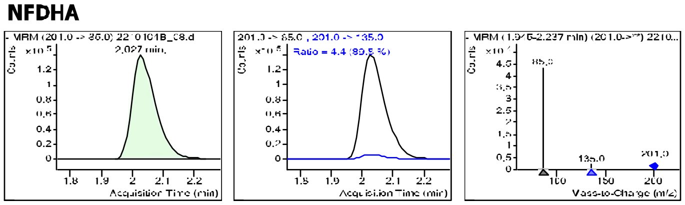

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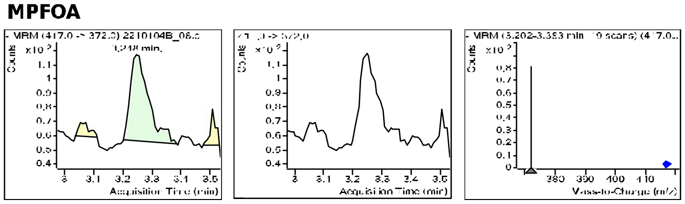

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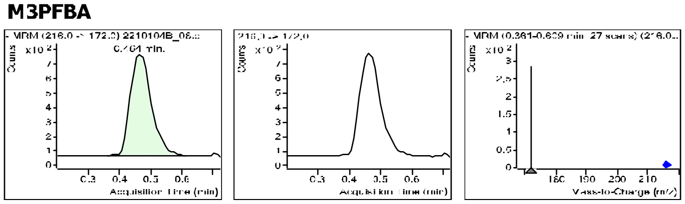


PFAS Isotope Dilution QSM B15

Form 6I

ICAL Verifications

6I

ORGANICS INITIAL CALIBRATION VERIFICATION

Report No:	220122279	Instrument ID:	QQQ1
Analysis Date:	12/24/2020 13:04	Lab File ID:	2201224A_13.d
Analytical Method:	EPA 537 Mod Isotope Dilution	Analytical Batch:	700789

ANALYTE	UNITS	TRUE	FOUND	% REC	LCL	UCL	Q
6:2 Fluorotelomersulfonic acid	ng/L	10000	10900	109	70	130	
8:2 Fluorotelomersulfonic acid	ng/L	10100	10200	101	70	130	
Perfluorobutanoic acid	ng/L	10000	9140	91	70	130	
Perfluorobutanesulfonic acid	ng/L	10000	9010	90	70	130	
Perfluorodecanoic acid	ng/L	10000	8800	88	70	130	
Perfluoroheptanoic acid	ng/L	10000	9150	91	70	130	
Perfluorohexanoic acid	ng/L	10100	8860	88	70	130	
Perfluorohexanesulfonic acid	ng/L	10000	11400	114	70	130	
Perfluorononanoic acid	ng/L	10000	9820	98	70	130	
Perfluorooctanoic acid	ng/L	10100	11200	111	70	130	
Perfluorooctanesulfonic acid	ng/L	10000	9740	97	70	130	
Perfluoropentanoic acid	ng/L	10100	9070	90	70	130	
Perfluoroundecanoic acid	ng/L	10000	8440	84	70	130	

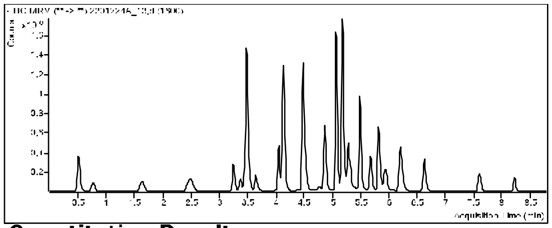
FORM 6I - ORG

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_13.d	**Position**	Vial 9	**Samp Name**	1600	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ1
Acq Date	12/24/2020 13:04						

Sample Chromatogram

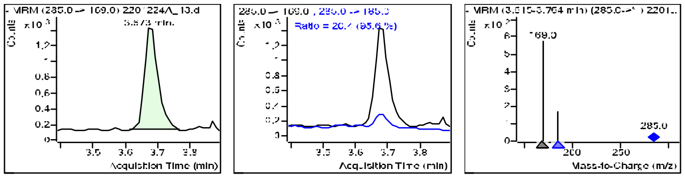


Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	200701.953	5.176				117.29	23.4586		1922.20	1.87	
M2PFHxA	306787.878	3.481				115.08	46.0326		11681.19	2.05	
M2PFOA	145226.560	4.489				114.94	22.9886		7510.93	1.49	
M4PFOS	46473.087	4.873				95.49	19.0974		6497.75	1.88	
M3PFBA	6959.330	0.503				0.00	5.4157		364.24	1.64	
MPFOA	552.743	4.489				0.00	27.1295		6.98	1.99	
HFPO-DA	3821.256	3.673	M3HFPODA	3218	3.683	109.71	9.3280		26.49	2.00	
4:2 FTS	50286.432	3.448	M2 4:2 FTS	13482	3.447	121.74	9.5235		835.82	1.73	
6:2 FTS	89169.102	4.467	M2 6:2 FTS	23723	4.466	108.12	10.8715		2084.02	1.79	
ADONA	179874.491	4.138	M8PFOA	22832	4.488	108.84	8.9487		2717.73	1.32	
8:2 FTS	79770.607	5.175	M2 8:2 FTS	11820	5.175	114.77	10.1953		4568.18	1.49	
FOSA	109286.593	5.282	M8FOSA	23286	5.281	105.84	10.0805		15588.27	1.57	
9Cl-PF3ONS	448796.376	5.059	M8PFOS	4298	4.872	91.20	10.7704		15819.29	2.01	
PFDS	19229.592	5.494	M6PFDA	38844	5.176	125.68	9.3757		2085.73	1.27	
11Cl-PF3OUdS	94832.184	5.669	M8PFOS	4298	4.872	91.20	9.9316		10061.50	1.88	
PFHpS	35507.093	4.529	M8PFOA	22832	4.488	108.84	10.2384		2868.19	1.42	
10:2 FTS	29344.413	5.827	M2 8:2 FTS	11820	5.175	114.77	7.8943		1362.88	1.30	
PFNS	16612.529	5.184	M9PFNA	29757	4.853	111.74	10.1104		1031.04	2.00	
PFDoS	15757.493	6.189	M8PFOS	4298	4.872	91.20	7.1794		13383.60	1.17	
PFPeS	35267.231	3.637	M5PFHxA	31351	3.480	116.71	10.4280		2056.08	1.84	
PFODA	36754.179	8.216	M2PFHxDA	34811	7.596	102.88	9.4284		2091.03	1.60	
NEtFOSAA	36370.441	5.484	d5-NEtFOSAA	13569	5.474	108.04	9.5596		1991.22	1.30	m
PFHxDA	32407.546	7.599	M2PFHxDA	34811	7.596	102.88	9.5489		152.23	1.46	
NMeFOSAA	29310.935	5.318	d3-NMeFOSAA	9964	5.317	104.57	9.0875		1829.69	1.76	m
PFBA	92178.361	0.505	MPFBA	39106	0.501	110.67	9.1438		786.28	1.51	
PFBS	38619.634	2.465	M3PFBS	13908	2.463	117.90	9.0149		1658.28	1.10	
NMeFOSA	15437.687	5.928	d-NMeFOSA	18431	5.917	109.63	8.9927		234.34	1.33	
PFDA	103050.169	5.176	M6PFDA	38844	5.176	125.68	8.7959		659.18	1.84	
PFDoA	85305.782	5.818	MPFDoA	45264	5.818	120.21	9.1075		2708.65	1.47	
NEtFOSA	14676.084	6.227	d-NEtFOSA	12747	6.216	107.42	8.3559		991.06	1.60	
PFHpA	71976.933	4.057	M4PFHpA	38509	4.056	109.12	9.1491		1788.29	1.38	
PFHxA	73329.495	3.483	M5PFHxA	31351	3.480	116.71	8.8640		1249.51	1.90	
NMeFOSE	22730.838	5.954	d7-NMeFOSE	27895	5.943	119.89	7.7935		1987.26	1.75	
PFHxS	51085.983	4.126	M3PFHxS	10042	4.126	100.56	11.3546		5782.94	1.36	m
PFNA	91017.182	4.853	M9PFNA	29757	4.853	111.74	9.8233		1063.29	1.78	
NEtFOSE	21454.866	6.244	d9-NEtFOSE	24980	6.223	120.16	7.7953		1214.02	1.28	
PFOA	72001.642	4.490	M8PFOA	22832	4.488	108.84	11.1902		1241.55	1.48	m
PFOS	38110.419	4.873	M8PFOS	4298	4.872	91.20	9.7372		3107.94	1.81	m
PFPeA	38786.671	1.627	M5PFPeA	18195	1.624	108.21	9.0661		612.90	1.22	
PFMPA	34786.019	0.755	M5PFPeA	18195	1.624	108.21	8.4044		583.23	1.30	
PFTA	74083.315	6.624	M2PFTA	35199	6.623	110.75	11.8613		651.04	1.55	
PFMBA	32232.143	2.610	M5PFHxA	31351	3.480	116.71	7.5955		1345.38	1.03	
PFTrDA	90529.013	6.190	MPFDoA	45264	5.818	120.21	9.3384		1151.10	1.96	
PFEESA	83812.124	3.242	M3PFHxS	10042	4.126	100.56	9.0475		334.63	1.74	
PFUnA	116392.939	5.486	M7PFUnA	64497	5.485	122.91	8.4424		2584.94	1.70	
NFDHA	34010.148	3.372	M4PFHpA	38509	4.056	109.12	8.9644		2584.01	1.60	

Quantitative Analysis Sample Report

HFPO-DA



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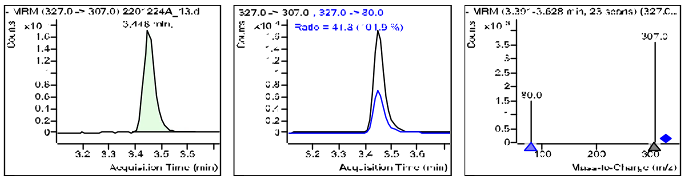

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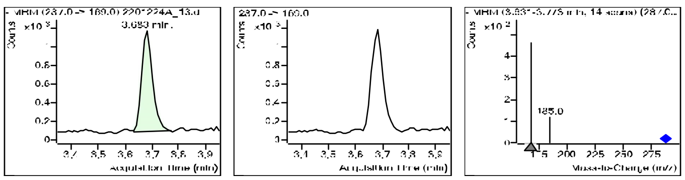

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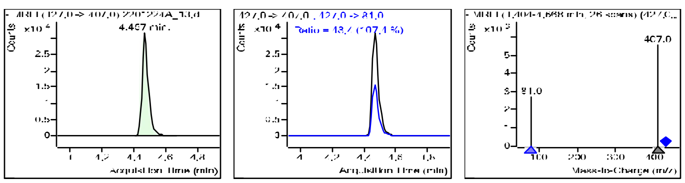

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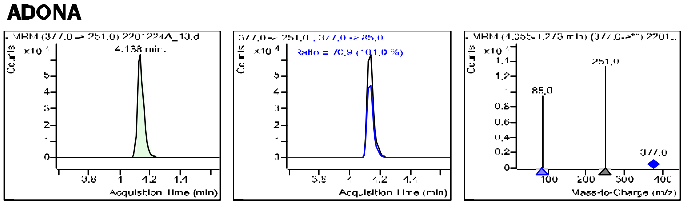

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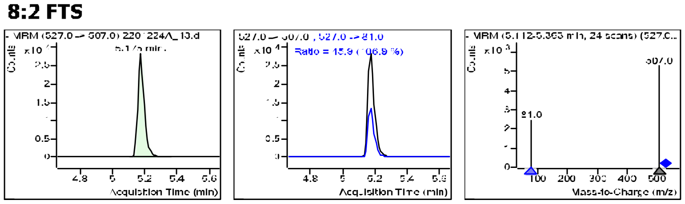

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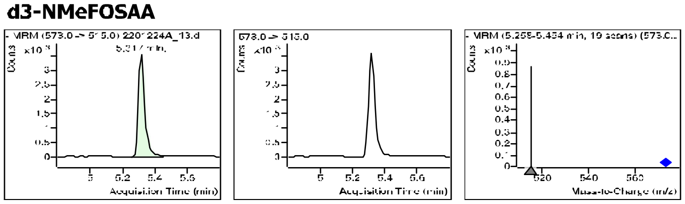

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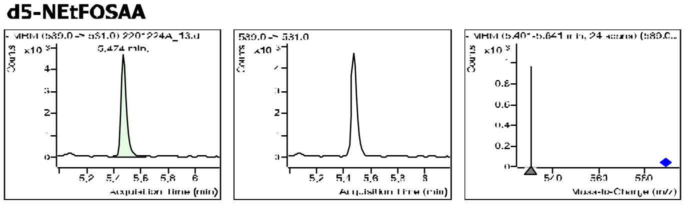
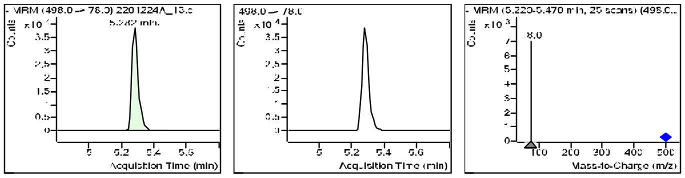
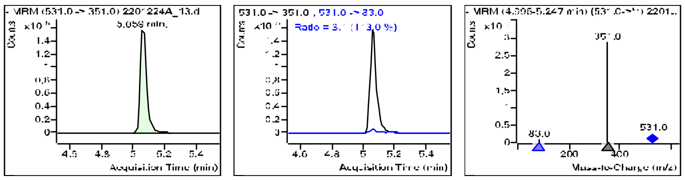


FOSA



9Cl-PF3ONS



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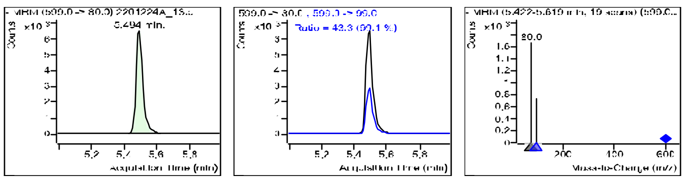

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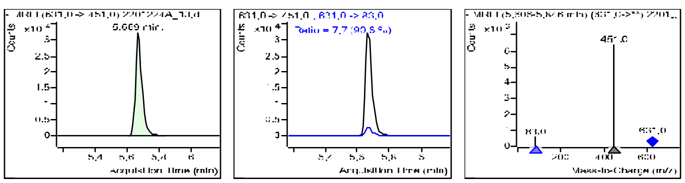

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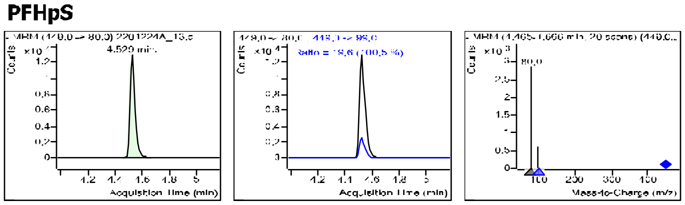

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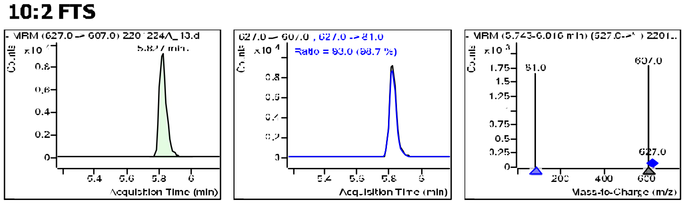

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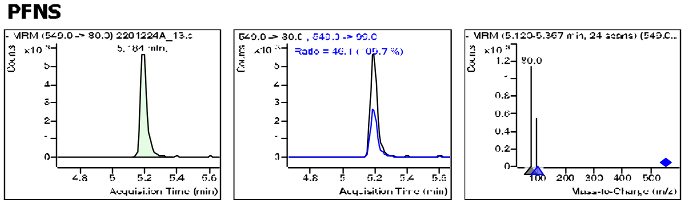

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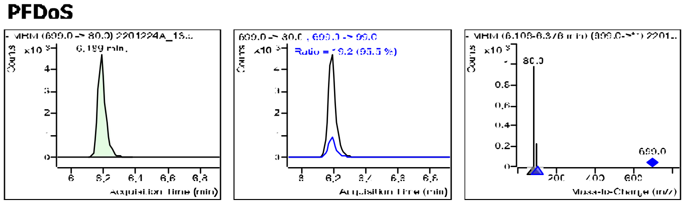

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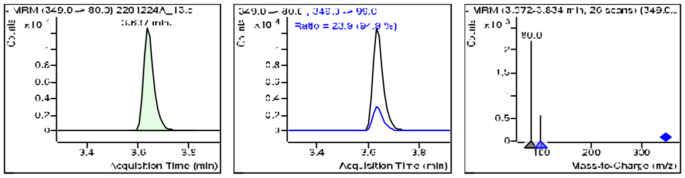

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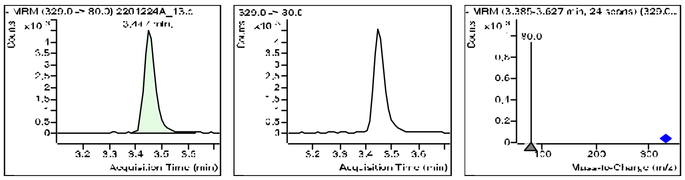

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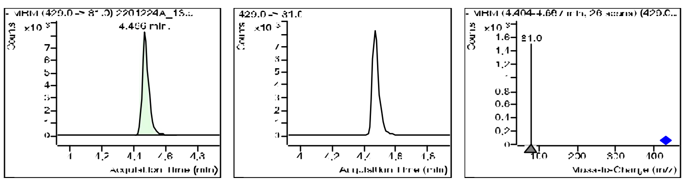

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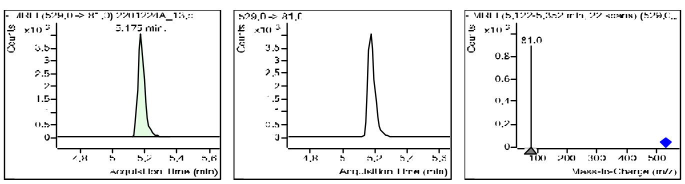

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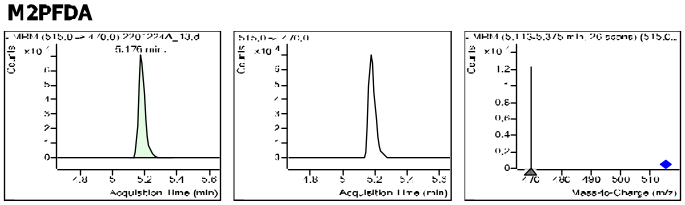

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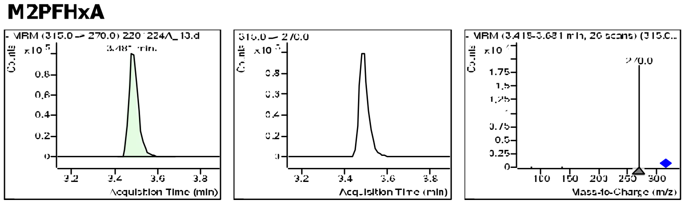

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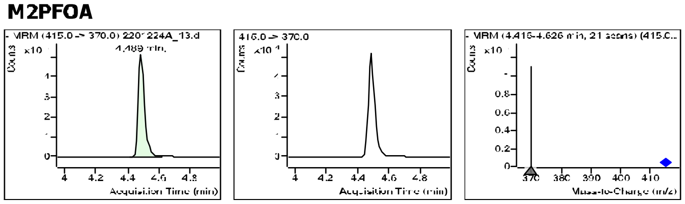

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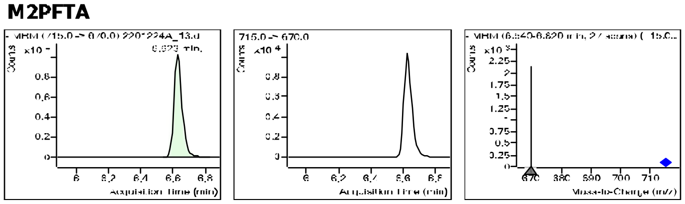

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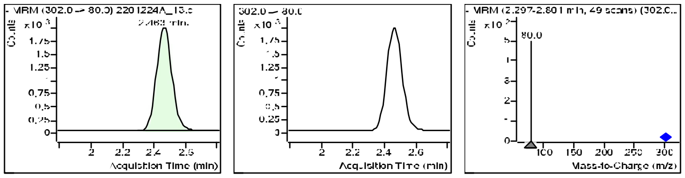

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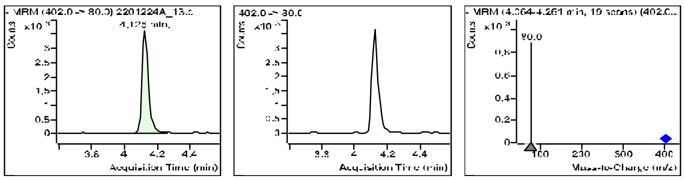

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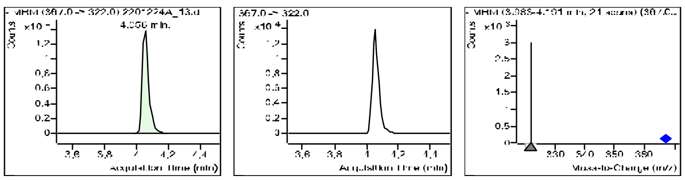

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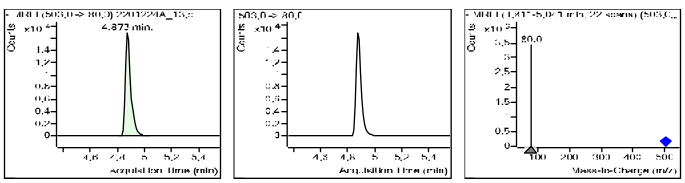

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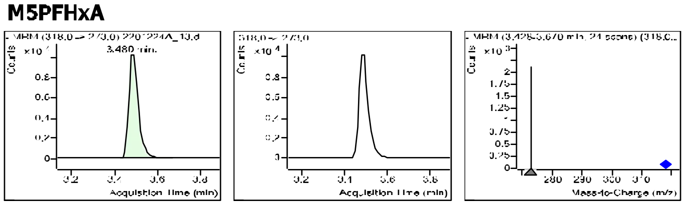

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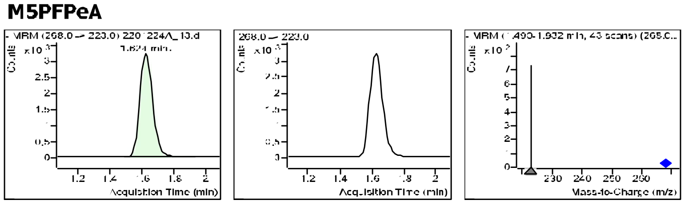

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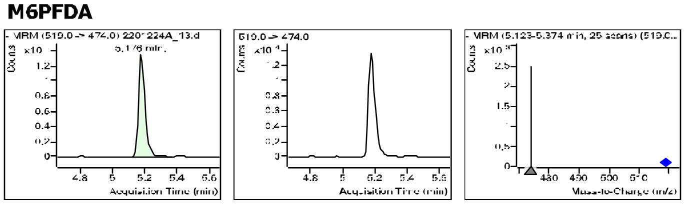

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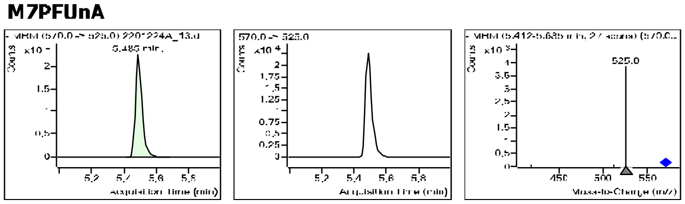

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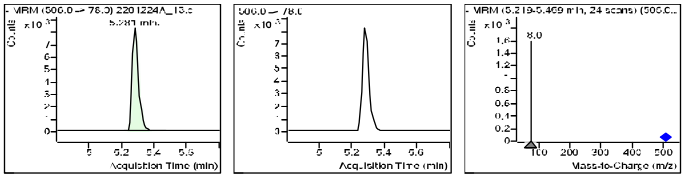

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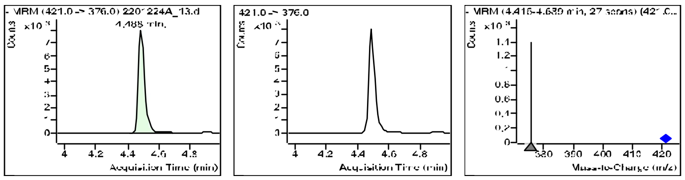

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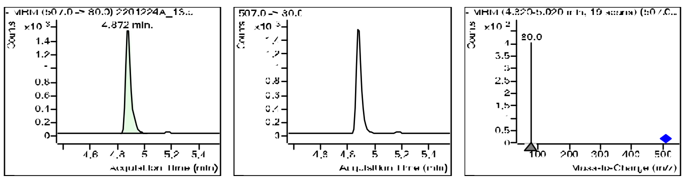

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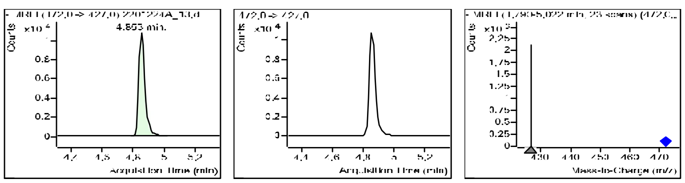

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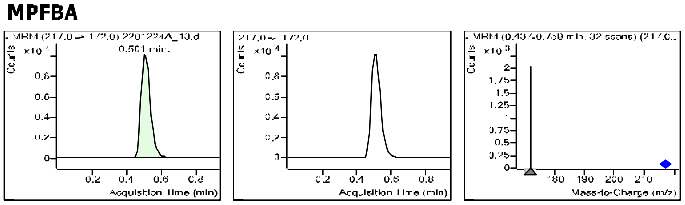

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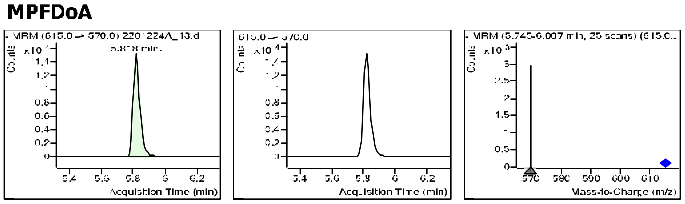

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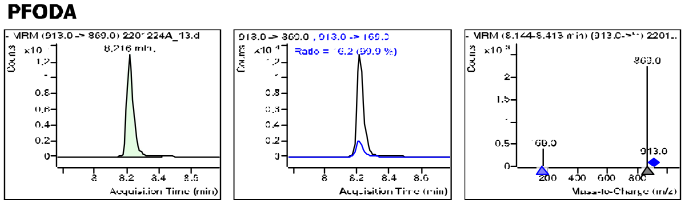

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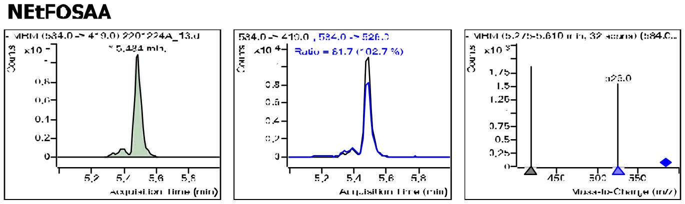

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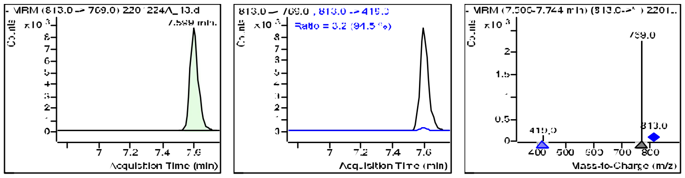

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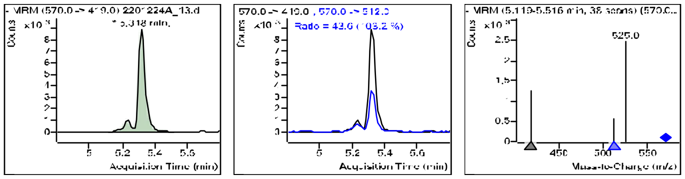

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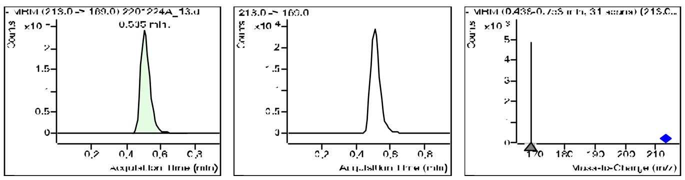

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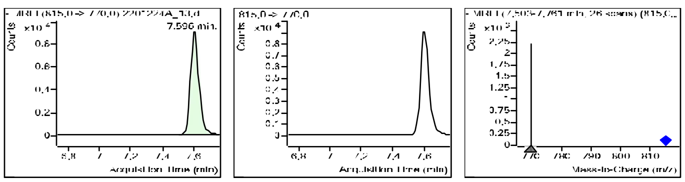

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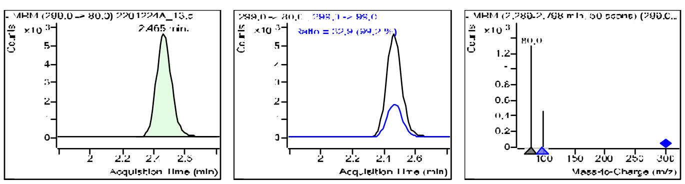

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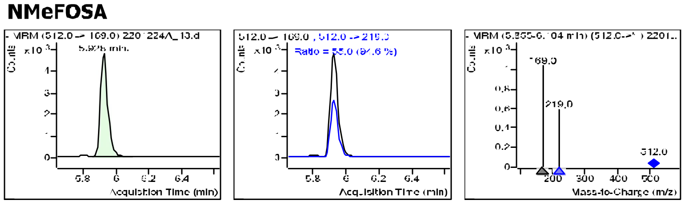

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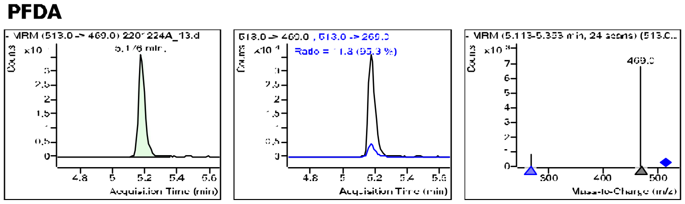

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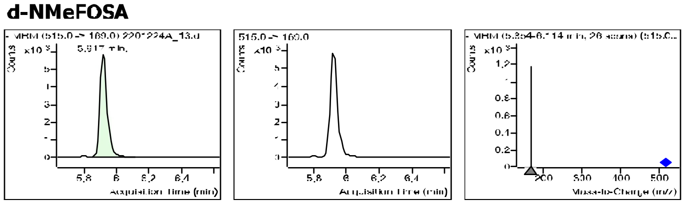

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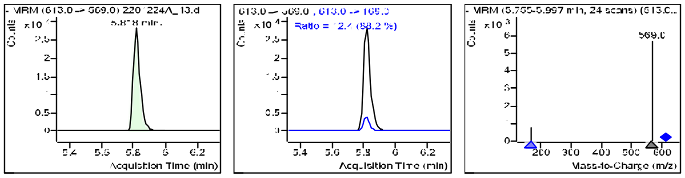

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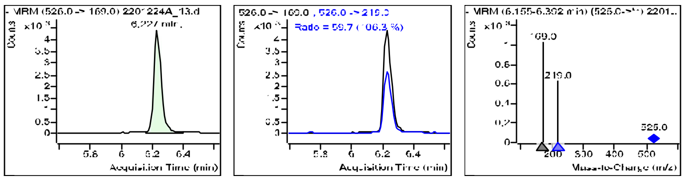

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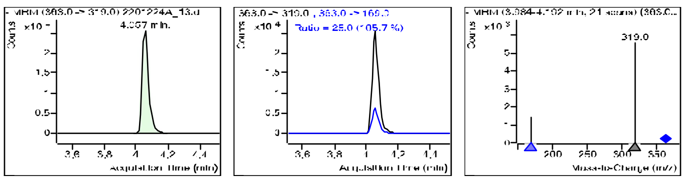

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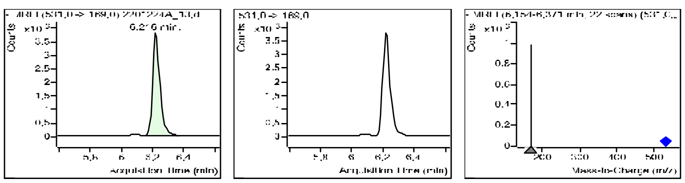

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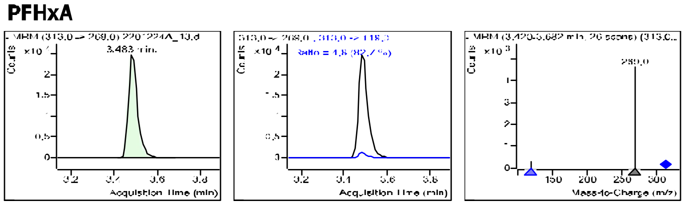

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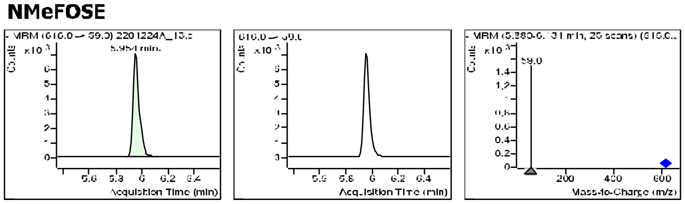

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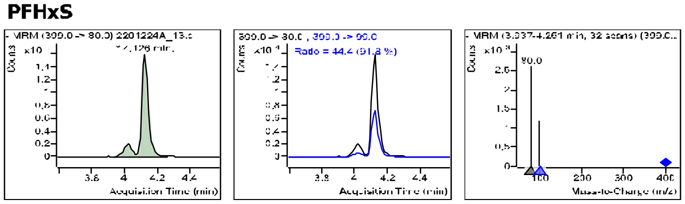

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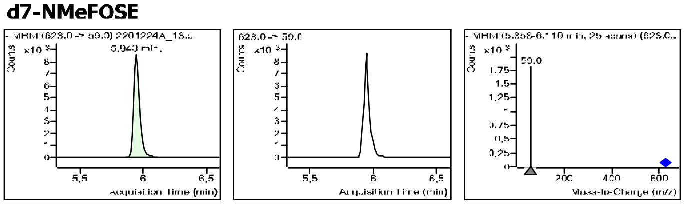

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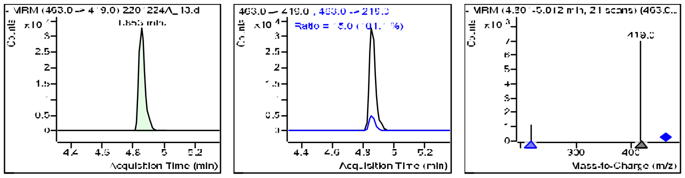

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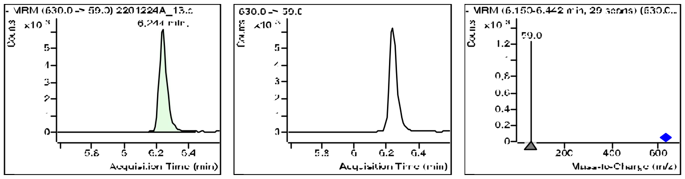

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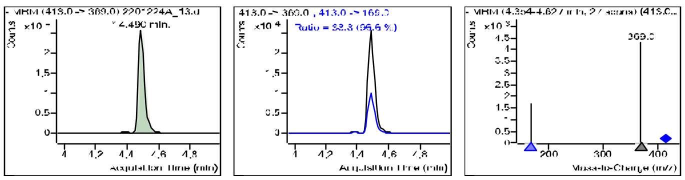

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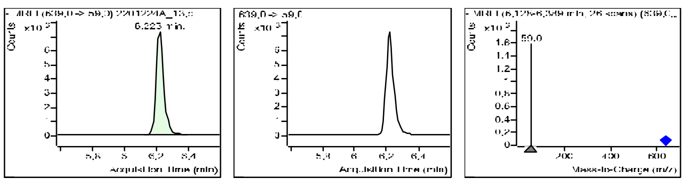

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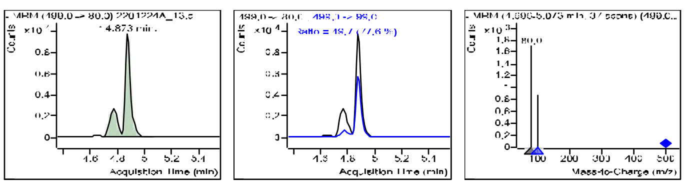

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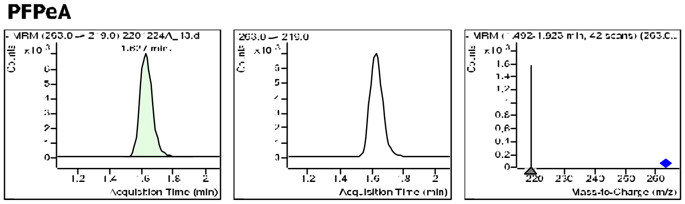

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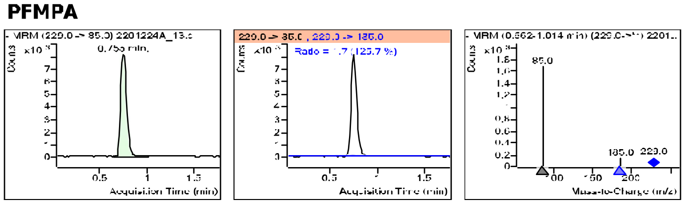

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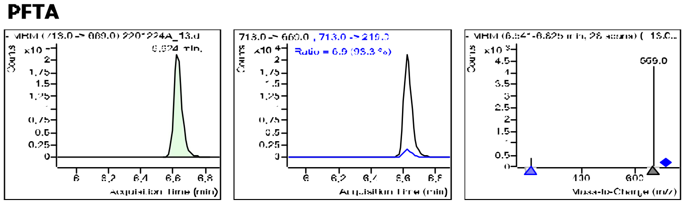

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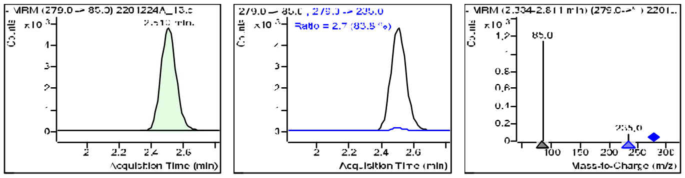

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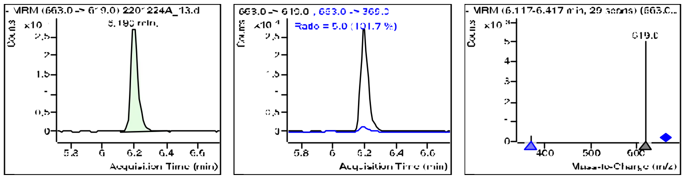

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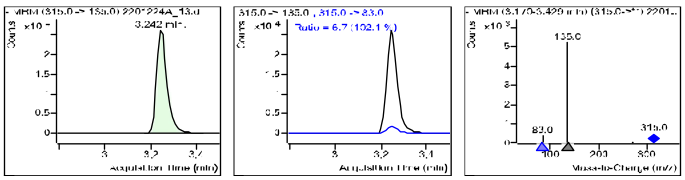

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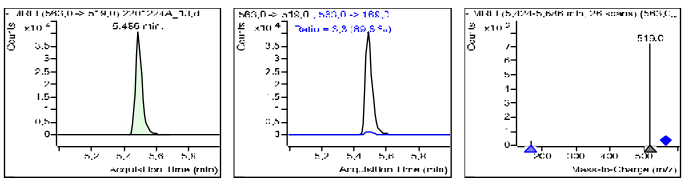

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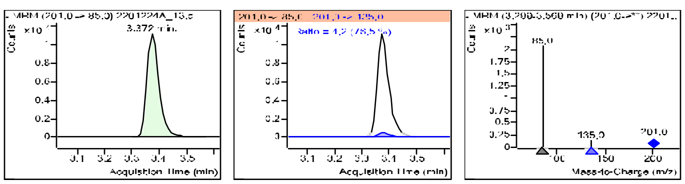

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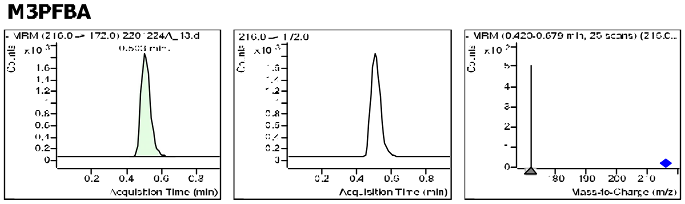

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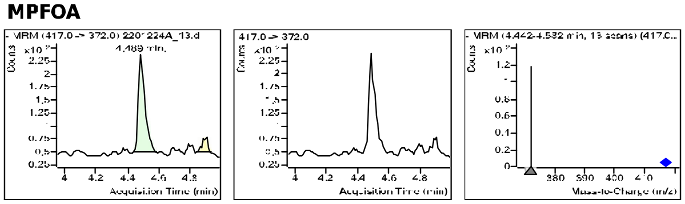


6I

ORGANICS INITIAL CALIBRATION VERIFICATION

Report No:	220122279	Instrument ID:	QQQ2
Analysis Date:	01/04/2021 19:00	Lab File ID:	2210104B_11.d
Analytical Method:	EPA 537 Mod Isotope Dilution	Analytical Batch:	701166

ANALYTE	*UNITS*	*TRUE*	*FOUND*	*% REC*	*LCL*	*UCL*	*Q*
6:2 Fluorotelomersulfonic acid	ng/L	10000	10300	103	70	130	
8:2 Fluorotelomersulfonic acid	ng/L	10100	12500	124	70	130	
Perfluorobutanoic acid	ng/L	10000	9420	94	70	130	
Perfluorobutanesulfonic acid	ng/L	10000	9360	94	70	130	
Perfluorodecanoic acid	ng/L	10000	9300	93	70	130	
Perfluoroheptanoic acid	ng/L	10000	8930	89	70	130	
Perfluorohexanoic acid	ng/L	10100	9240	91	70	130	
Perfluorohexanesulfonic acid	ng/L	10000	10200	102	70	130	
Perfluorononanoic acid	ng/L	10000	10300	103	70	130	
Perfluorooctanoic acid	ng/L	10100	9260	92	70	130	
Perfluorooctanesulfonic acid	ng/L	10000	8190	82	70	130	
Perfluoropentanoic acid	ng/L	10100	9340	93	70	130	
Perfluoroundecanoic acid	ng/L	10000	8600	86	70	130	

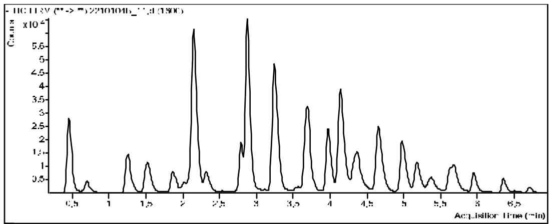
FORM 6I - ORG

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_11.d	**Position**	P1-A9	**Samp Name**	1600	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	Sample	**Comment**	MRA,QQQ2;Cal
Acq Date	1/4/2021 19:00						

Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
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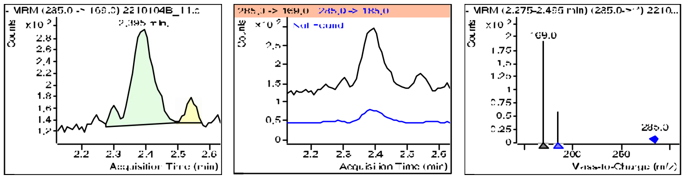
M2PFHxA	226142.706	2.152				116.42	46.5660		12064.82	1.59	
M2PFOA	95676.405	3.248				120.97	24.1946		3656.10	1.42	
M4PFOS	60749.314	3.703				120.18	24.0359		155.53	1.52	
MPFOA	280.051	3.238				0.00	25.0500		2.78	2.17	
M3PFBA	4024.515	0.464				0.00	5.4892		25.63	1.60	
HFPO-DA	816.668	2.395	M3HFPODA	798	2.384	119.18	6.7527		4.51	1.06	
4:2 FTS	8632.551	2.095	M2 4:2 FTS	2948	2.104	119.46	9.2766		308.39	1.56	
6:2 FTS	16492.859	3.226	M2 6:2 FTS	4966	3.225	109.85	10.3120		55.03	1.42	
ADONA	162238.144	2.887	M8PFOA	25574	3.247	116.51	9.5083		1697.91	1.36	
8:2 FTS	19275.519	4.138	M2 8:2 FTS	4278	4.128	103.18	12.5431		12965.15	1.37	
FOSA	33923.168	4.335	M8FOSA	14584	4.335	108.10	8.5072		1473.36	1.50	
9Cl-PF3ONS	114529.391	3.979	M8PFOS	11149	3.702	108.20	10.7343		3406.17	1.35	
PFDS	26773.481	4.676	M6PFDA	17465	4.149	112.17	9.4084		188.06	1.59	
11Cl-PF3OUdS	103983.366	4.979	M8PFOS	11149	3.702	108.20	10.3222		3876.33	1.57	
PFHpS	26221.614	3.288	M8PFOA	25574	3.247	116.51	9.0985		179.17	1.70	
10:2 FTS	7243.599	5.183	M2 8:2 FTS	4278	4.128	103.18	4.6988		425.19	1.43	
PFNS	27701.508	4.172	M9PFNA	22687	3.669	109.75	9.6736		1085.73	1.42	
PFDoS	14733.717	5.623	M8PFOS	11149	3.702	108.20	4.2348		48.93	1.45	
PFPeS	24034.476	2.323	M5PFHxA	22641	2.151	109.27	10.5568		238.00	1.50	
PFODA	6623.168	6.706	M2PFHxDA	11585	6.348	103.80	4.8032		310.11	1.42	
NEtFOSAA	30869.639	4.651	d5-NEtFOSAA	12529	4.641	115.66	8.7123		85.27	0.85	m
PFHxDA	10056.084	6.351	M2PFHxDA	11585	6.348	103.80	4.7264		171.43	1.63	
NMeFOSAA	34628.114	4.375	d3-NMeFOSAA	8232	4.374	106.66	10.2332		4187.19	0.88	m
PFBA	92268.934	0.466	MPFBA	26394	0.463	107.66	9.4198		3020.95	1.40	
PFBS	24166.178	1.507	M3PFBS	10122	1.505	110.60	9.3640		881.80	1.50	
NMeFOSA	5441.303	5.354	d-NMeFOSA	6127	5.344	101.89	4.2877		60.41	1.51	
PFDA	37737.076	4.150	M6PFDA	17465	4.149	112.17	9.3042		1443.93	1.42	
PFDoA	30191.457	5.187	MPFDoA	15622	5.177	115.51	10.0953		11394.88	1.42	
NEtFOSA	6565.621	5.695	d-NEtFOSA	6406	5.684	102.25	4.0739		215.24	1.50	
PFHpA	47542.657	2.798	M4PFHpA	22369	2.797	109.12	8.9313		2921.58	1.42	
PFHxA	47721.395	2.153	M5PFHxA	22641	2.151	109.27	9.2376		1786.76	1.46	
NMeFOSE	9351.932	5.398	d7-NMeFOSE	7967	5.379	108.99	3.9980		105.47	1.47	
PFHxS	28501.904	2.866	M3PFHxS	10299	2.874	107.86	10.1937		2051.26	1.54	m
PFNA	51952.337	3.670	M9PFNA	22687	3.669	109.75	10.3461		2681.69	1.52	
NEtFOSE	10140.159	5.703	d9-NEtFOSE	10881	5.682	110.35	4.5458		7565.82	1.40	
PFOA	51485.801	3.249	M8PFOA	25574	3.247	116.51	9.2607		5129.31	1.42	m
PFOS	29102.741	3.704	M8PFOS	11149	3.702	108.20	8.1946		3661.05	0.78	m
PFPeA	55133.299	1.265	M5PFPeA	18476	1.263	108.83	9.3431		3177.37	1.33	
PFMPA	18874.861	0.698	M5PFPeA	18476	1.263	108.83	3.6557		600.39	1.36	
PFTA	21292.453	5.957	M2PFTA	10864	5.954	114.87	11.3708		244.12	1.39	
PFMBA	22164.416	1.547	M5PFHxA	22641	2.151	109.27	3.9331		872.15	1.56	
PFTrDA	22637.034	5.625	MPFDoA	15622	5.177	115.51	9.5748		581.88	1.60	
PFEESA	36126.852	1.876	M3PFHxS	10299	2.874	107.86	4.0132		1246.67	1.30	
PFUnA	33761.460	4.665	M7PFUnA	18686	4.662	111.92	8.6006		2974.40	1.57	
NFDHA	16964.566	2.027	M4PFHpA	22369	2.797	109.12	3.8369		711.94	1.43	

HFPO-DA



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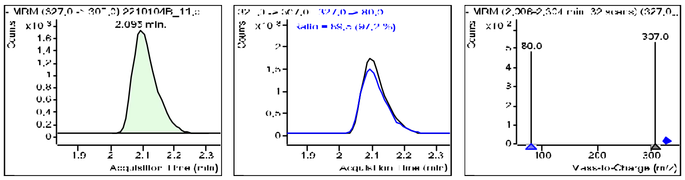

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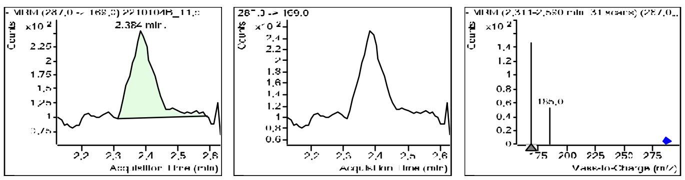

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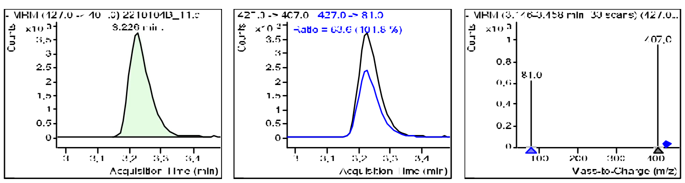

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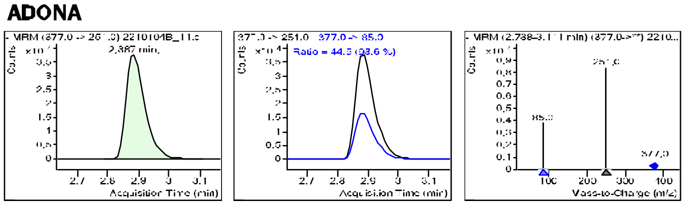

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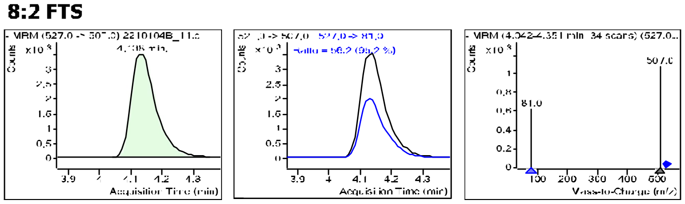

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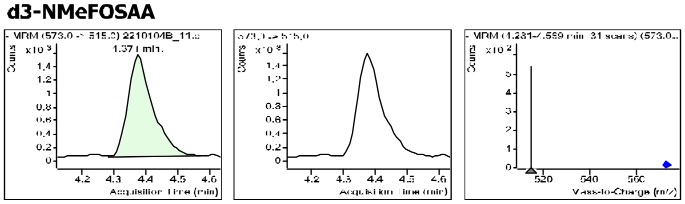

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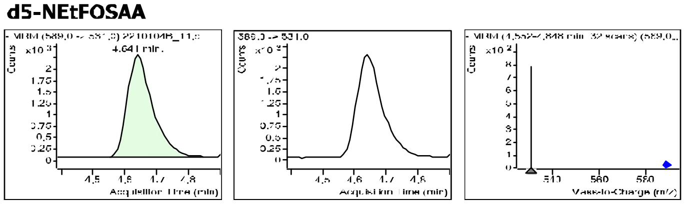

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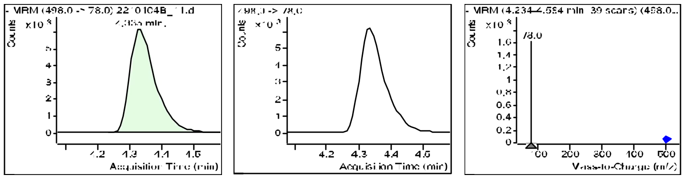

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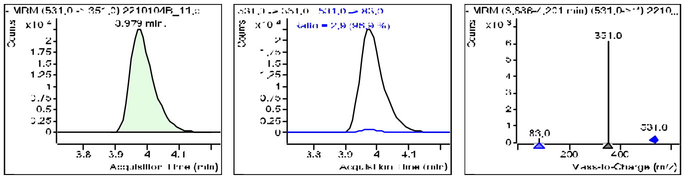

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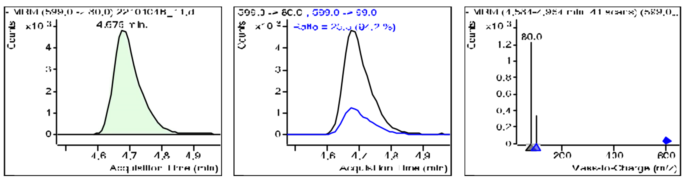

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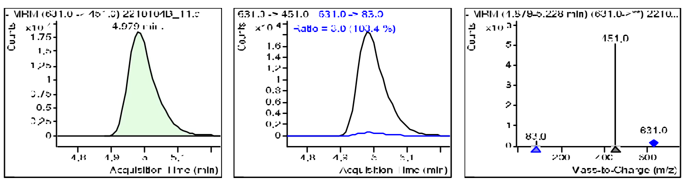

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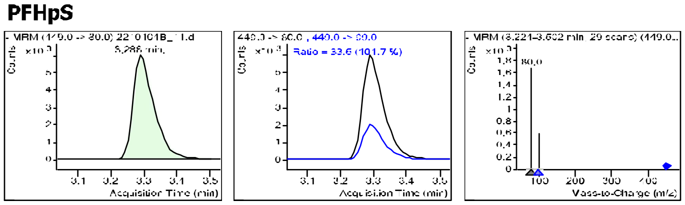

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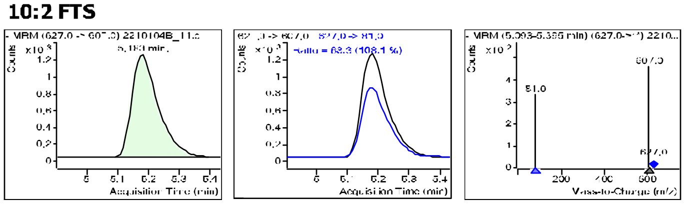

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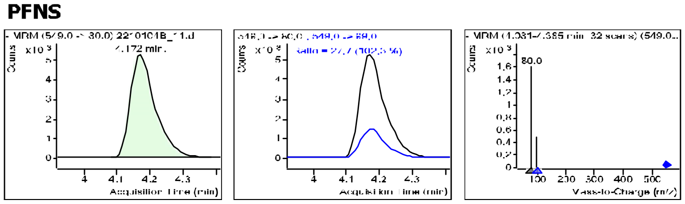

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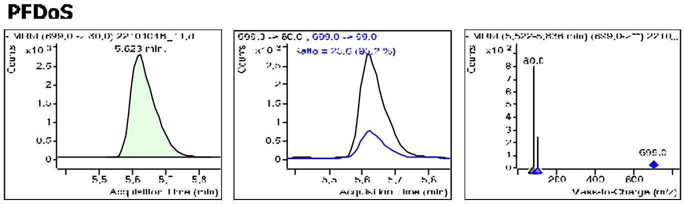

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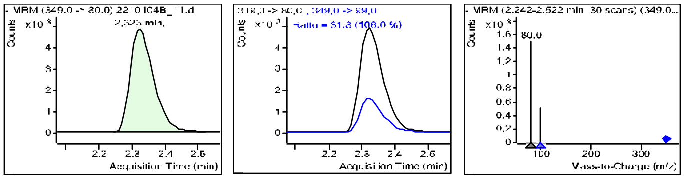

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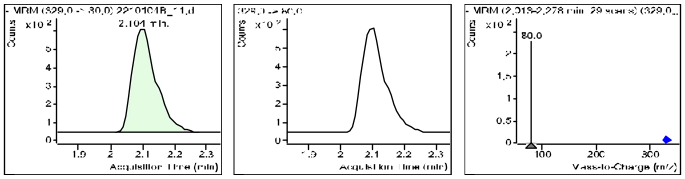

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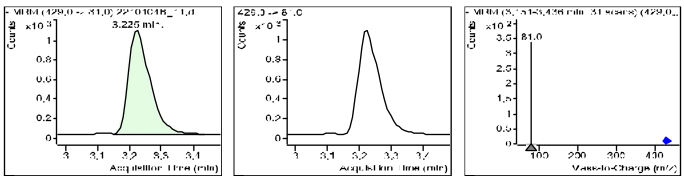

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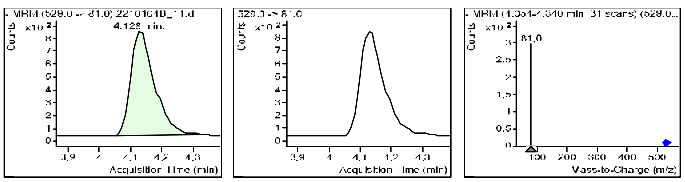

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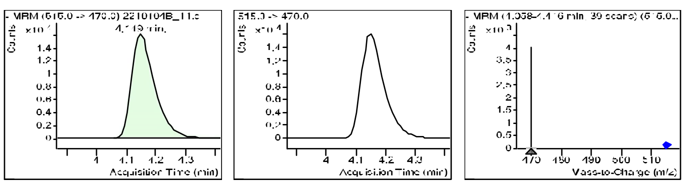

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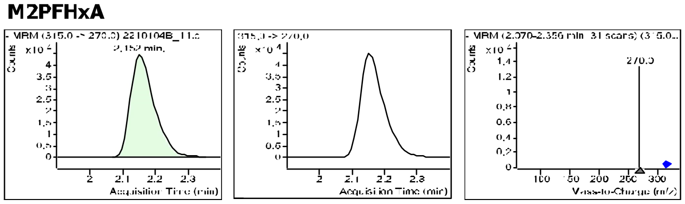

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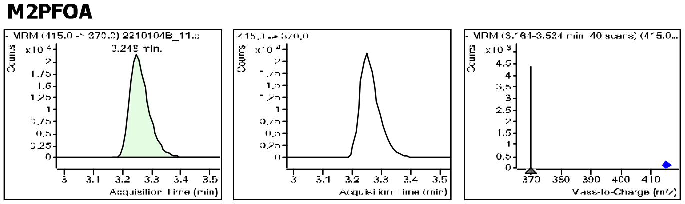

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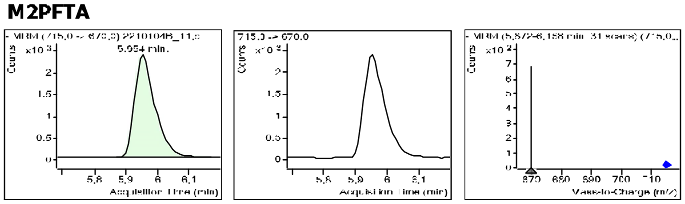

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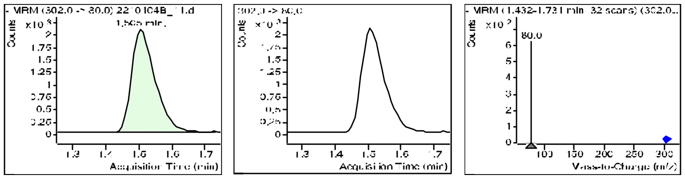

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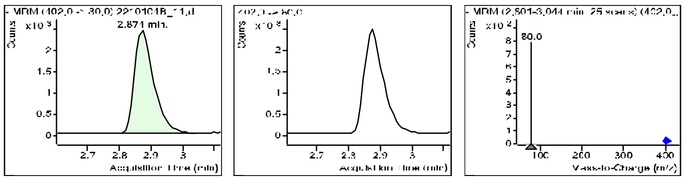

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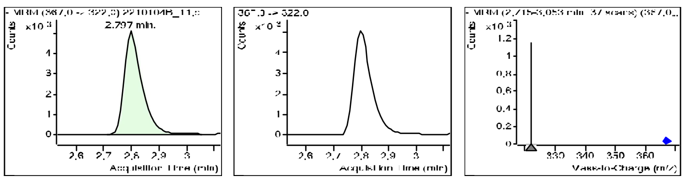

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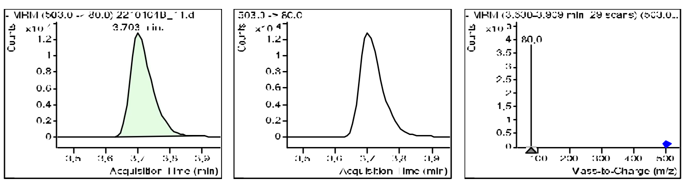

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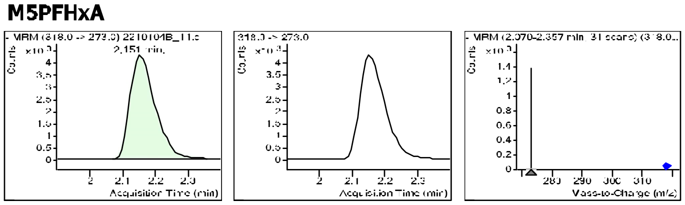

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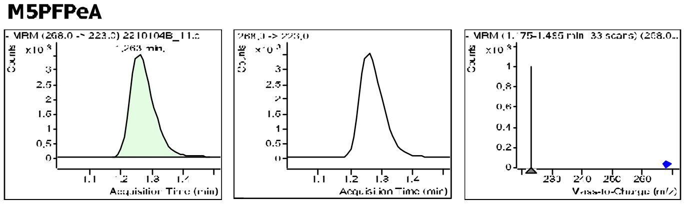

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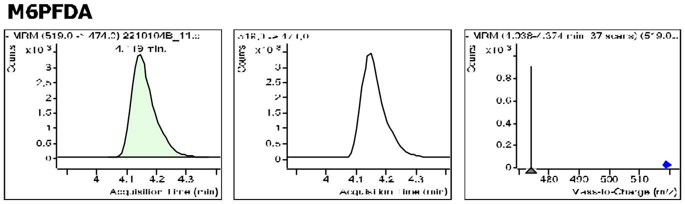

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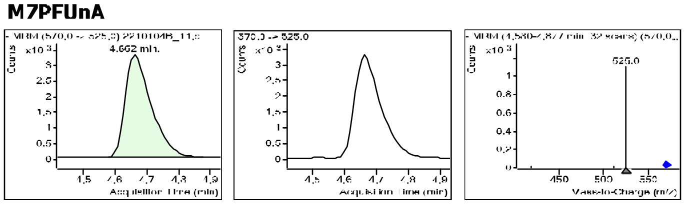

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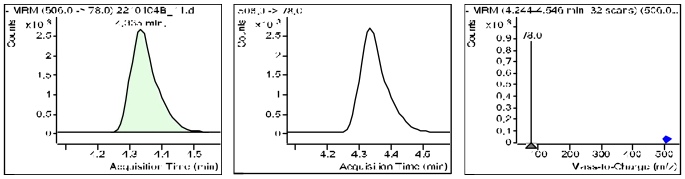

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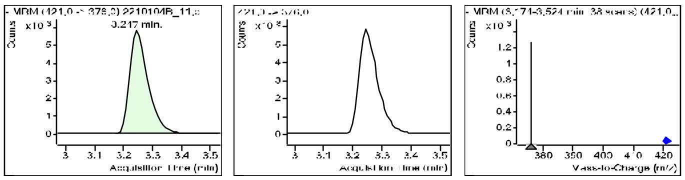

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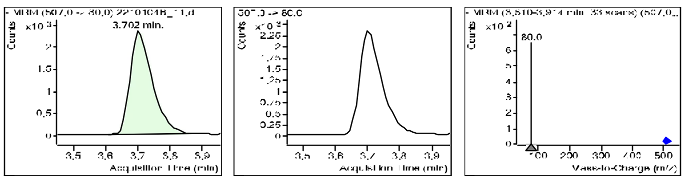

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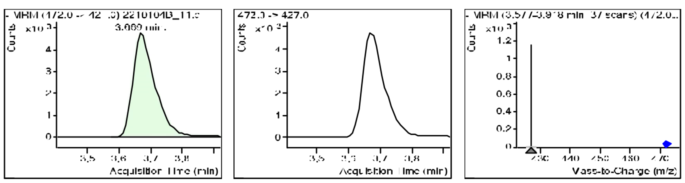

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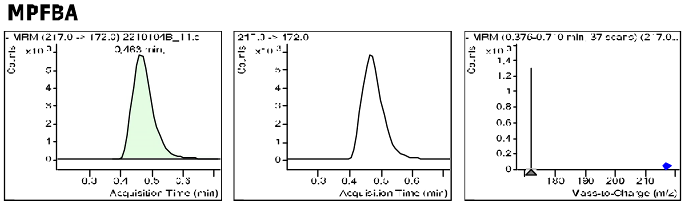

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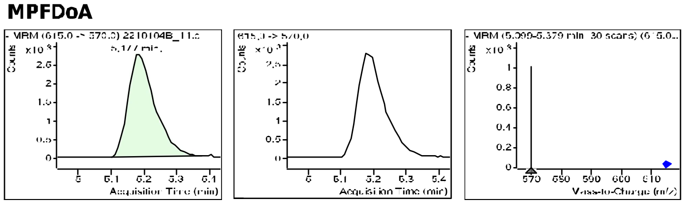

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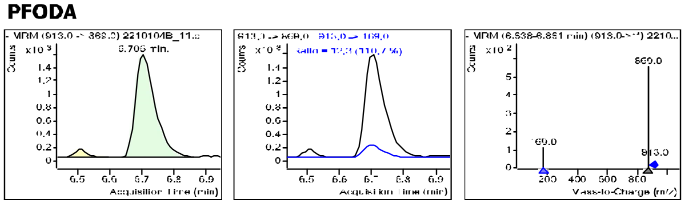

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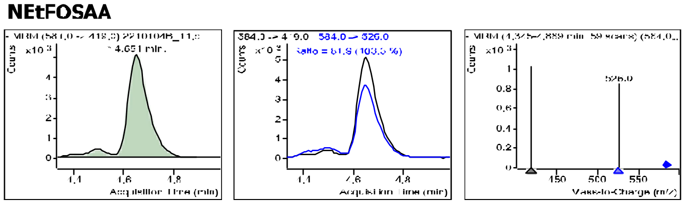

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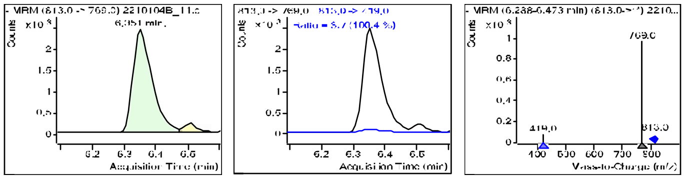

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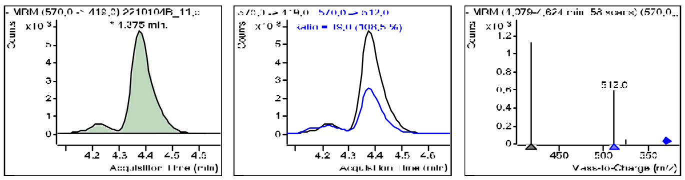

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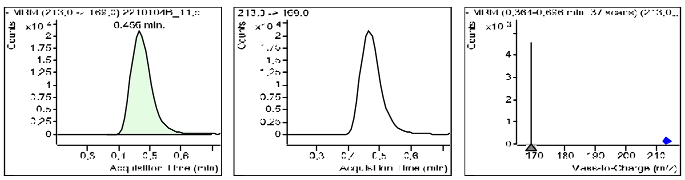

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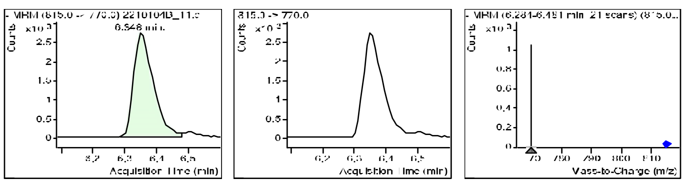

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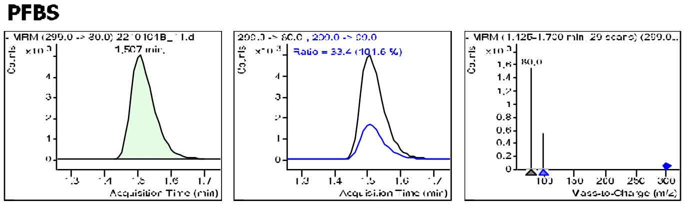

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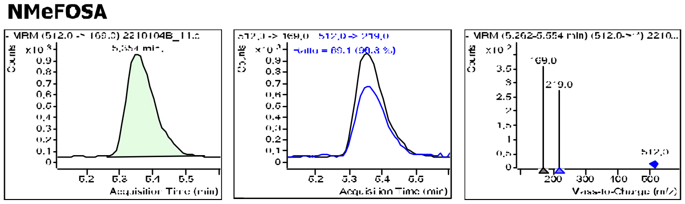

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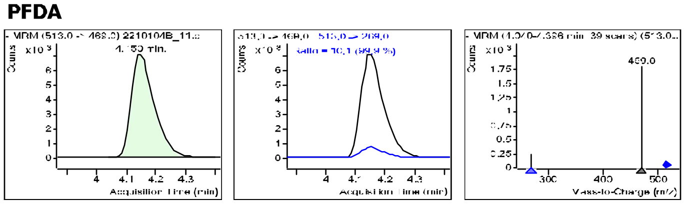

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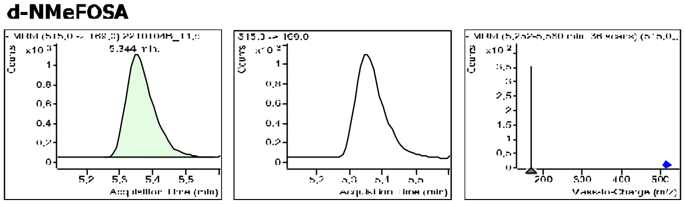

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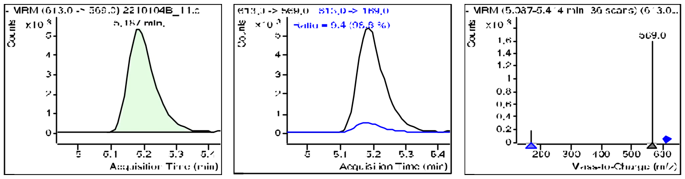

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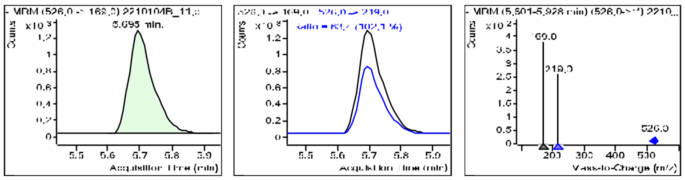

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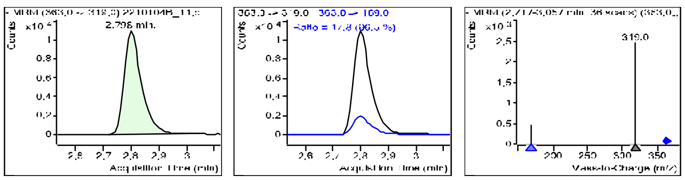

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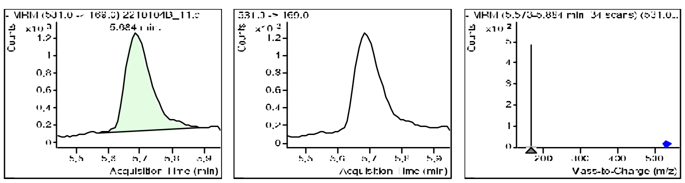

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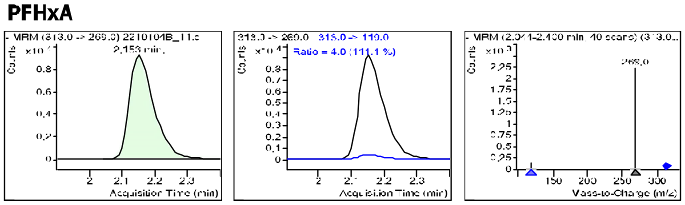

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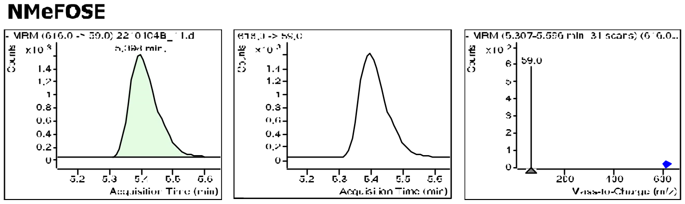

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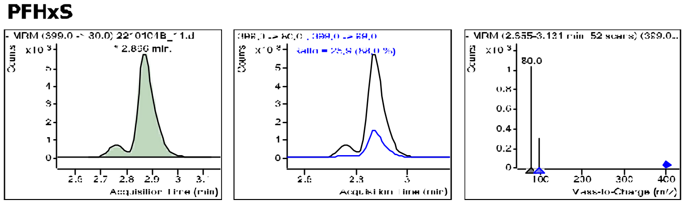

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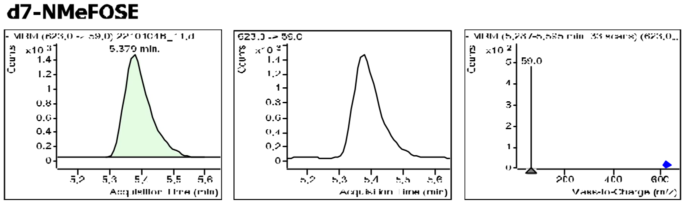

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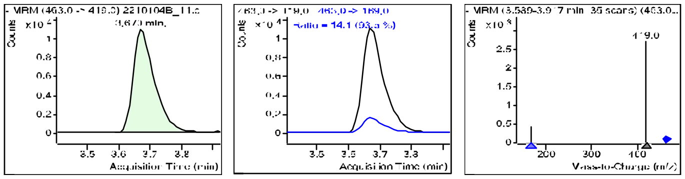
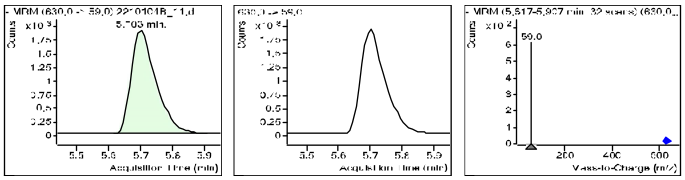


NEtFOSE



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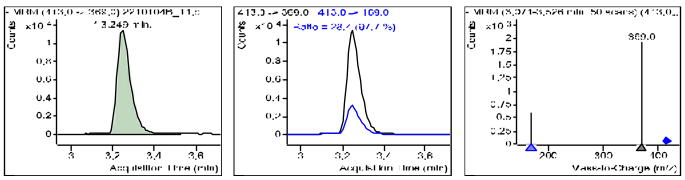

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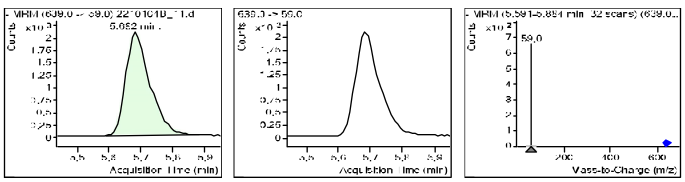

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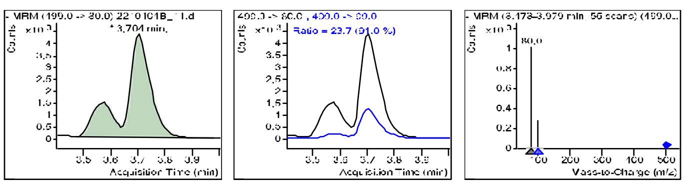

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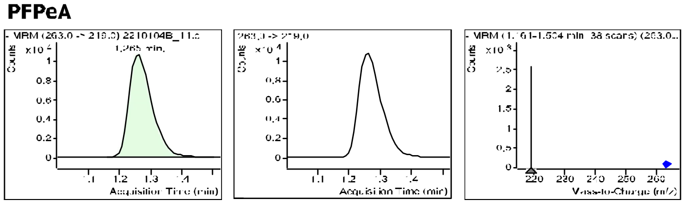

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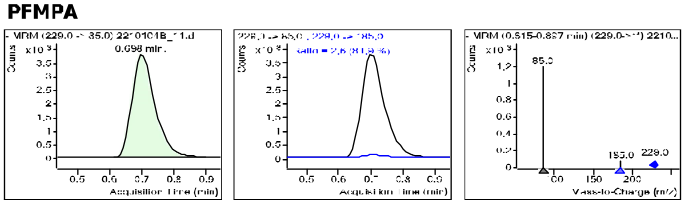

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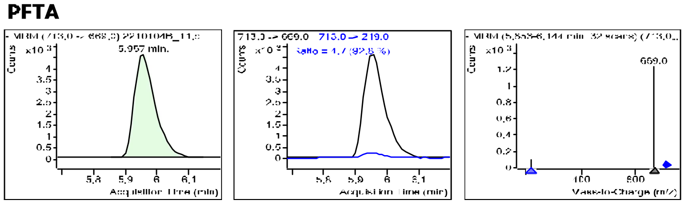

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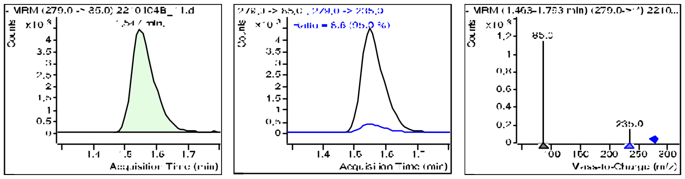

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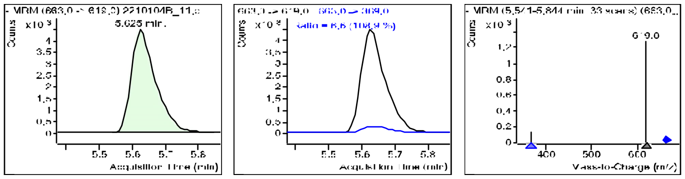

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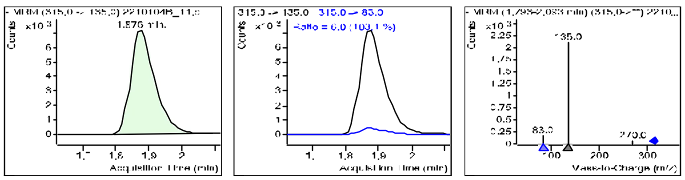

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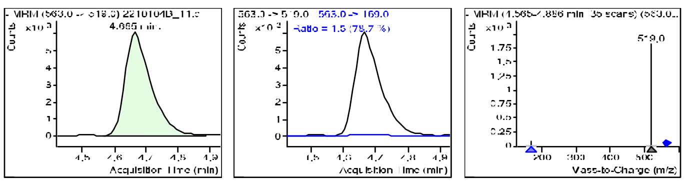

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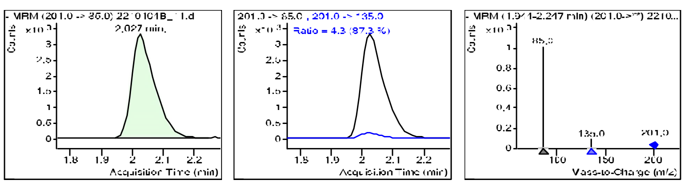

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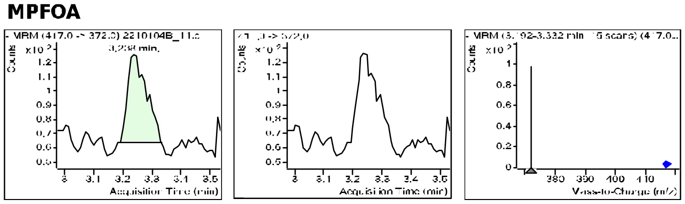

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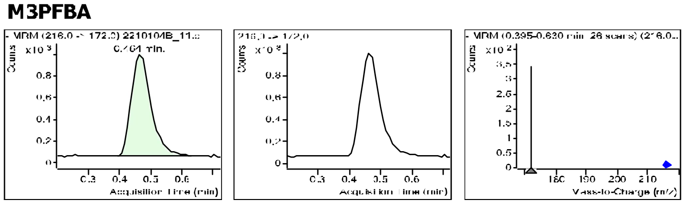


PFAS Isotope Dilution QSM B15

Form 7E

CCAL Verifications

7E

ORGANICS CALIBRATION VERIFICATION

Report No:	220122279	Instrument ID:	QQQ1
Analysis Date:	12/24/2020 20:30	Lab File ID:	2201224A_34.d
Analytical Method:	EPA 537 Mod Isotope Dilution	Analytical Batch:	700789

ANALYTE	*UNITS*	*TRUE*	*FOUND*	*% REC*	*LCL*	*UCL*	*Q*
6:2 Fluorotelomersulfonic acid	ng/L	9500	9840	104	70	130	
8:2 Fluorotelomersulfonic acid	ng/L	9600	8450	88	70	130	
Perfluorobutanoic acid	ng/L	10000	8630	86	70	130	
Perfluorobutanesulfonic acid	ng/L	8850	7160	81	70	130	
Perfluorodecanoic acid	ng/L	10000	8250	83	70	130	
Perfluoroheptanoic acid	ng/L	10000	8530	85	70	130	
Perfluorohexanoic acid	ng/L	10000	8770	88	70	130	
Perfluorohexanesulfonic acid	ng/L	9120	8560	94	70	130	
Perfluorononanoic acid	ng/L	10000	7760	78	70	130	
Perfluorooctanoic acid	ng/L	10000	9860	99	70	130	
Perfluorooctanesulfonic acid	ng/L	9260	9290	100	70	130	
Perfluoropentanoic acid	ng/L	10000	8520	85	70	130	
Perfluoroundecanoic acid	ng/L	10000	8970	90	70	130	

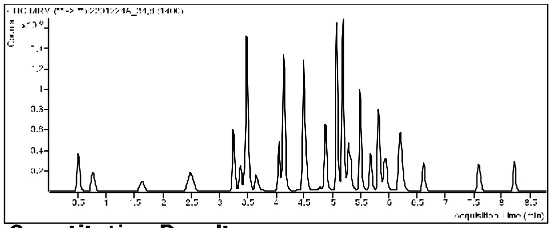
FORM 7E - ORG

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_34.d	**Position**	Vial 27	**Samp Name**	1400	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	QC	**Comment**	MRA,QQQ1;CCV
Acq Date	12/24/2020 20:30						

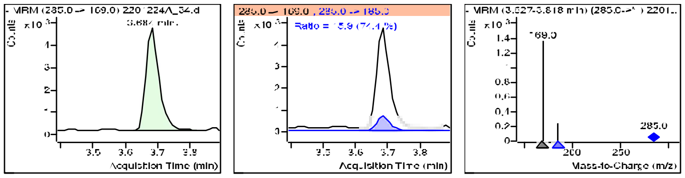
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	203212.719	5.186				118.76	23.7520	118.76	15106.79	1.45	
M2PFHxA	329273.643	3.491				123.52	49.4066	123.52	10589.98	1.29	
M2PFOA	152069.719	4.499				120.36	24.0718	120.36	19842.91	1.50	
M4PFOS	51488.502	4.883				105.79	21.1584	105.79	4941.47	1.80	
M3PFBA	6817.732	0.503				0.00	5.3056	106.11	306.11	1.27	
MPFOA	658.902	4.499				0.00	32.3399	129.36	40.10	1.91	
HFPO-DA	13140.459	3.684	M3HFPODA	3018	3.683	102.90	34.2009	114.00	INF	1.40	
4:2 FTS	43619.754	3.448	M2 4:2 FTS	14678	3.447	132.55	7.5875	81.15	2100.44	1.78	
6:2 FTS	80446.610	4.477	M2 6:2 FTS	23656	4.477	107.81	9.8359	103.54	4038.00	1.84	
ADONA	186083.990	4.138	M8PFOA	24296	4.499	115.82	8.6998	87.00	4251.35	1.93	
8:2 FTS	69202.166	5.175	M2 8:2 FTS	12375	5.175	120.16	8.4479	88.00	5247.31	1.98	
FOSA	109793.063	5.293	M8FOSA	21067	5.291	95.75	11.1938	111.94	6069.71	1.25	
9Cl-PF3ONS	437635.023	5.069	M8PFOS	5028	4.882	106.69	8.9777	89.78	16809.93	1.73	
PFDS	16736.552	5.494	M6PFDA	36891	5.186	119.36	8.5921	89.04	1778.42	1.43	
11Cl-PF3OUdS	97408.608	5.669	M8PFOS	5028	4.882	106.69	8.7203	87.20	98083.52	1.85	
PFHpS	36322.503	4.539	M8PFOA	24296	4.499	115.82	9.8125	103.61	1982.41	1.41	
10:2 FTS	58839.046	5.816	M2 8:2 FTS	12375	5.175	120.16	15.1190	78.42	8858.69	1.91	
PFNS	13491.225	5.194	M9PFNA	30591	4.863	114.88	7.9869	83.20	1167.09	1.85	
PFDoS	39746.725	6.179	M8PFOS	5028	4.882	106.69	15.9873	87.58	2854.22	1.41	
PFPeS	31561.382	3.647	M5PFHxA	31280	3.490	116.45	9.3533	99.50	1734.44	1.23	
PFODA	74224.403	8.216	M2PFHxDA	34757	7.585	102.73	19.0700	95.35	5163.28	1.36	
NEtFOSAA	38654.970	5.484	d5-NEtFOSAA	13304	5.484	105.93	10.3624	103.62	49495.97	1.48	
PFHxDA	66604.384	7.589	M2PFHxDA	34757	7.585	102.73	19.6555	98.28	2284.83	1.42	
NMeFOSAA	36603.174	5.329	d3-NMeFOSAA	11432	5.317	119.98	9.8911	98.91	5234.67	1.28	
PFBA	89494.355	0.505	MPFBA	40227	0.501	113.84	8.6301	86.30	1146.60	1.26	
PFBS	34304.650	2.465	M3PFBS	15549	2.463	131.82	7.1622	80.93	1872.34	1.05	
NMeFOSA	32593.640	5.917	d-NMeFOSA	18074	5.917	107.51	19.3611	96.81	1153.37	1.75	
PFDA	91832.535	5.187	M6PFDA	36891	5.186	119.36	8.2534	82.53	5970.07	1.44	
PFDoA	78024.395	5.818	MPFDoA	38538	5.818	102.35	9.7841	97.84	1859.07	1.34	
NEtFOSA	29927.230	6.227	d-NEtFOSA	12189	6.216	102.71	17.8197	89.10	2683.84	1.21	
PFHpA	75208.410	4.057	M4PFHpA	43174	4.056	122.34	8.5269	85.27	530.11	1.99	
PFHxA	72377.588	3.483	M5PFHxA	31280	3.490	116.45	8.7687	87.69	963.37	1.97	
NMeFOSE	46209.246	5.953	d7-NMeFOSE	25400	5.943	109.17	17.3995	87.00	3025.11	1.54	
PFHxS	41866.786	4.126	M3PFHxS	10916	4.136	109.32	8.5601	93.86	1441.15	2.00	m
PFNA	73874.505	4.864	M9PFNA	30591	4.863	114.88	7.7557	77.56	634.11	1.70	
NEtFOSE	43442.430	6.233	d9-NEtFOSE	24163	6.212	116.23	16.3182	81.59	1968.27	1.51	
PFOA	67529.687	4.500	M8PFOA	24296	4.499	115.82	9.8629	98.63	2540.98	1.47	
PFOS	42553.054	4.883	M8PFOS	5028	4.882	106.69	9.2938	100.42	475.22	1.82	m
PFPeA	37246.778	1.627	M5PFPeA	18592	1.624	110.57	8.5204	85.20	808.93	1.12	
PFMPA	75835.492	0.755	M5PFPeA	18592	1.624	110.57	17.9310	89.66	1768.18	1.17	
PFTA	60036.980	6.614	M2PFTA	33314	6.613	104.82	10.1563	101.56	907.67	1.30	
PFMBA	69901.757	2.600	M5PFHxA	31280	3.490	116.45	16.5095	82.55	4337.21	1.22	
PFTrDA	93955.436	6.190	MPFDoA	38538	5.818	102.35	11.3834	113.83	706.79	1.34	
PFEESA	176509.479	3.242	M3PFHxS	10916	4.136	109.32	17.5280	98.47	7946.35	1.65	
PFUnA	116312.918	5.486	M7PFUnA	60640	5.485	115.56	8.9732	89.73	3513.74	1.90	
NFDHA	73199.366	3.372	M4PFHpA	43174	4.056	122.34	17.2092	86.05	5882.39	1.59	

HFPO-DA



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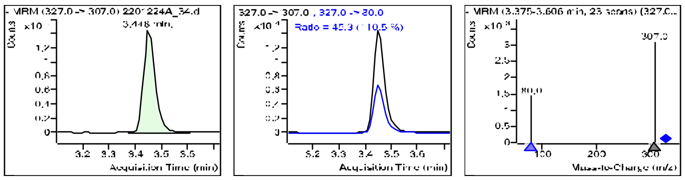

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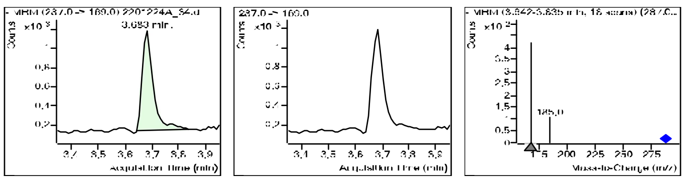

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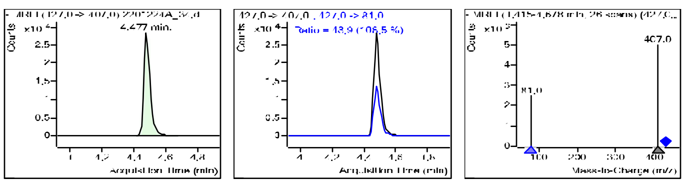

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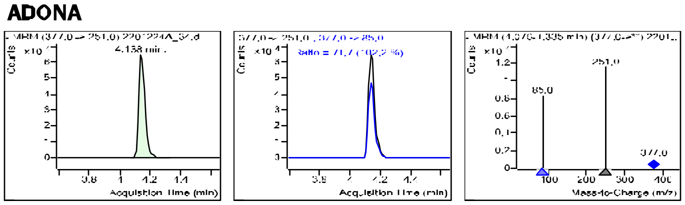

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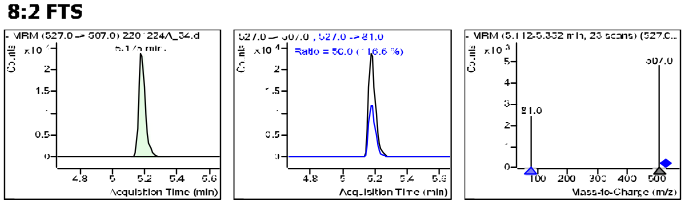

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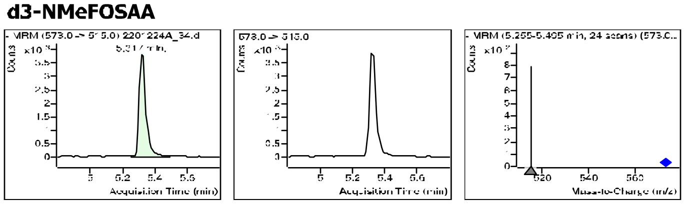

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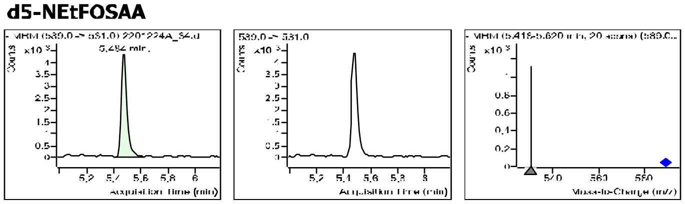

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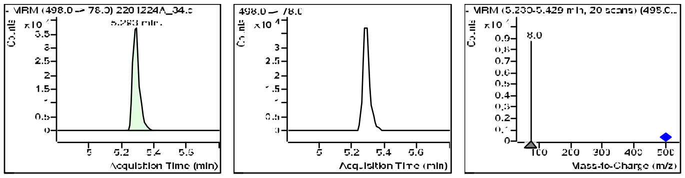

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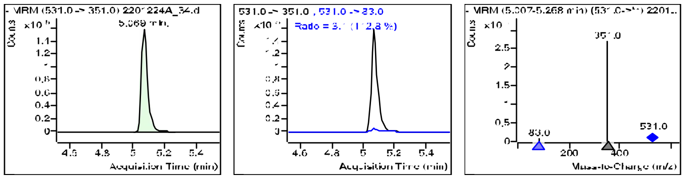

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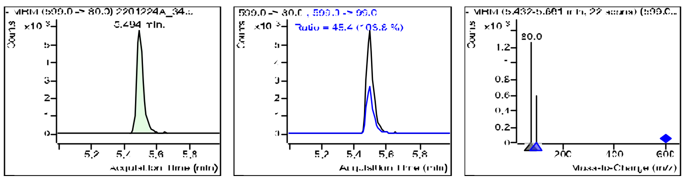

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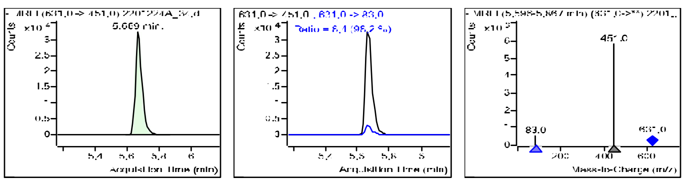

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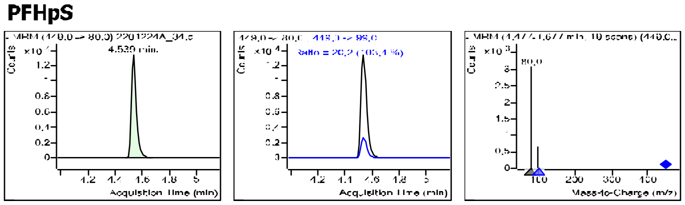
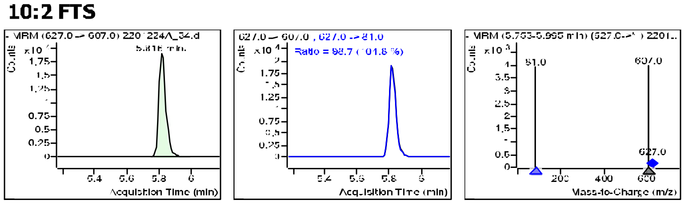


10:2 FTS



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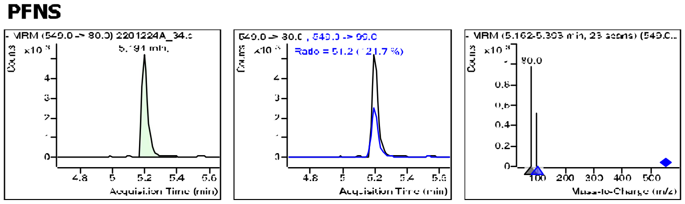
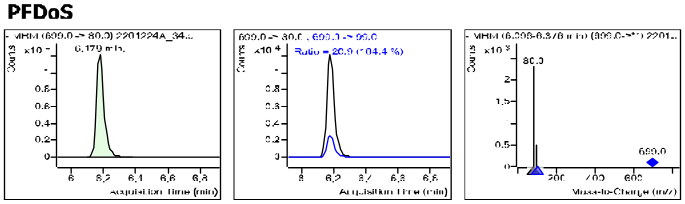


PFDoS



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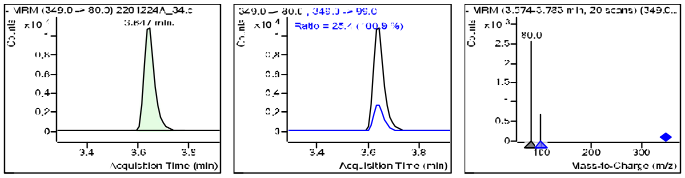
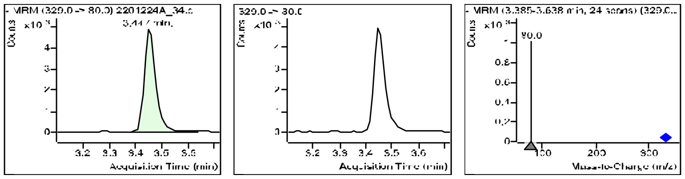
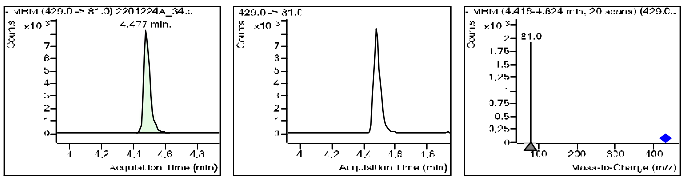


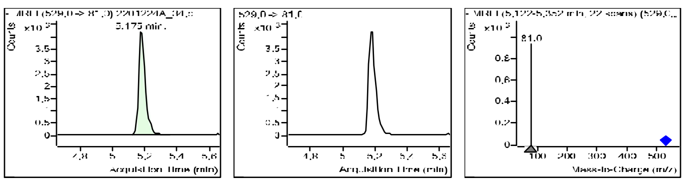
M2 4:2 FTS



M2 6:2 FTS



M2 8:2 FTS



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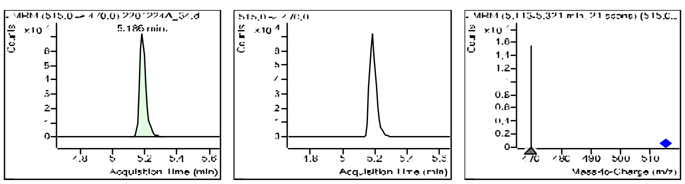

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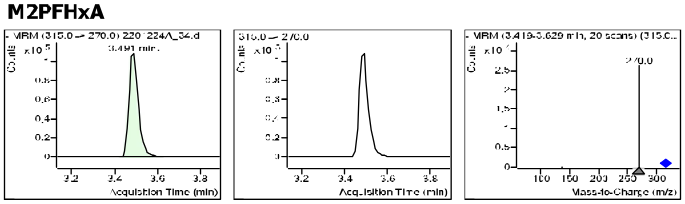

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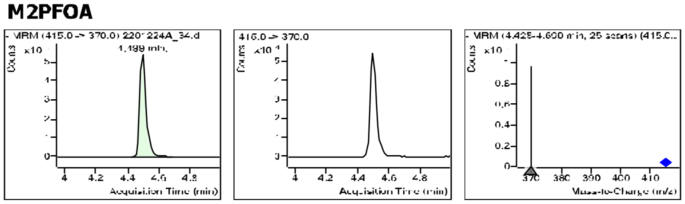

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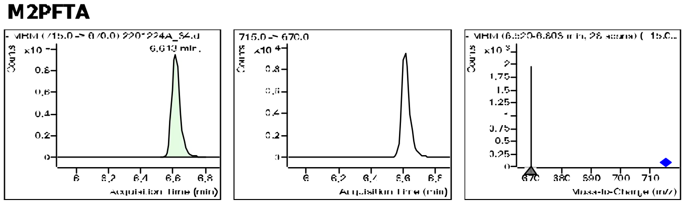

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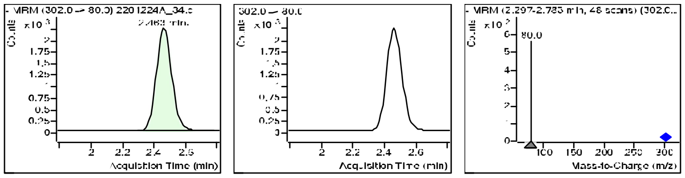

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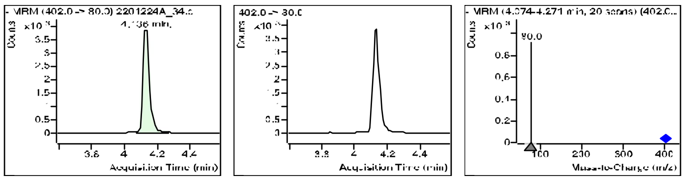

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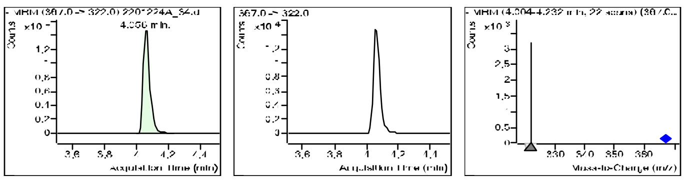

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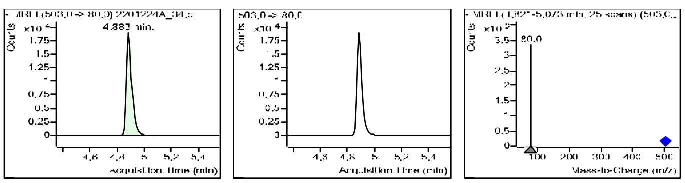

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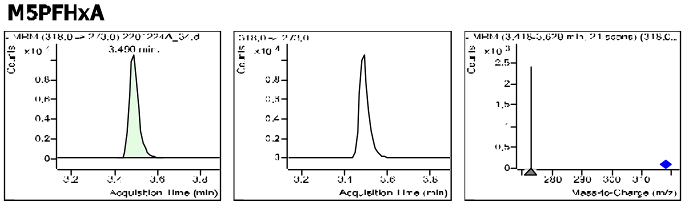

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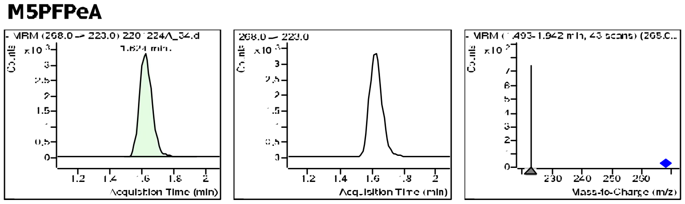

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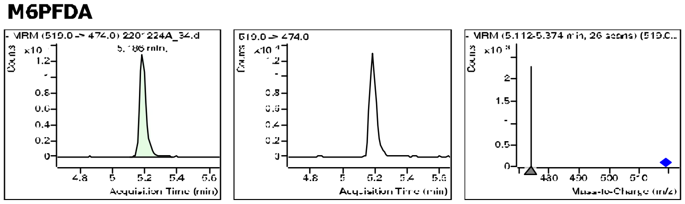

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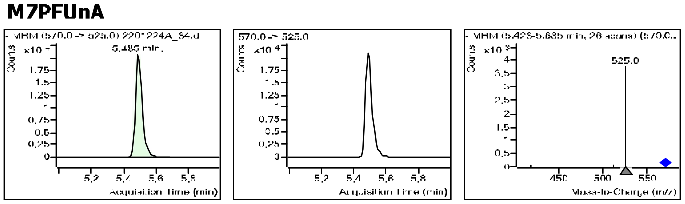

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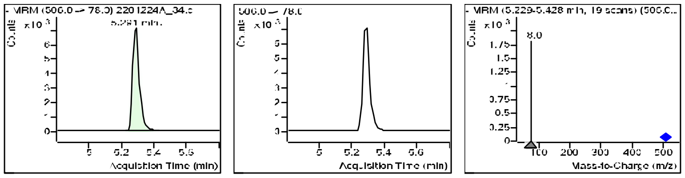

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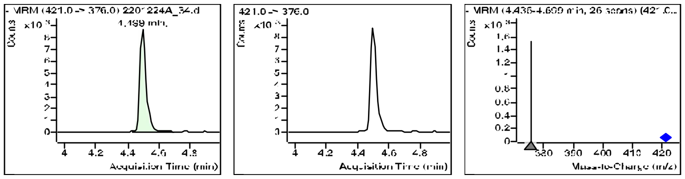

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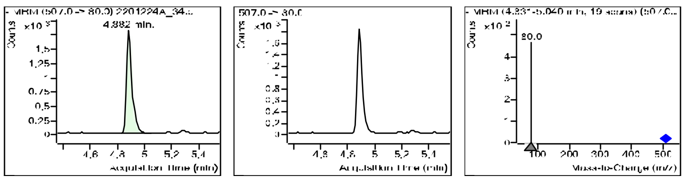

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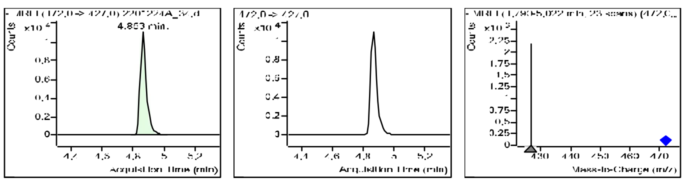

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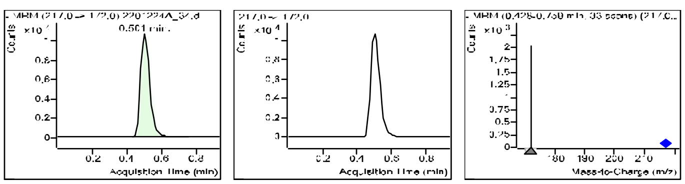

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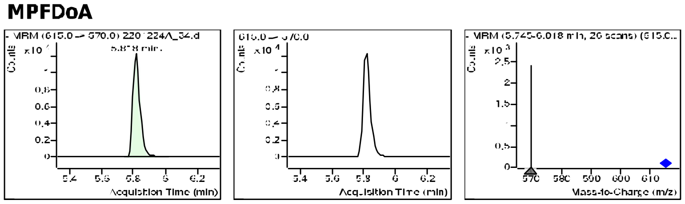

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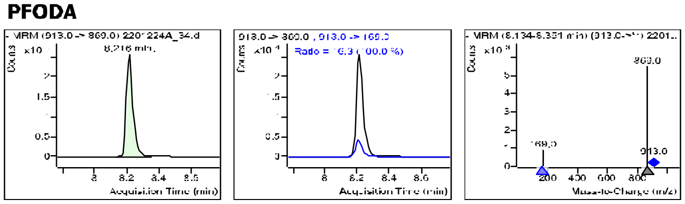

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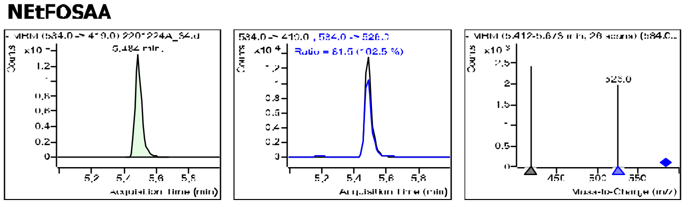

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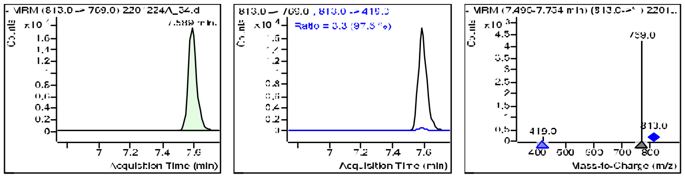

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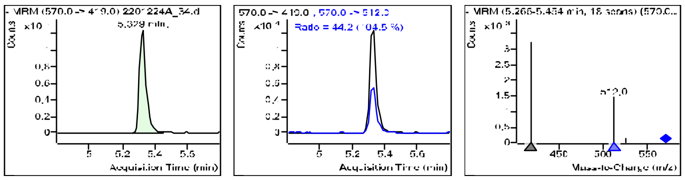

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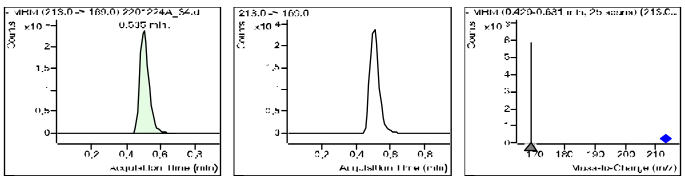

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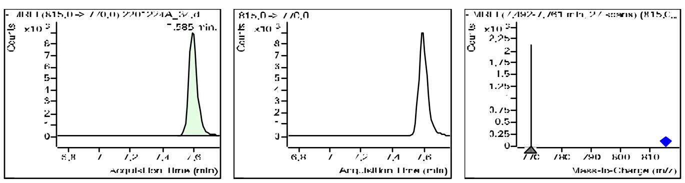

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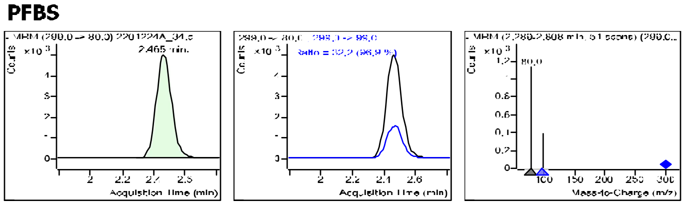

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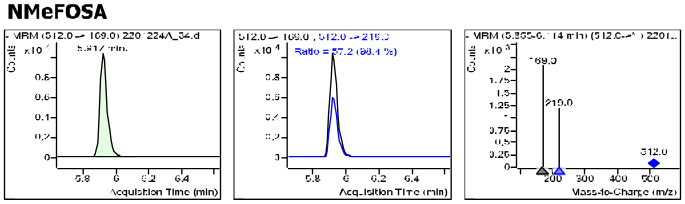

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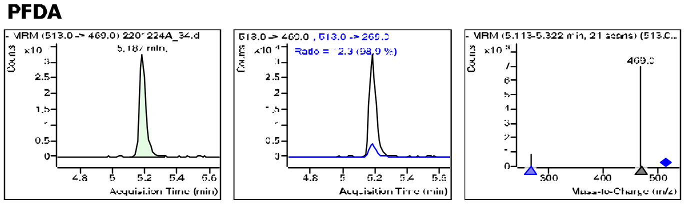

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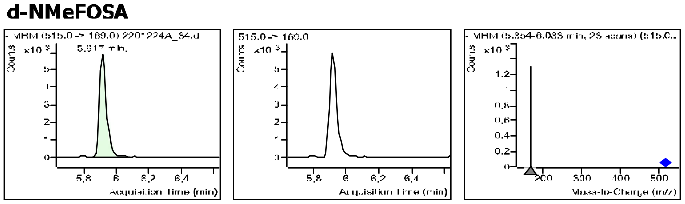

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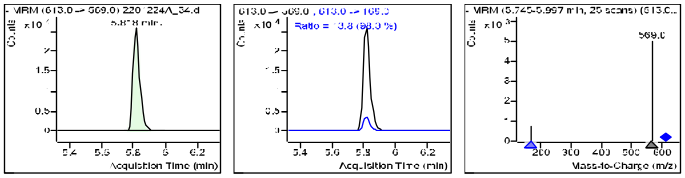

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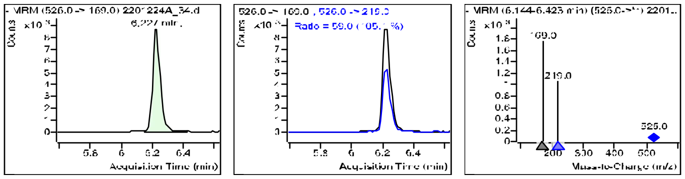

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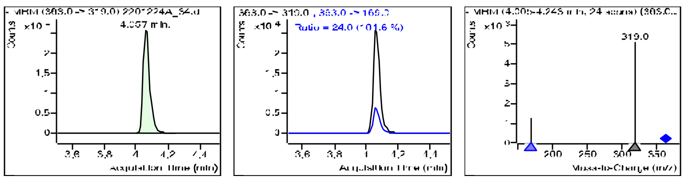

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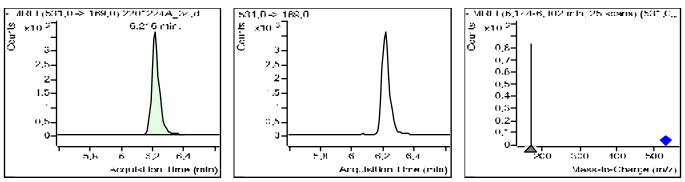

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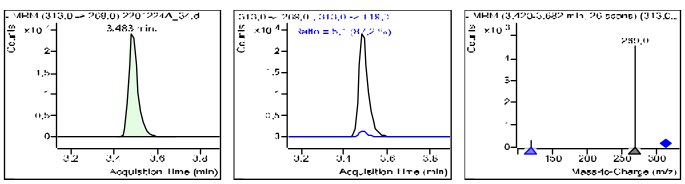

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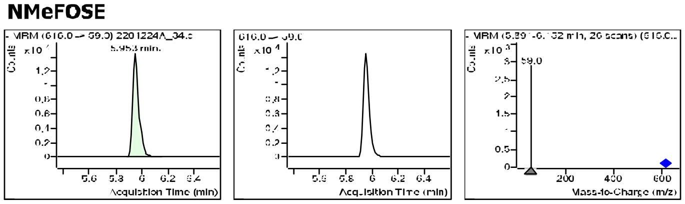

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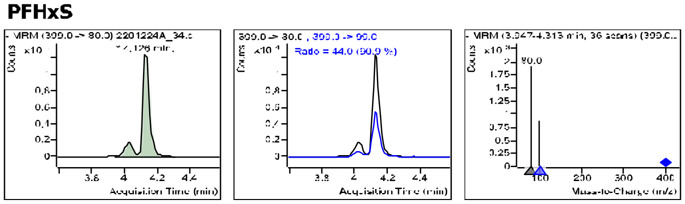

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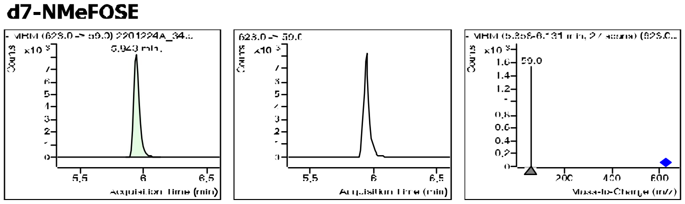

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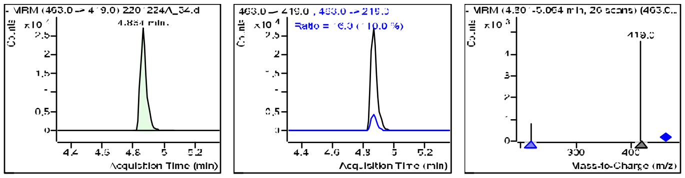

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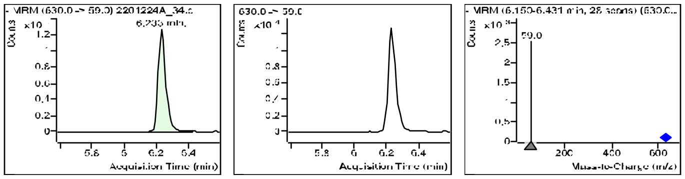

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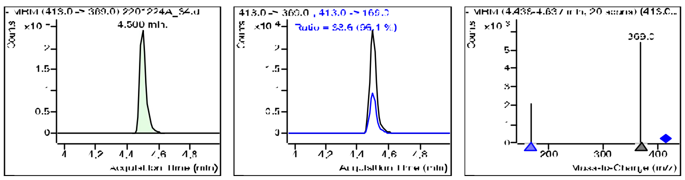

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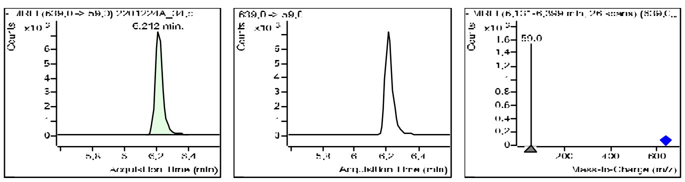

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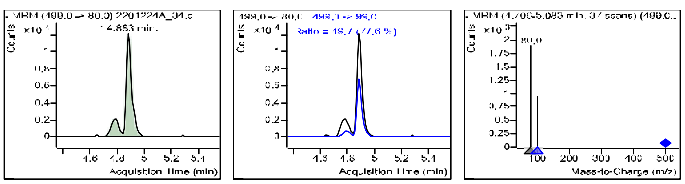

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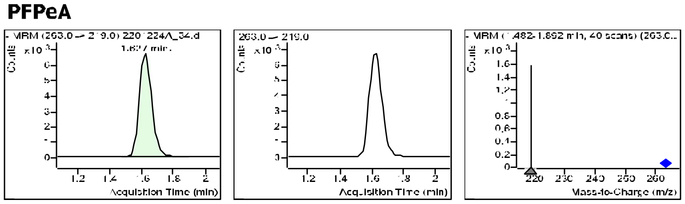

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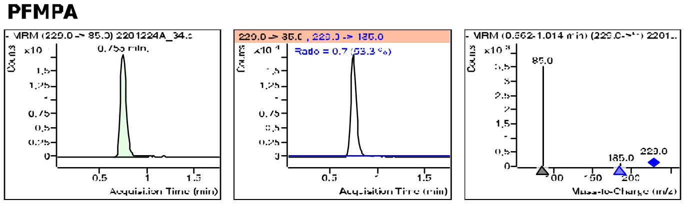

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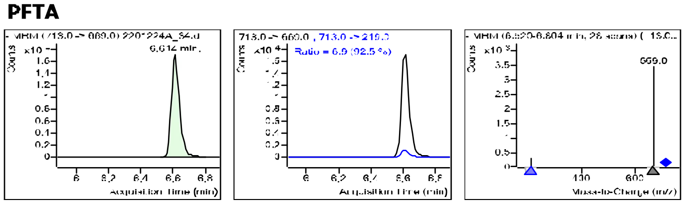

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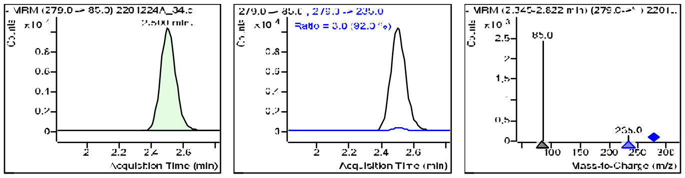

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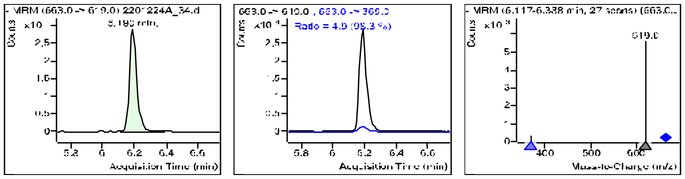

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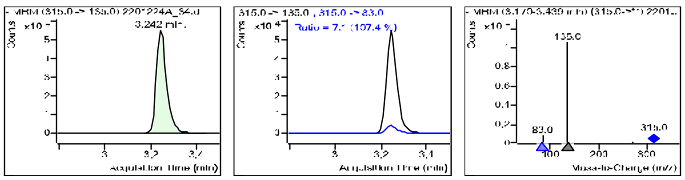

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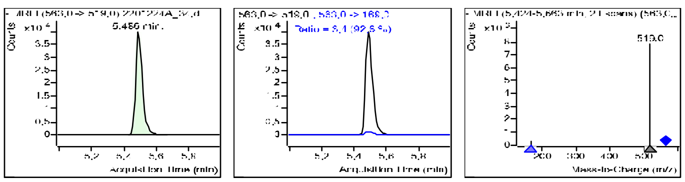

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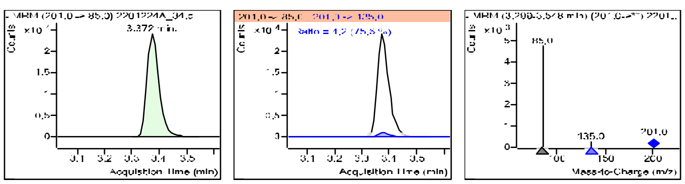

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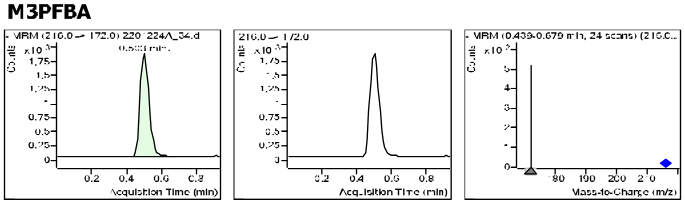

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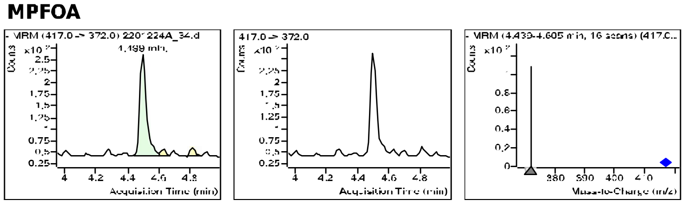


7E

ORGANICS CALIBRATION VERIFICATION

Report No:	220122279	Instrument ID:	QQQ1
Analysis Date:	12/25/2020 04:50	Lab File ID:	2201224A_69.d
Analytical Method:	EPA 537 Mod Isotope Dilution	Analytical Batch:	700789

ANALYTE	*UNITS*	*TRUE*	*FOUND*	*% REC*	*LCL*	*UCL*	*Q*
6:2 Fluorotelomersulfonic acid	ng/L	9500	8310	87	70	130	
8:2 Fluorotelomersulfonic acid	ng/L	9600	9130	95	70	130	
Perfluorobutanoic acid	ng/L	10000	8570	86	70	130	
Perfluorobutanesulfonic acid	ng/L	8850	6460	73	70	130	
Perfluorodecanoic acid	ng/L	10000	8570	86	70	130	
Perfluoroheptanoic acid	ng/L	10000	8470	85	70	130	
Perfluorohexanoic acid	ng/L	10000	8610	86	70	130	
Perfluorohexanesulfonic acid	ng/L	9120	8210	90	70	130	
Perfluorononanoic acid	ng/L	10000	7930	79	70	130	
Perfluorooctanoic acid	ng/L	10000	9850	98	70	130	
Perfluorooctanesulfonic acid	ng/L	9260	8830	95	70	130	
Perfluoropentanoic acid	ng/L	10000	8350	84	70	130	
Perfluoroundecanoic acid	ng/L	10000	8150	82	70	130	

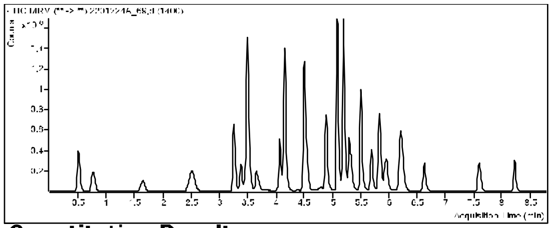
FORM 7E - ORG

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_69.d	**Position**	Vial 60	**Samp Name**	1400	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	QC	**Comment**	MRA,QQQ1;CCV
Acq Date	12/25/2020 4:50						

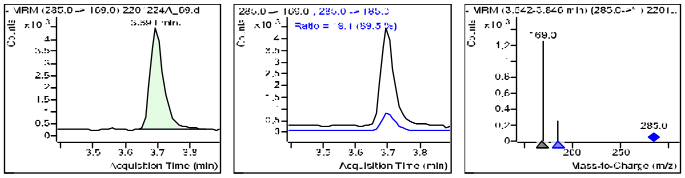
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	202889.154	5.197				118.57	23.7142	118.57	13508.50	1.76	
M2PFHxA	334693.055	3.501				125.55	50.2197	125.55	15676.17	1.33	
M2PFOA	153565.557	4.510				121.54	24.3086	121.54	7673.05	1.67	
M4PFOS	68134.401	4.893				139.99	27.9987	139.99	7224.71	2.01	
M3PFBA	6976.545	0.503				0.00	5.4291	108.58	280.67	1.52	
MPFOA	494.733	4.509				0.00	24.2822	97.13	10.22	1.64	
HFPO-DA	12137.210	3.694	M3HFPODA	3688	3.693	125.77	25.8458	86.15	19.57	1.63	
4:2 FTS	37934.840	3.458	M2 4:2 FTS	12449	3.458	112.42	7.7801	83.21	3680.54	1.87	
6:2 FTS	66881.939	4.487	M2 6:2 FTS	23283	4.487	106.11	8.3083	87.46	1353.63	2.02	
ADONA	194727.175	4.159	M8PFOA	23868	4.509	113.78	9.2671	92.67	8392.44	1.40	
8:2 FTS	64895.878	5.196	M2 8:2 FTS	10742	5.195	104.30	9.1264	95.07	5727.65	1.34	
FOSA	116750.403	5.303	M8FOSA	25664	5.302	116.64	9.7713	97.71	5919.67	1.41	
9Cl-PF3ONS	464918.912	5.080	M8PFOS	6102	4.893	129.50	7.8579	78.58	39680.25	1.97	
PFDS	21694.683	5.504	M6PFDA	36120	5.196	116.87	11.3753	117.88	1782.97	1.83	
11Cl-PF3OUdS	109669.224	5.689	M8PFOS	6102	4.893	129.50	8.0889	80.89	10683.82	1.33	
PFHpS	45337.139	4.549	M8PFOA	23868	4.509	113.78	12.5054	131.64	2112.65	1.56	
10:2 FTS	56564.744	5.837	M2 8:2 FTS	10742	5.195	104.30	16.7440	86.85	332.63	1.39	
PFNS	19901.201	5.205	M9PFNA	29994	4.874	112.64	12.0160	125.17	2847.19	1.93	
PFDoS	53715.500	6.189	M8PFOS	6102	4.893	129.50	17.6354	91.09	2362.70	1.49	
PFPeS	39070.124	3.657	M5PFHxA	32327	3.501	120.35	11.2034	119.18	1963.00	1.36	
PFODA	75280.653	8.216	M2PFHxDA	34972	7.596	103.36	19.2223	96.11	6471.01	1.92	
NEtFOSAA	40465.702	5.495	d5-NEtFOSAA	15085	5.495	120.12	9.5668	95.67	3514.74	1.91	
PFHxDA	67553.155	7.599	M2PFHxDA	34972	7.596	103.36	19.8129	99.06	1301.73	1.25	
NMeFOSAA	38768.111	5.339	d3-NMeFOSAA	10398	5.339	109.12	11.5182	115.18	4167.03	1.51	
PFBA	96656.608	0.505	MPFBA	43774	0.501	123.88	8.5655	85.66	1267.31	1.43	
PFBS	36454.875	2.485	M3PFBS	18315	2.483	155.27	6.4618	73.01	1301.32	1.10	
NMeFOSA	30878.578	5.938	d-NMeFOSA	17706	5.927	105.32	18.7232	93.62	1803.58	1.42	
PFDA	93311.633	5.197	M6PFDA	36120	5.196	116.87	8.5654	85.65	1545.64	1.76	
PFDoA	77942.333	5.828	MPFDoA	40907	5.828	108.64	9.2077	92.08	1127.92	1.59	
NEtFOSA	32265.661	6.237	d-NEtFOSA	13482	6.226	113.61	17.3698	86.85	1645.95	1.42	
PFHpA	76475.824	4.078	M4PFHpA	44211	4.077	125.28	8.4672	84.67	1882.07	1.48	
PFHxA	73430.369	3.493	M5PFHxA	32327	3.501	120.35	8.6080	86.08	366.97	2.02	
NMeFOSE	45254.231	5.964	d7-NMeFOSE	24689	5.953	106.11	17.5311	87.66	2701.07	1.84	
PFHxS	47968.458	4.147	M3PFHxS	13047	4.147	130.66	8.2057	89.97	2838.07	1.43	m
PFNA	74098.433	4.874	M9PFNA	29994	4.874	112.64	7.9340	79.34	1500.03	1.86	
NEtFOSE	44090.197	6.244	d9-NEtFOSE	23301	6.223	112.08	17.1741	85.87	6251.65	1.68	
PFOA	66251.065	4.510	M8PFOA	23868	4.509	113.78	9.8495	98.50	4597.53	1.64	
PFOS	49091.568	4.894	M8PFOS	6102	4.893	129.50	8.8337	95.45	308.01	1.93	m
PFPeA	38954.371	1.637	M5PFPeA	19840	1.635	117.99	8.3505	83.50	1086.25	1.30	
PFMPA	78942.773	0.755	M5PFPeA	19840	1.635	117.99	17.4916	87.46	3153.36	1.30	
PFTA	58254.896	6.624	M2PFTA	31962	6.623	100.56	10.2718	102.72	366.54	1.46	
PFMBA	75013.382	2.531	M5PFHxA	32327	3.501	120.35	17.1427	85.71	3695.85	1.00	
PFTrDA	87270.215	6.201	MPFDoA	40907	5.828	108.64	9.9611	99.61	857.16	1.46	
PFEESA	194996.277	3.253	M3PFHxS	13047	4.147	130.66	16.2010	91.02	10407.54	1.54	
PFUnA	108095.985	5.507	M7PFUnA	62036	5.506	118.22	8.1515	81.51	3638.06	1.39	
NFDHA	76220.990	3.382	M4PFHpA	44211	4.077	125.28	17.4992	87.50	5521.98	1.56	

HFPO-DA



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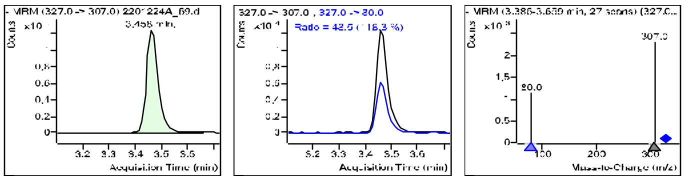

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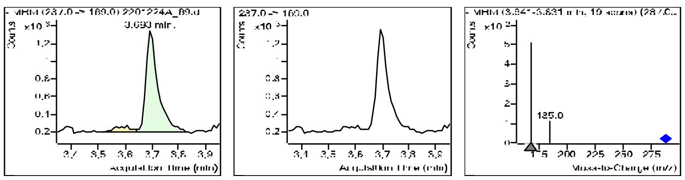

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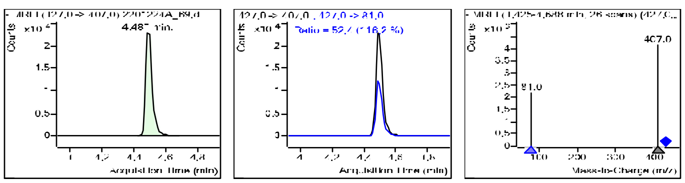

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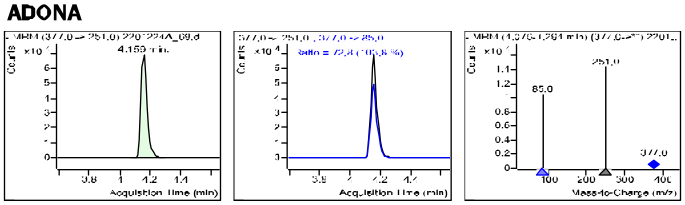

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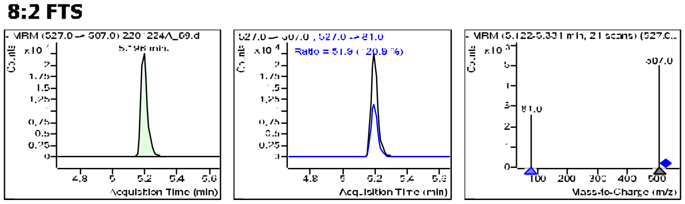

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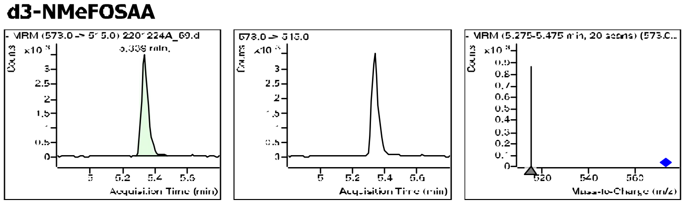

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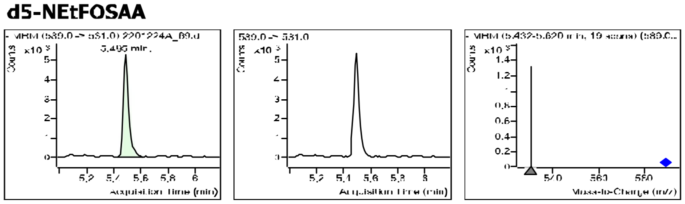

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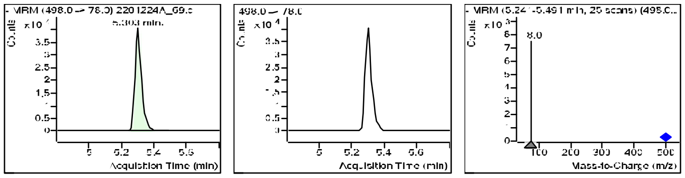

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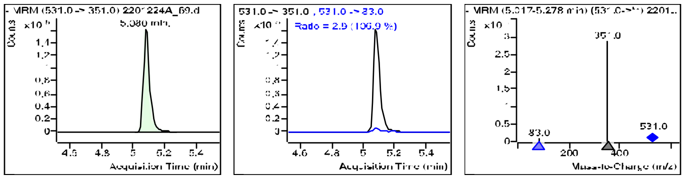

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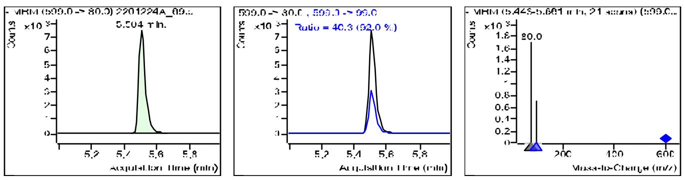

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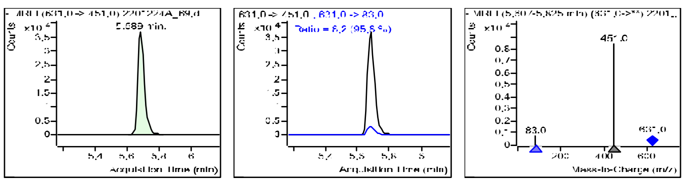

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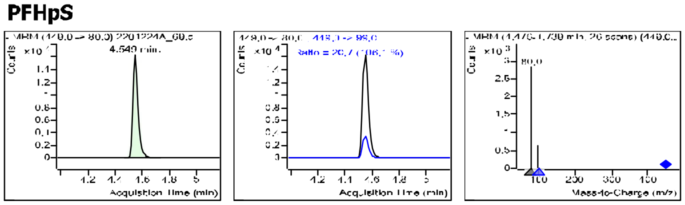

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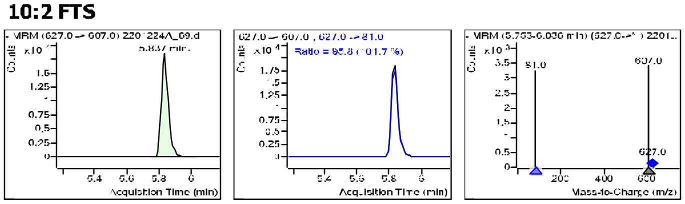

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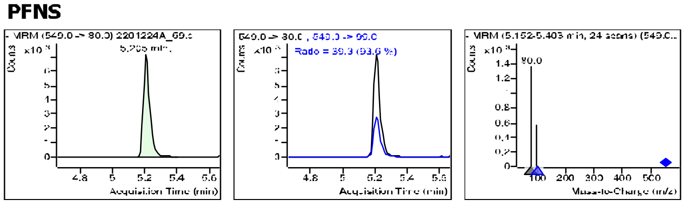

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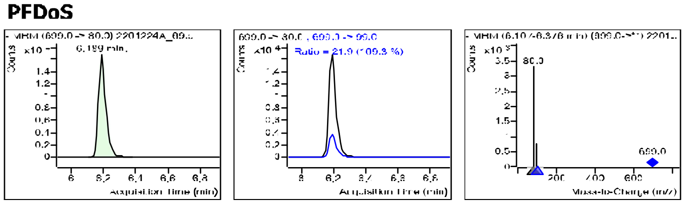

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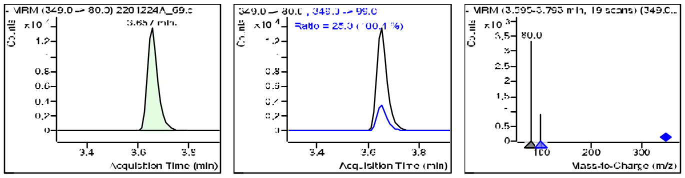

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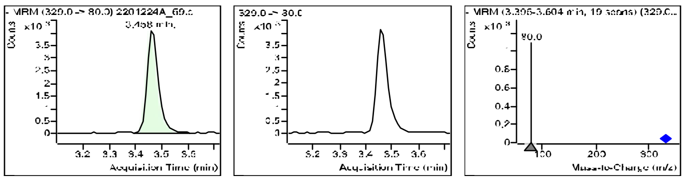

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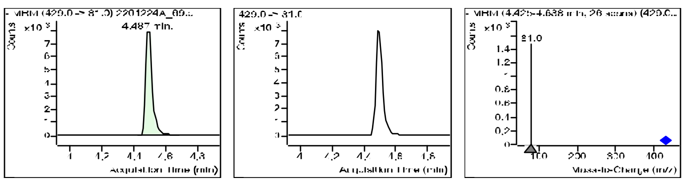

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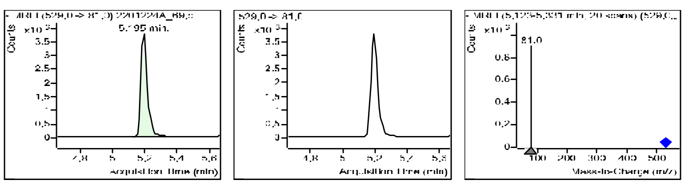

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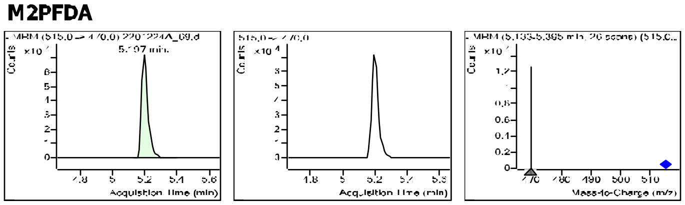

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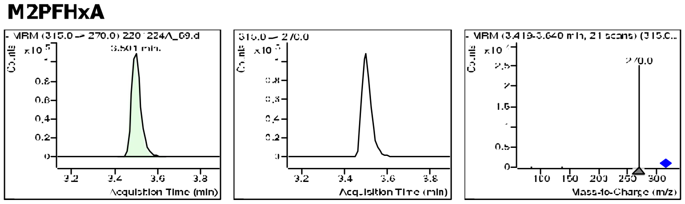

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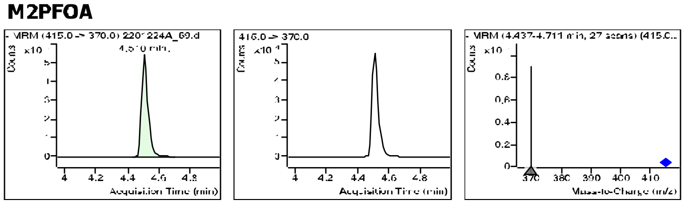

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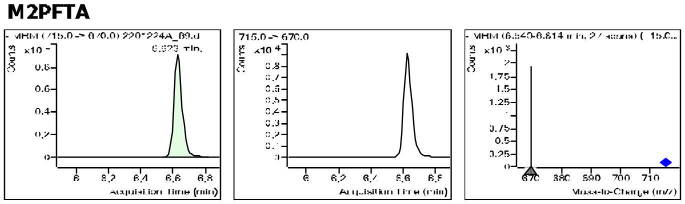

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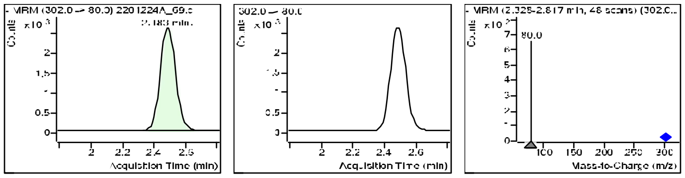

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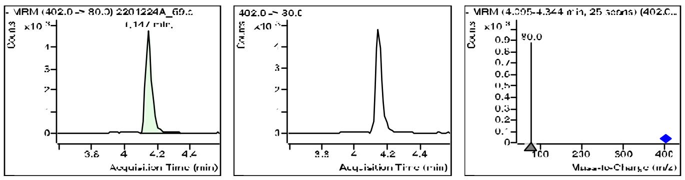

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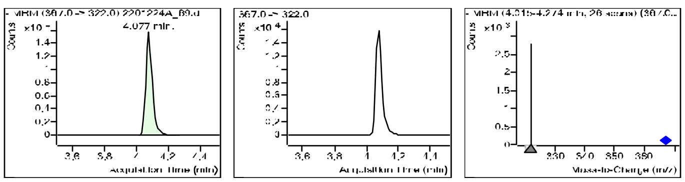

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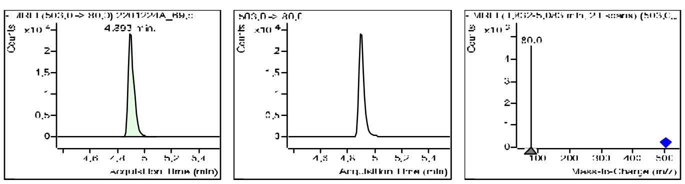

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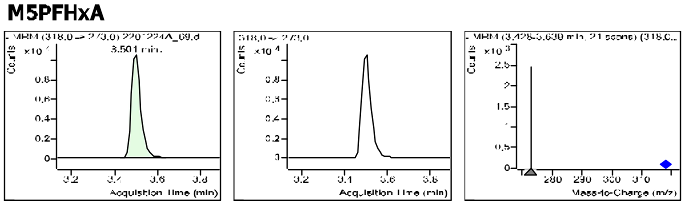

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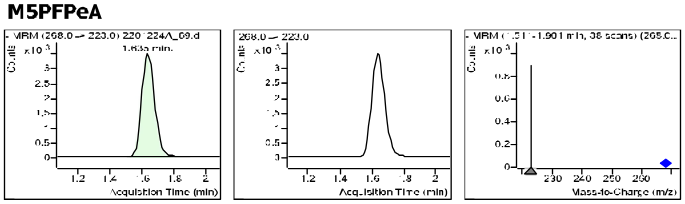

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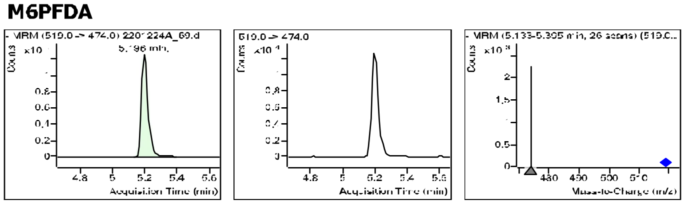

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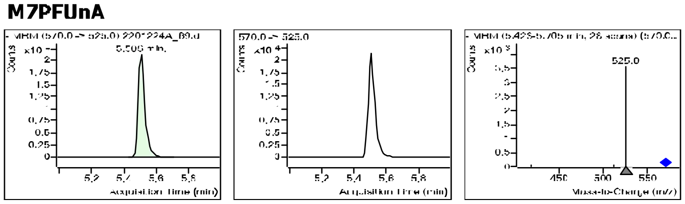

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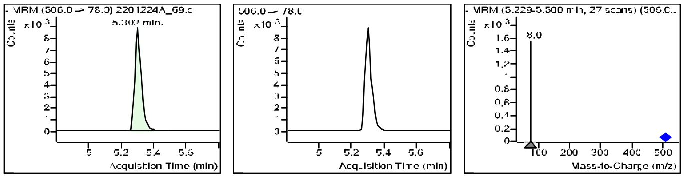

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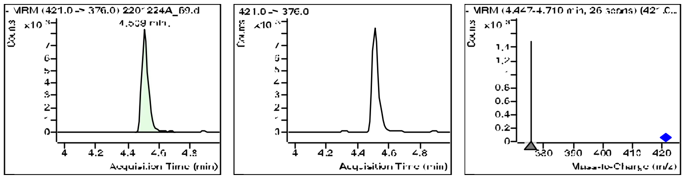

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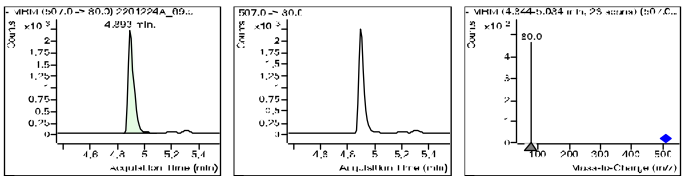

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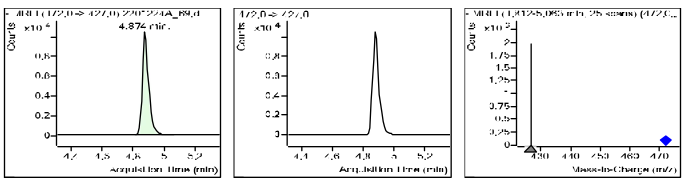

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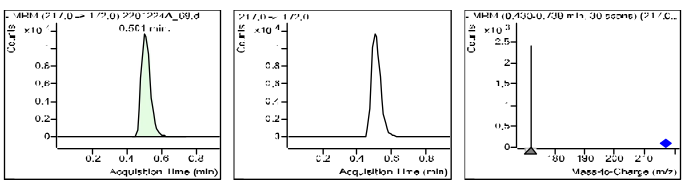

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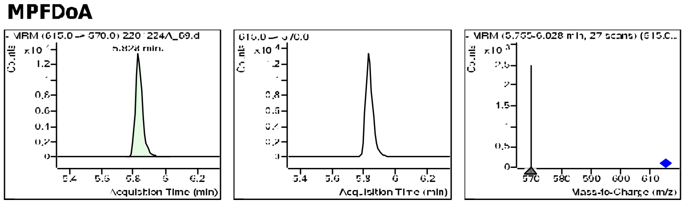

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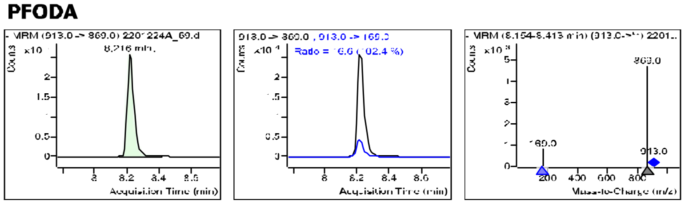

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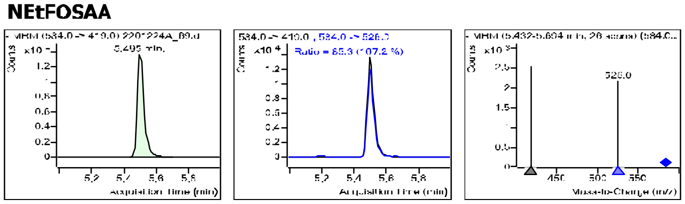

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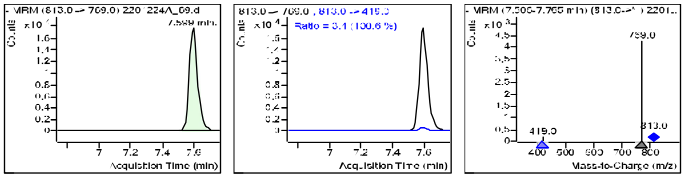

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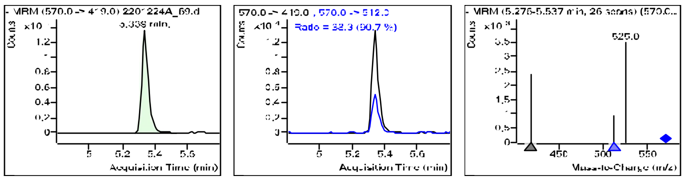

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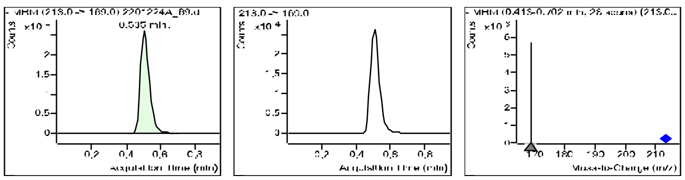

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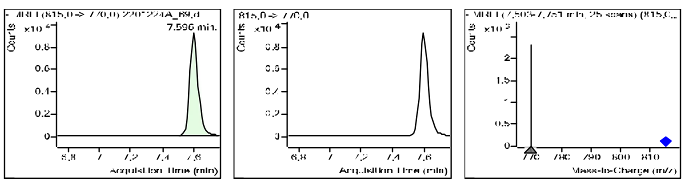

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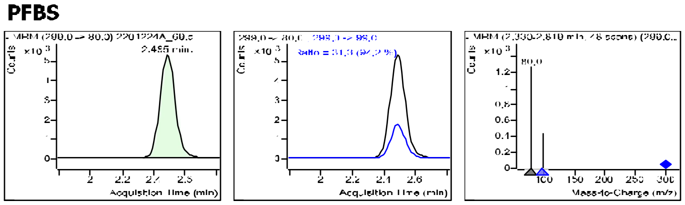

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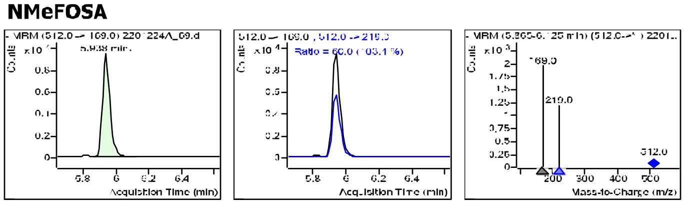

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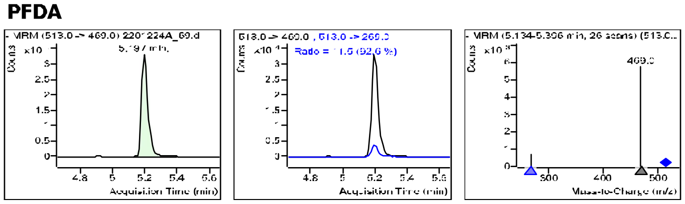

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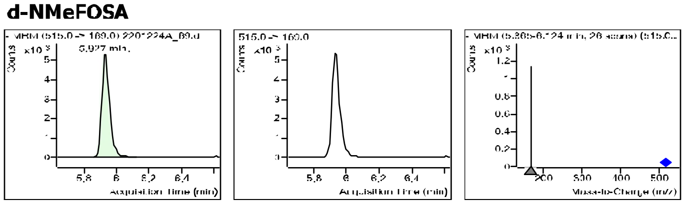

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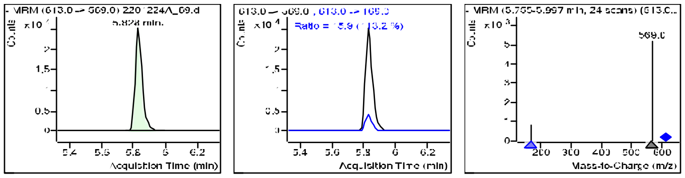

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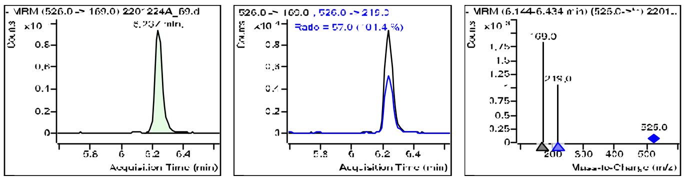

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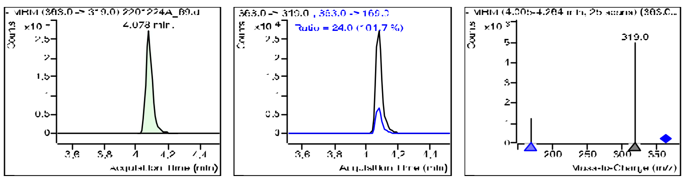

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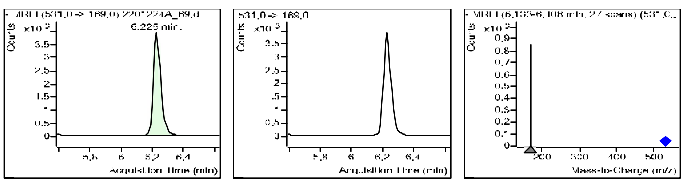

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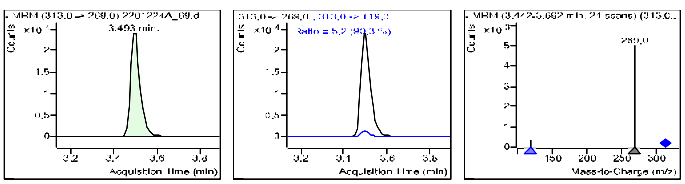

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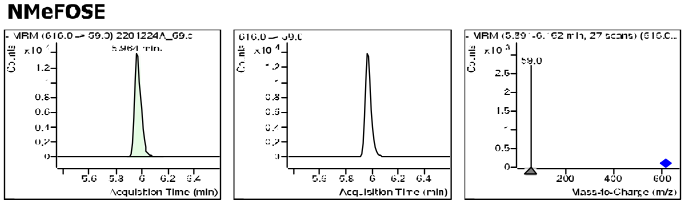

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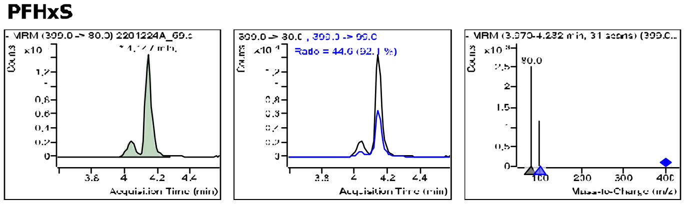

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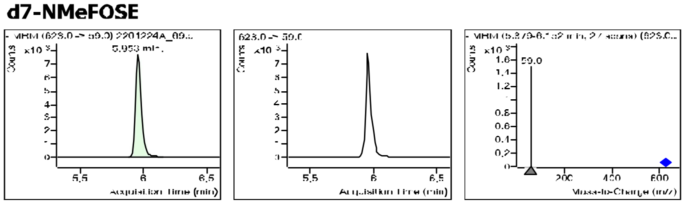

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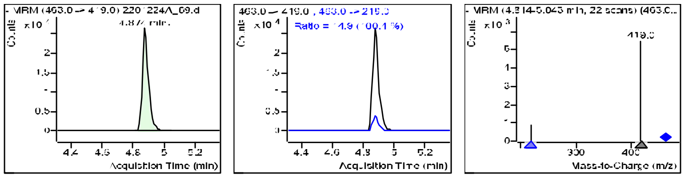

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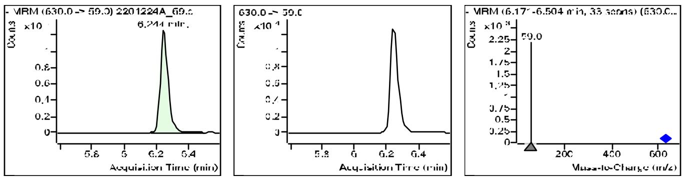

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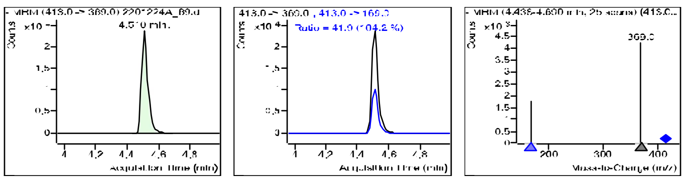

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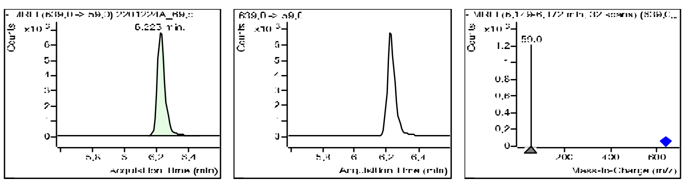

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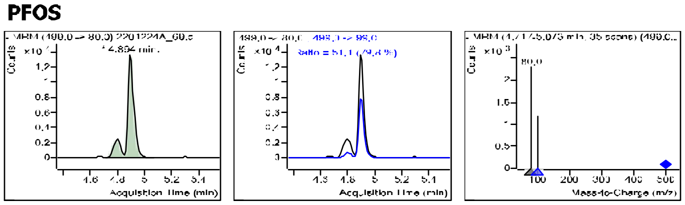

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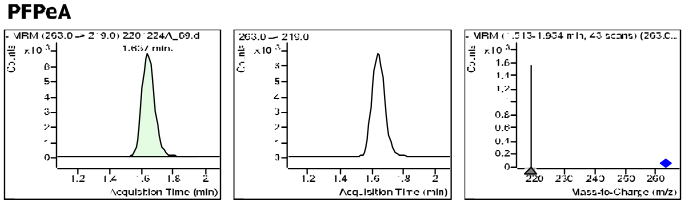

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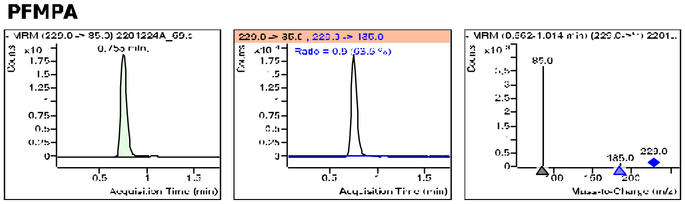

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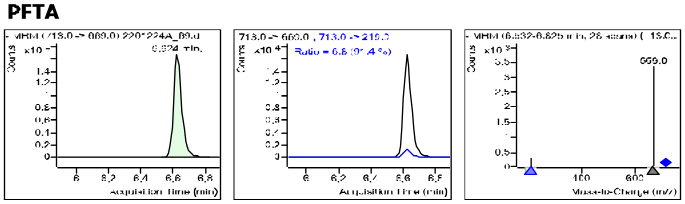

Quantitative Analysis Sample Report

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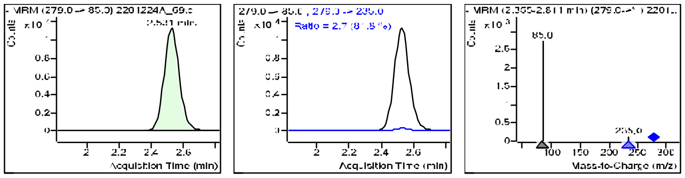

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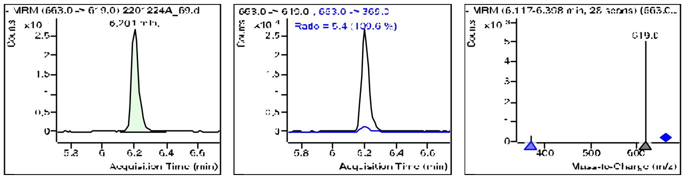

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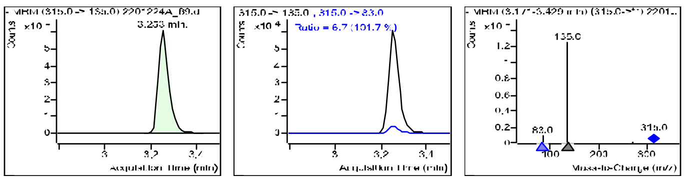

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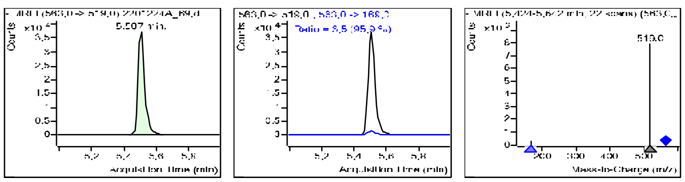

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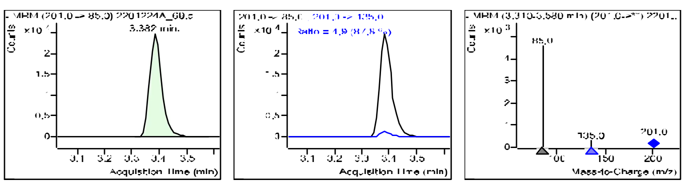

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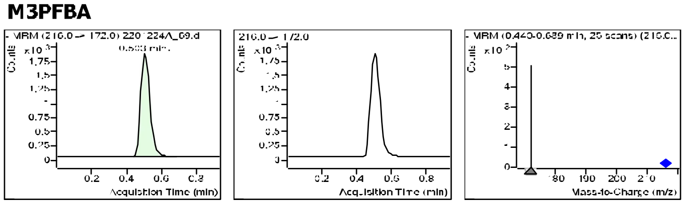

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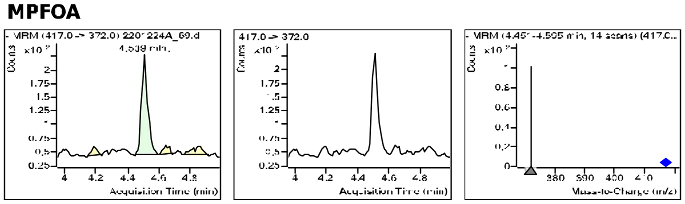


7E

ORGANICS CALIBRATION VERIFICATION

Report No:	220122279	Instrument ID:	QQQ2
Analysis Date:	01/04/2021 23:21	Lab File ID:	2210104B_31.d
Analytical Method:	EPA 537 Mod Isotope Dilution	Analytical Batch:	701166

ANALYTE	*UNITS*	*TRUE*	*FOUND*	*% REC*	*LCL*	*UCL*	*Q*
6:2 Fluorotelomersulfonic acid	ng/L	9510	9050	95	70	130	
8:2 Fluorotelomersulfonic acid	ng/L	9600	10600	110	70	130	
Perfluorobutanoic acid	ng/L	10000	8550	85	70	130	
Perfluorobutanesulfonic acid	ng/L	8870	7680	87	70	130	
Perfluorodecanoic acid	ng/L	10000	8840	88	70	130	
Perfluoroheptanoic acid	ng/L	10000	8410	84	70	130	
Perfluorohexanoic acid	ng/L	10000	8820	88	70	130	
Perfluorohexanesulfonic acid	ng/L	9140	7210	79	70	130	
Perfluorononanoic acid	ng/L	10000	8500	85	70	130	
Perfluorooctanoic acid	ng/L	10000	9020	90	70	130	
Perfluorooctanesulfonic acid	ng/L	9280	7980	86	70	130	
Perfluoropentanoic acid	ng/L	10000	8530	85	70	130	
Perfluoroundecanoic acid	ng/L	10000	8200	82	70	130	

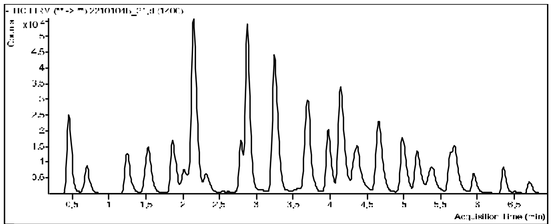
FORM 7E - ORG

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_31.d	**Position**	P1-C9	**Samp Name**	1400	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	QC	**Comment**	BMH,QQQ2;CCV
Acq Date	1/4/2021 23:21						

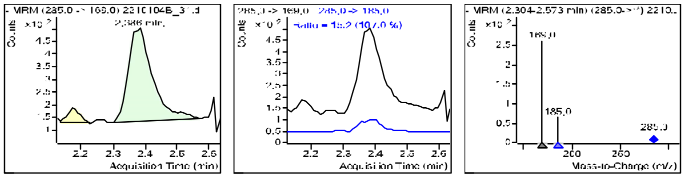
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	73882.075	4.149				106.39	21.2783	106.39	3331.87	1.49	
M2PFHxA	204253.567	2.152				105.15	42.0587	105.15	9140.76	1.36	
M2PFOA	84210.320	3.248				106.48	21.2951	106.48	764.88	1.60	
M4PFOS	55091.501	3.703				108.99	21.7973	108.99	94.04	1.52	
MPFOA	421.996	3.248				0.00	37.7466	150.99	4.71	2.19	
M3PFBA	3673.125	0.464				0.00	5.0099	100.20	INF	1.61	
HFPO-DA	1945.925	2.386	M3HFPODA	644	2.375	96.26	19.9208	99.60	53.76	1.57	
4:2 FTS	7141.614	2.095	M2 4:2 FTS	2633	2.095	106.68	8.5938	91.72	257.36	1.41	
6:2 FTS	14598.557	3.226	M2 6:2 FTS	5006	3.226	110.75	9.0537	95.20	488.11	1.42	
ADONA	132607.275	2.887	M8PFOA	23839	3.247	108.61	8.3371	88.22	138.26	1.36	
8:2 FTS	17227.312	4.129	M2 8:2 FTS	4529	4.129	109.23	10.5890	110.30	2681.53	1.65	
FOSA	32329.619	4.335	M8FOSA	13246	4.335	98.18	8.9266	89.27	INF	1.57	
9Cl-PF3ONS	94874.822	3.979	M8PFOS	11074	3.702	107.48	8.9523	95.95	6414.63	1.35	
PFDS	22941.672	4.685	M6PFDA	15827	4.149	101.65	8.8966	92.19	16814.59	1.39	
11Cl-PF3OUdS	92648.514	4.989	M8PFOS	11074	3.702	107.48	9.2593	98.19	358.32	1.37	
PFHpS	23220.767	3.297	M8PFOA	23839	3.247	108.61	8.6134	90.70	1262.27	1.42	
10:2 FTS	17396.021	5.183	M2 8:2 FTS	4529	4.129	109.23	10.6591	110.57	1146.17	1.56	
PFNS	23285.151	4.172	M9PFNA	22562	3.678	109.15	8.1764	84.99	94.12	1.49	
PFDoS	30009.600	5.623	M8PFOS	11074	3.702	107.48	8.9889	97.86	911.98	1.60	
PFPeS	18703.054	2.323	M5PFHxA	20900	2.151	100.87	8.8992	94.57	897.85	1.36	
PFODA	13511.196	6.706	M2PFHxDA	11860	6.348	106.26	9.5715	95.71	646.27	1.42	
NEtFOSAA	29821.974	4.651	d5-NEtFOSAA	11926	4.641	110.09	8.8425	88.43	732.74	1.00	m
PFHxDA	21781.612	6.351	M2PFHxDA	11860	6.348	106.26	10.0001	100.00	940.49	1.63	
NMeFOSAA	32761.326	4.375	d3-NMeFOSAA	8044	4.365	104.23	9.9078	99.08	INF	0.85	m
PFBA	79472.465	0.466	MPFBA	25046	0.463	102.17	8.5499	85.50	2728.27	1.31	
PFBS	18847.007	1.497	M3PFBS	9622	1.496	105.13	7.6825	86.61	89.60	1.50	
NMeFOSA	12277.624	5.364	d-NMeFOSA	6097	5.353	101.39	9.7229	97.23	266.98	1.38	
PFDA	32496.714	4.150	M6PFDA	15827	4.149	101.65	8.8417	88.42	169.44	1.49	
PFDoA	28353.712	5.187	MPFDoA	14841	5.186	109.73	9.9802	99.80	1005.55	1.55	
NEtFOSA	13816.874	5.704	d-NEtFOSA	6045	5.694	96.49	9.0851	90.85	425.71	1.43	
PFHpA	42237.016	2.798	M4PFHpA	21109	2.797	102.97	8.4081	84.08	1691.72	1.42	
PFHxA	42051.078	2.153	M5PFHxA	20900	2.151	100.87	8.8180	88.18	1611.77	1.46	
NMeFOSE	18734.514	5.407	d7-NMeFOSE	7410	5.379	101.37	8.6113	86.11	81.58	1.35	
PFHxS	21145.899	2.875	M3PFHxS	10809	2.874	113.21	7.2054	78.83	799.23	0.78	m
PFNA	42455.933	3.670	M9PFNA	22562	3.678	109.15	8.5018	85.02	59.43	1.82	
NEtFOSE	19983.556	5.703	d9-NEtFOSE	10415	5.693	105.62	9.3595	93.59	776.51	1.55	
PFOA	46741.392	3.249	M8PFOA	23839	3.247	108.61	9.0190	90.19	180.08	1.42	
PFOS	28161.180	3.704	M8PFOS	11074	3.702	107.48	7.9831	86.03	297.23	0.81	m
PFPeA	47053.377	1.253	M5PFPeA	17277	1.248	101.77	8.5271	85.27	1597.64	1.38	
PFMPA	39817.249	0.698	M5PFPeA	17277	1.248	101.77	8.2470	82.47	962.65	1.36	
PFTA	17047.912	5.957	M2PFTA	9920	5.954	104.88	9.9704	99.70	119.77	1.38	
PFMBA	46576.728	1.547	M5PFHxA	20900	2.151	100.87	8.9535	89.53	3045.90	1.34	
PFTrDA	21585.292	5.634	MPFDoA	14841	5.186	109.73	9.6109	96.11	914.65	1.44	
PFEESA	78487.844	1.867	M3PFHxS	10809	2.874	113.21	8.3069	93.34	3299.84	1.51	
PFUnA	31739.241	4.665	M7PFUnA	18430	4.672	110.39	8.1975	81.97	856.93	1.57	
NFDHA	33558.096	2.027	M4PFHpA	21109	2.797	102.97	8.0427	80.43	105.18	1.36	

HFPO-DA



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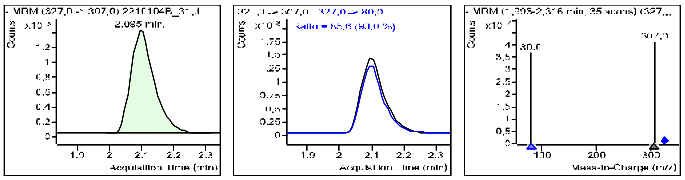

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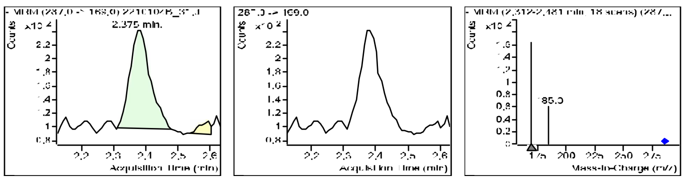

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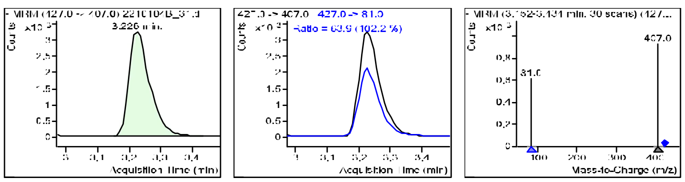

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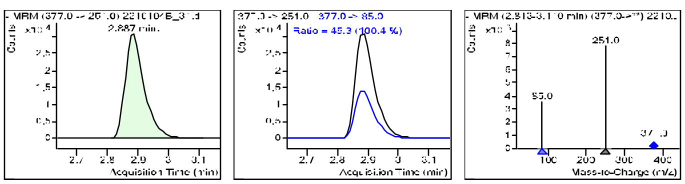

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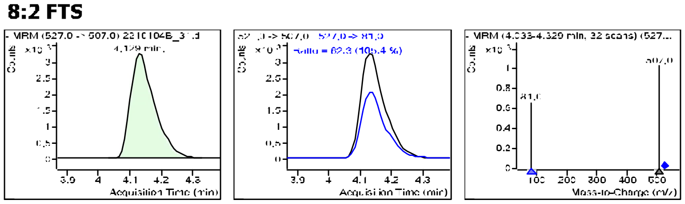

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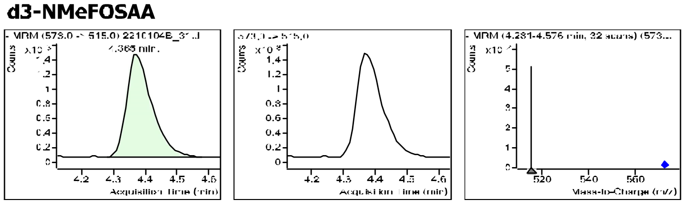

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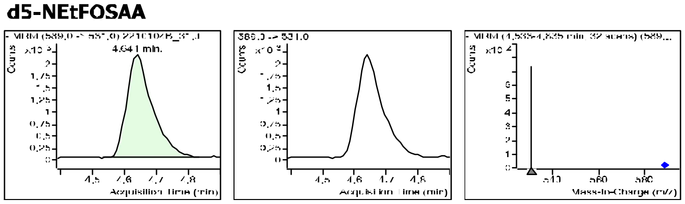

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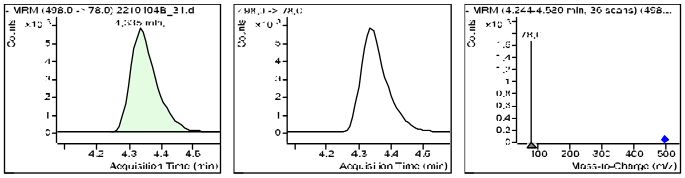

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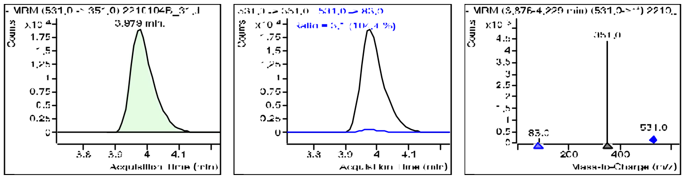

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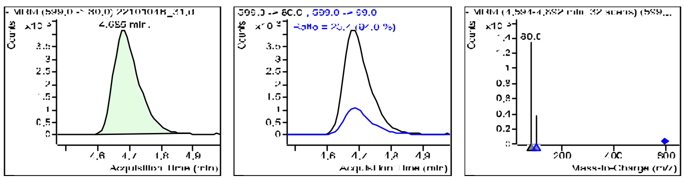

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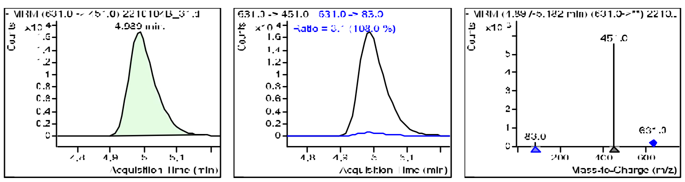

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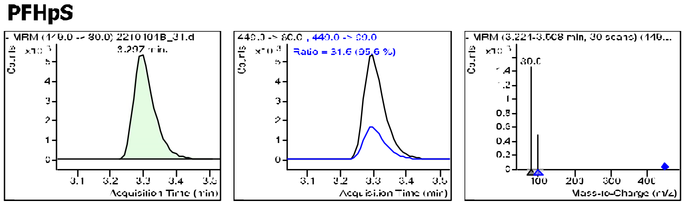

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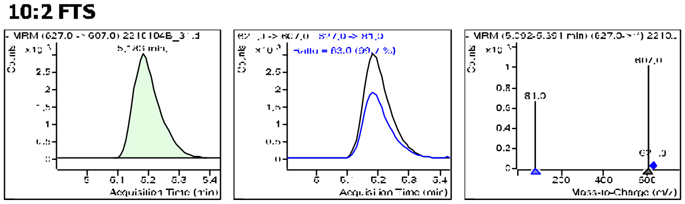

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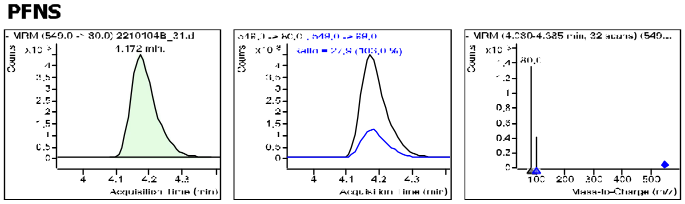

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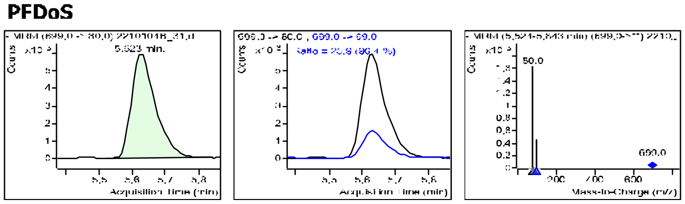

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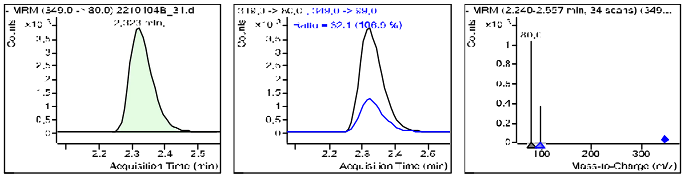

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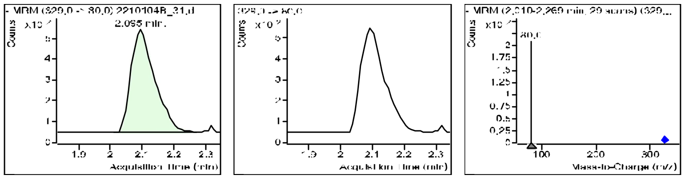

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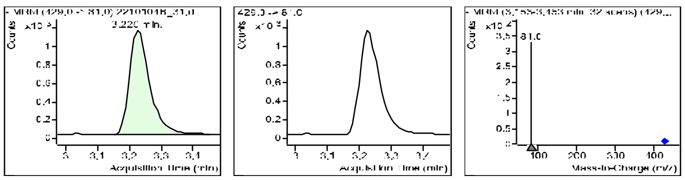

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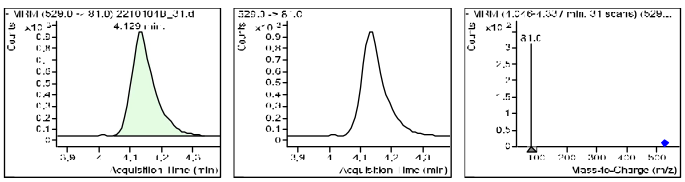

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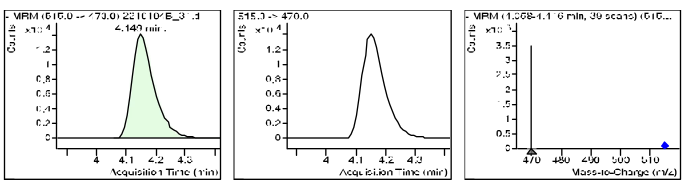

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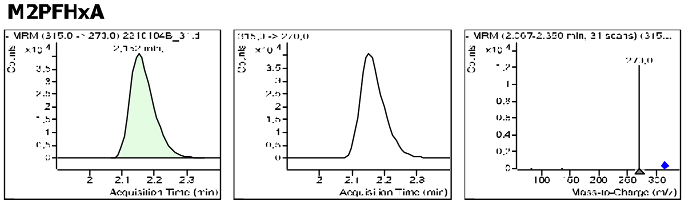

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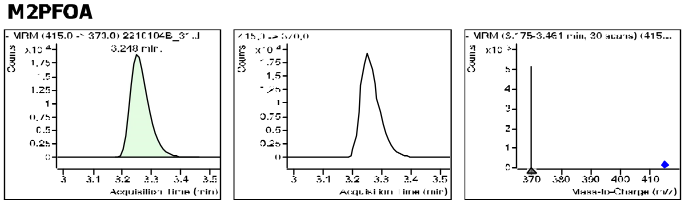

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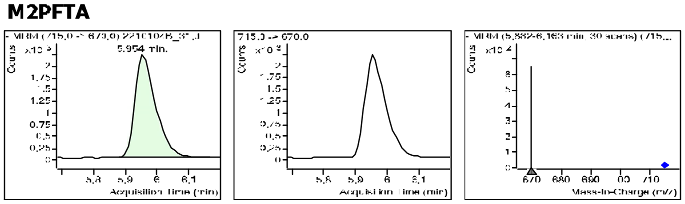

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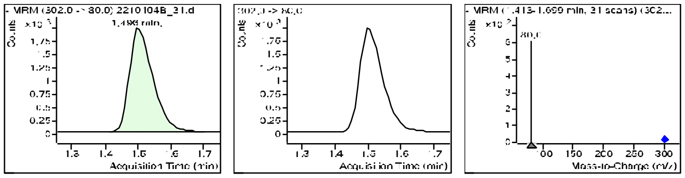

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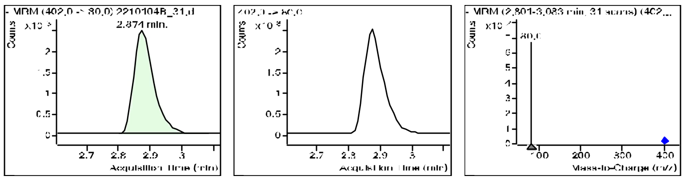

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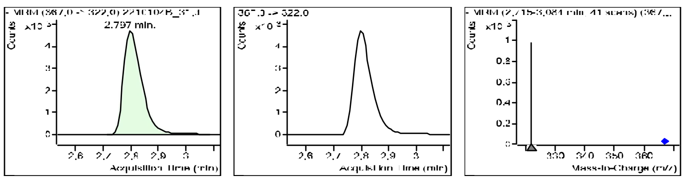

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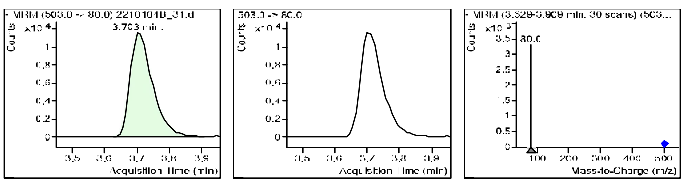

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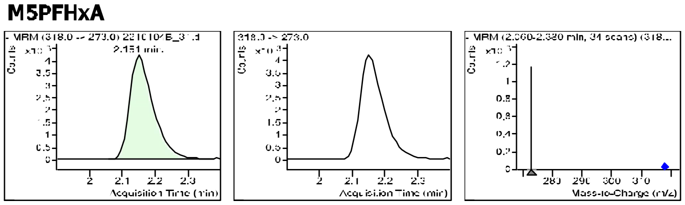

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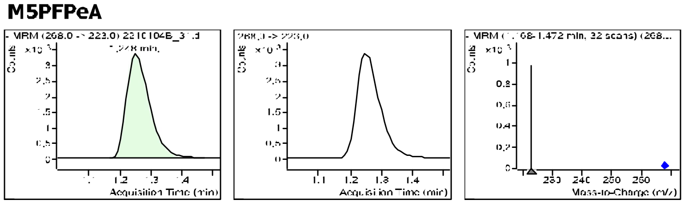

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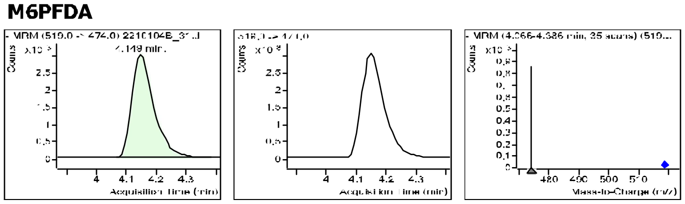

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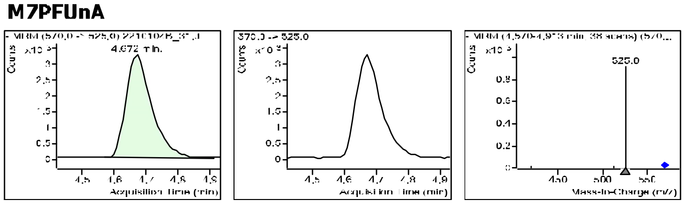

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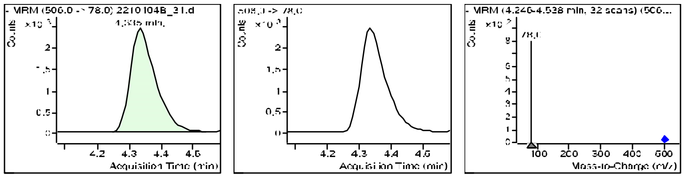

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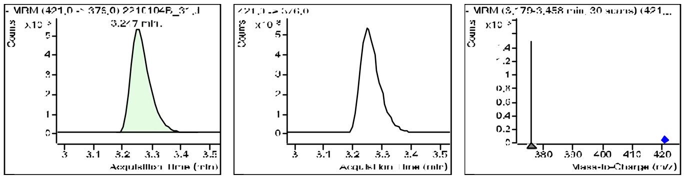

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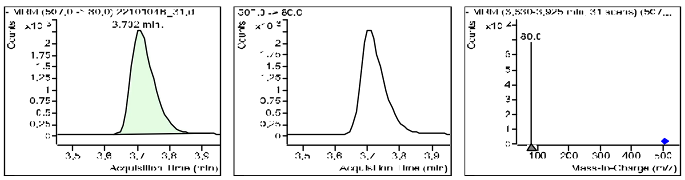

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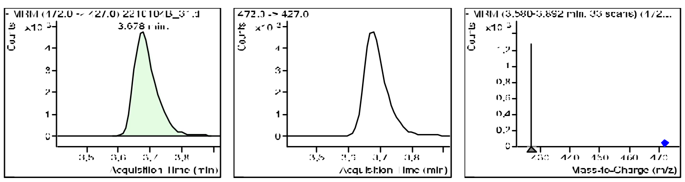

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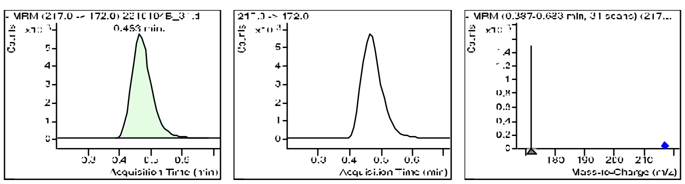

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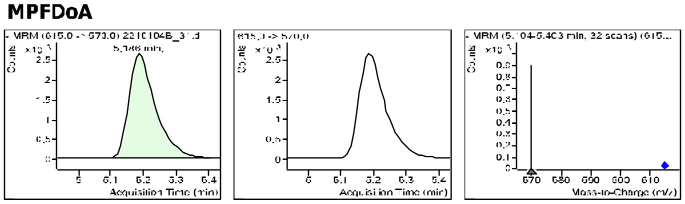

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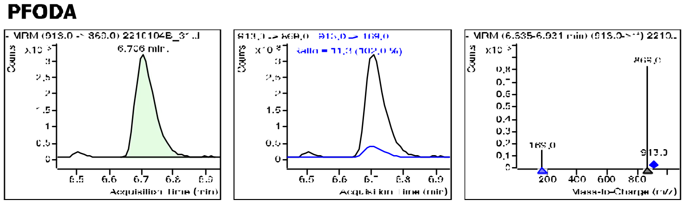

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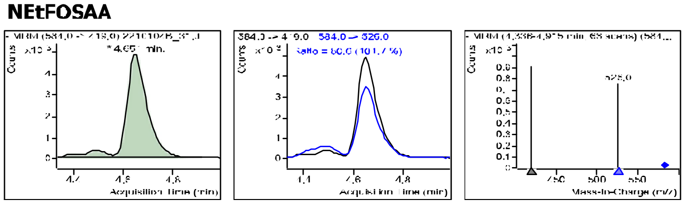

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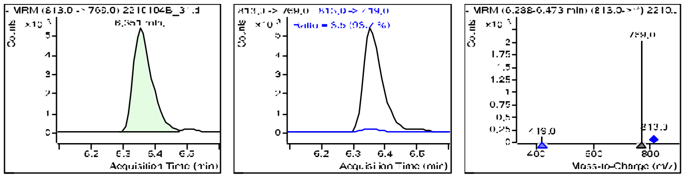

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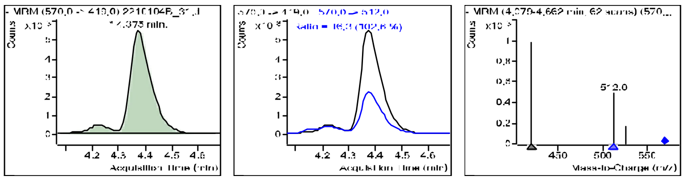

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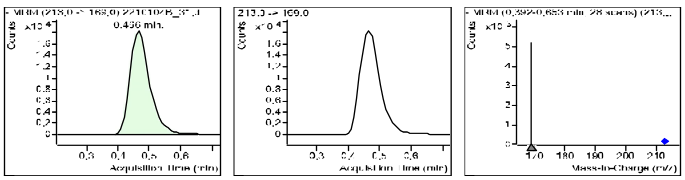

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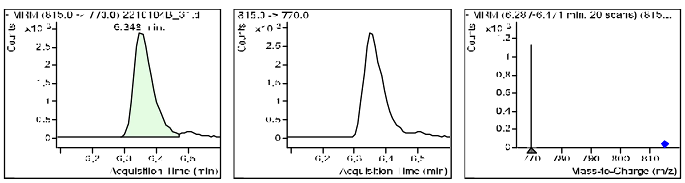

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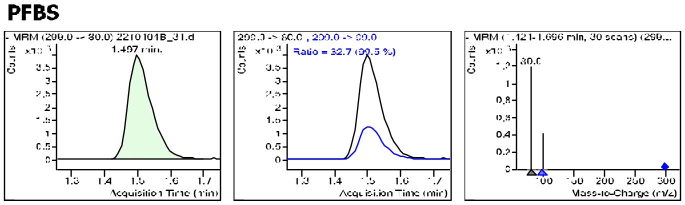

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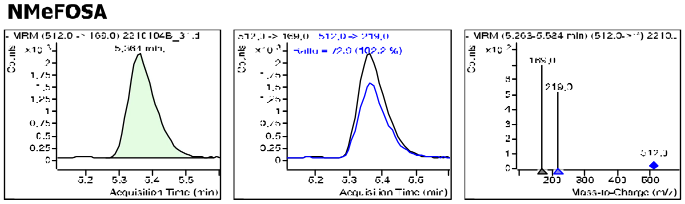

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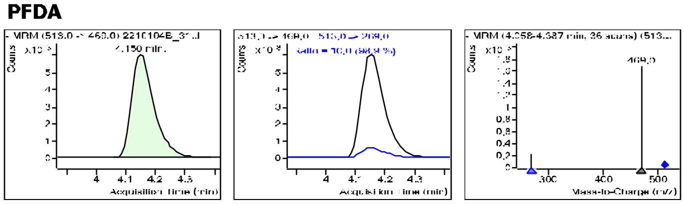

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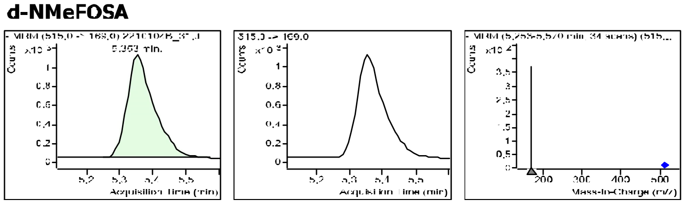

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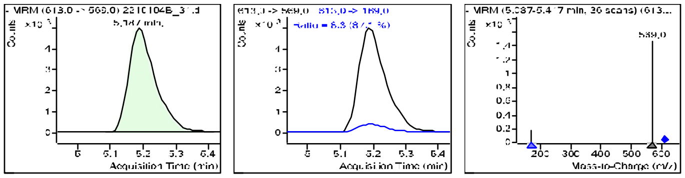

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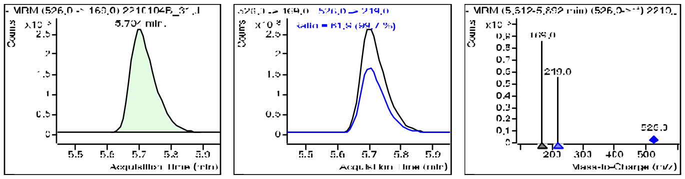

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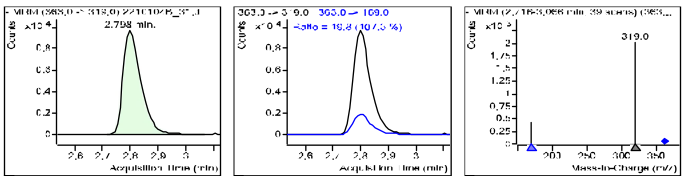

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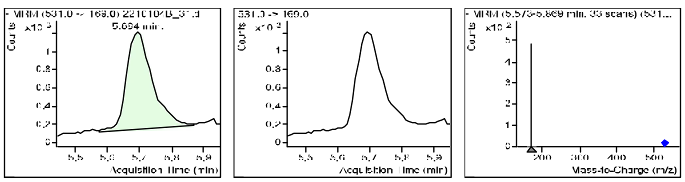

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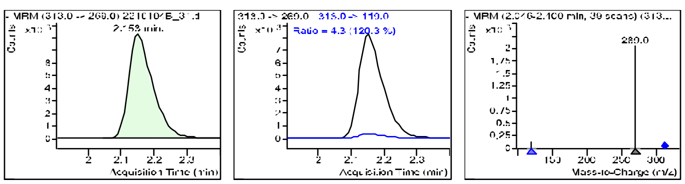
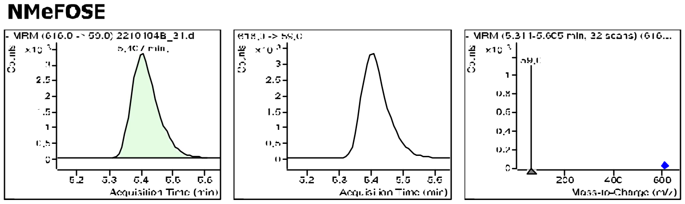


NMeFOSE



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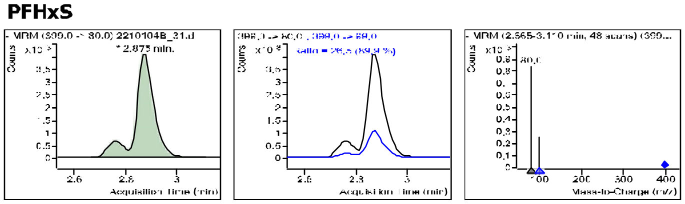

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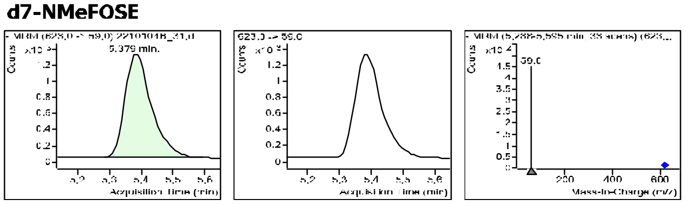

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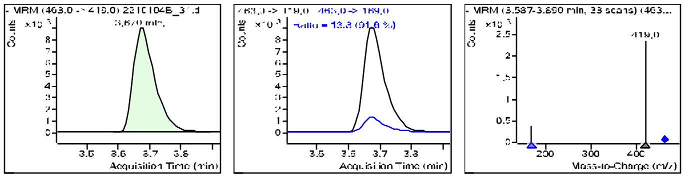

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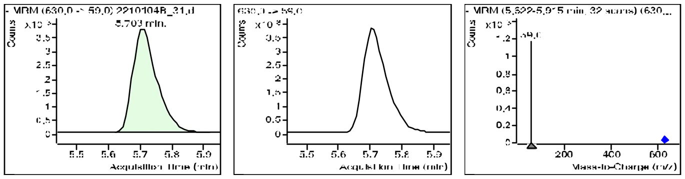

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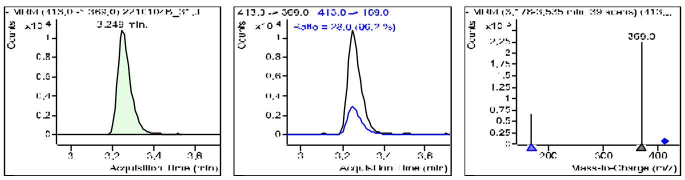

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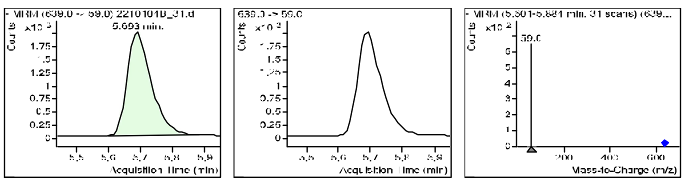

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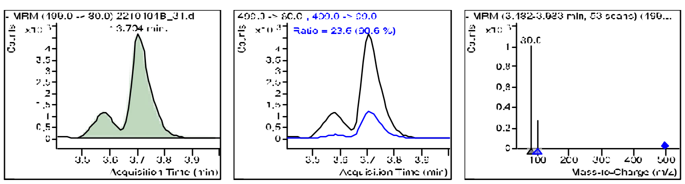

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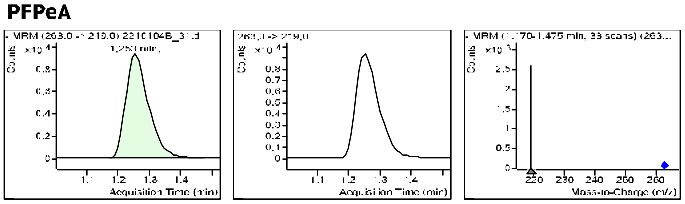

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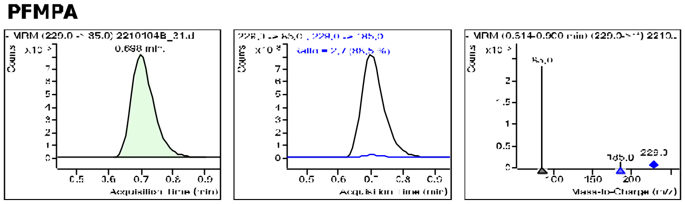

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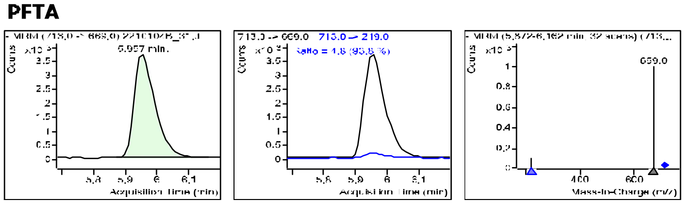

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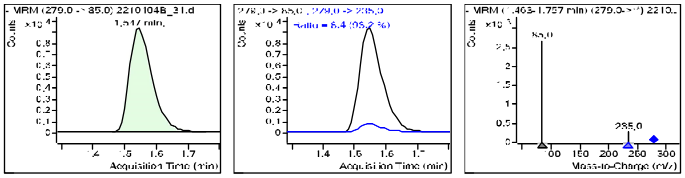

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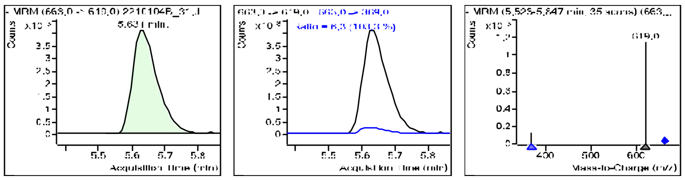

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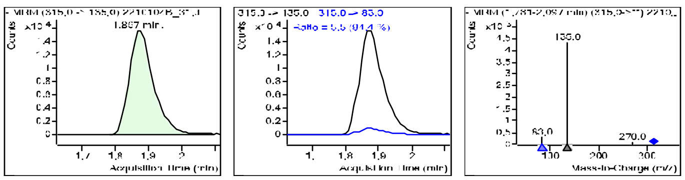

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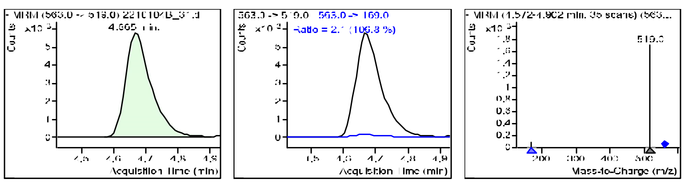

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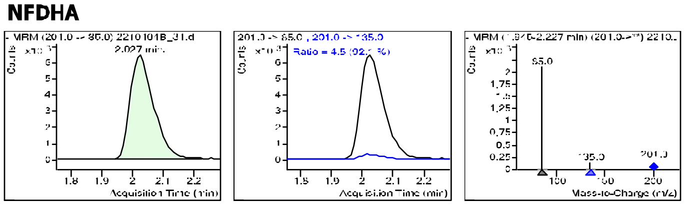
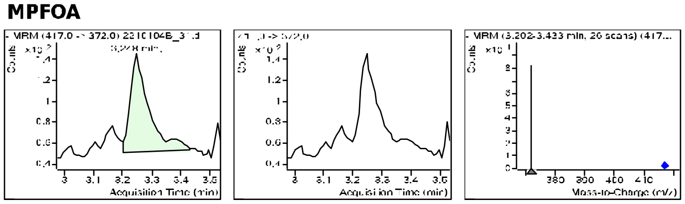


MPFOA



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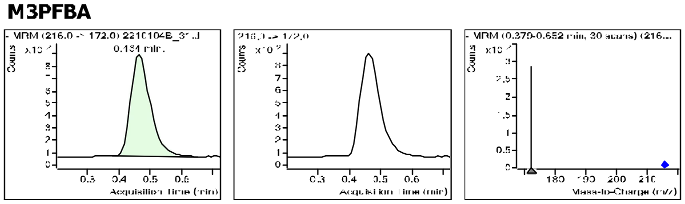


7E

ORGANICS CALIBRATION VERIFICATION

Report No:	220122279	Instrument ID:	QQQ2
Analysis Date:	01/05/2021 02:10	Lab File ID:	2210104B_44.d
Analytical Method:	EPA 537 Mod Isotope Dilution	Analytical Batch:	701166

ANALYTE	*UNITS*	*TRUE*	*FOUND*	*% REC*	*LCL*	*UCL*	*Q*
6:2 Fluorotelomersulfonic acid	ng/L	9510	9060	95	70	130	
8:2 Fluorotelomersulfonic acid	ng/L	9600	9330	97	70	130	
Perfluorobutanoic acid	ng/L	10000	8850	88	70	130	
Perfluorobutanesulfonic acid	ng/L	8870	7690	87	70	130	
Perfluorodecanoic acid	ng/L	10000	8400	84	70	130	
Perfluoroheptanoic acid	ng/L	10000	8150	82	70	130	
Perfluorohexanoic acid	ng/L	10000	8620	86	70	130	
Perfluorohexanesulfonic acid	ng/L	9140	7320	80	70	130	
Perfluorononanoic acid	ng/L	10000	8280	83	70	130	
Perfluorooctanoic acid	ng/L	10000	8950	90	70	130	
Perfluorooctanesulfonic acid	ng/L	9280	7690	83	70	130	
Perfluoropentanoic acid	ng/L	10000	8460	85	70	130	
Perfluoroundecanoic acid	ng/L	10000	8950	89	70	130	

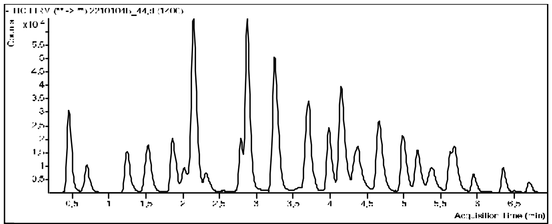
FORM 7E - ORG

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_44.d	**Position**	P1-E4	**Samp Name**	1400	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	QC	**Comment**	MRA,QQQ2;CCV
Acq Date	1/5/2021 2:10						

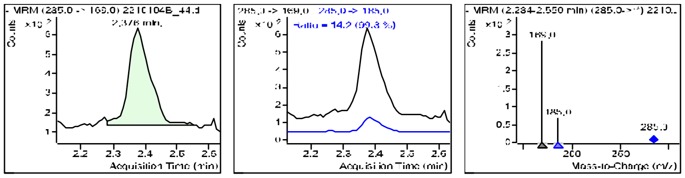
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	84226.934	4.158				121.29	24.2576	121.29	2865.91	1.42	
M2PFHxA	237097.251	2.152				122.05	48.8217	122.05	10266.10	1.36	
M2PFOA	99291.608	3.258				125.54	25.1088	125.54	5734.50	1.42	
M4PFOS	66729.020	3.712				132.01	26.4018	132.01	4685.94	1.52	
MPFOA	335.057	3.248				0.00	29.9701	119.88	3.16	2.33	
M3PFBA	4827.077	0.464				0.00	6.5838	131.68	108.04	1.65	
HFPO-DA	2334.229	2.376	M3HFPODA	986	2.384	147.39	15.6067	78.03	4.89	0.99	
4:2 FTS	9265.478	2.095	M2 4:2 FTS	3189	2.095	129.22	9.2047	98.24	27.78	1.41	
6:2 FTS	17846.587	3.226	M2 6:2 FTS	6113	3.225	135.24	9.0637	95.31	1717.07	1.50	
ADONA	162316.819	2.887	M8PFOA	27077	3.256	123.36	8.9847	95.08	8833.67	1.36	
8:2 FTS	19279.552	4.147	M2 8:2 FTS	5751	4.147	138.70	9.3330	97.22	27354.89	1.35	
FOSA	37213.190	4.345	M8FOSA	15741	4.353	116.68	8.6462	86.46	1689.90	1.50	
9Cl-PF3ONS	112592.813	3.988	M8PFOS	13589	3.711	131.88	8.6584	92.80	4525.35	1.36	
PFDS	27623.225	4.685	M6PFDA	19120	4.158	122.80	8.8671	91.89	4122.27	1.51	
11Cl-PF3OUdS	110128.482	4.989	M8PFOS	13589	3.711	131.88	8.9698	95.12	420.74	1.50	
PFHpS	27033.651	3.297	M8PFOA	27077	3.256	123.36	8.8591	92.96	5121.41	1.42	
10:2 FTS	20833.960	5.192	M2 8:2 FTS	5751	4.147	138.70	10.0538	104.29	10536.03	1.37	
PFNS	28100.291	4.181	M9PFNA	25654	3.678	124.10	8.6781	90.21	993.39	1.42	
PFDoS	34595.551	5.623	M8PFOS	13589	3.711	131.88	8.4452	87.74	1507.77	1.60	
PFPeS	21744.843	2.314	M5PFHxA	24906	2.151	120.20	8.6826	92.27	169.58	1.50	
PFODA	14980.693	6.706	M2PFHxDA	13327	6.348	119.41	9.4440	94.44	718.36	1.33	
NEtFOSAA	33833.611	4.651	d5-NEtFOSAA	13605	4.650	125.59	8.7937	87.94	201.22	0.88	m
PFHxDA	24793.690	6.351	M2PFHxDA	13327	6.348	119.41	10.1297	101.30	1116.35	1.63	
NMeFOSAA	37137.544	4.384	d3-NMeFOSAA	9725	4.374	126.01	9.2898	92.90	INF	0.85	m
PFBA	98323.160	0.466	MPFBA	29953	0.463	122.18	8.8452	88.45	3990.70	1.31	
PFBS	23226.525	1.497	M3PFBS	11854	1.496	129.52	7.6852	86.64	1543.03	1.50	
NMeFOSA	14410.841	5.364	d-NMeFOSA	7062	5.363	117.44	9.8525	98.53	692.09	1.44	
PFDA	37307.966	4.159	M6PFDA	19120	4.158	122.80	8.4025	84.02	2374.61	1.49	
PFDoA	30880.281	5.187	MPFDoA	16651	5.186	123.12	9.6875	96.88	1025.26	1.55	
NEtFOSA	15422.059	5.704	d-NEtFOSA	7340	5.694	117.15	8.3524	83.52	137.90	1.43	
PFHpA	49962.233	2.798	M4PFHpA	25749	2.797	125.60	8.1538	81.54	2195.80	1.42	
PFHxA	49002.640	2.153	M5PFHxA	24906	2.151	120.20	8.6231	86.23	INF	1.39	
NMeFOSE	19657.809	5.407	d7-NMeFOSE	7585	5.388	103.76	8.8270	88.27	50.62	1.35	
PFHxS	24673.348	2.866	M3PFHxS	12409	2.874	129.96	7.3238	80.13	830.20	0.83	m
PFNA	47037.890	3.679	M9PFNA	25654	3.678	124.10	8.2842	82.84	2084.71	1.52	
NEtFOSE	22311.324	5.703	d9-NEtFOSE	11221	5.693	113.79	9.6997	97.00	58.97	1.63	
PFOA	52703.424	3.249	M8PFOA	27077	3.256	123.36	8.9533	89.53	471.34	1.70	
PFOS	33269.285	3.713	M8PFOS	13589	3.711	131.88	7.6862	82.82	INF	0.79	m
PFPeA	56940.283	1.253	M5PFPeA	21073	1.248	124.13	8.4601	84.60	489.15	1.38	
PFMPA	47772.532	0.698	M5PFPeA	21073	1.248	124.13	8.1124	81.12	3166.35	1.36	
PFTA	18291.648	5.957	M2PFTA	11192	5.954	118.34	9.4815	94.82	233.03	1.38	
PFMBA	56670.224	1.547	M5PFHxA	24906	2.151	120.20	9.1418	91.42	183.88	1.34	
PFTrDA	24096.089	5.634	MPFDoA	16651	5.186	123.12	9.5621	95.62	890.04	1.37	
PFEESA	94413.729	1.867	M3PFHxS	12409	2.874	129.96	8.7046	97.80	5470.04	1.51	
PFUnA	37357.891	4.674	M7PFUnA	19869	4.672	119.01	8.9497	89.50	INF	1.57	
NFDHA	40216.038	2.027	M4PFHpA	25749	2.797	125.60	7.9016	79.02	3206.87	1.36	

HFPO-DA



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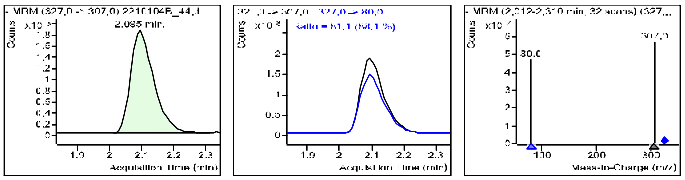
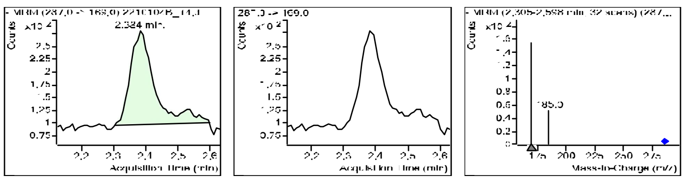


M3HFPODA



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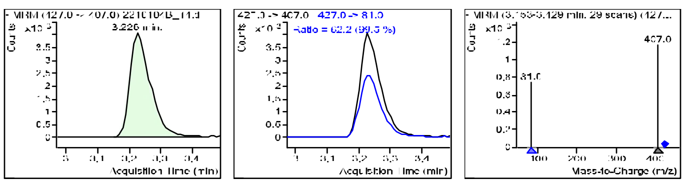

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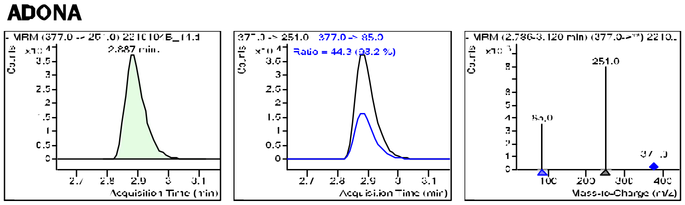

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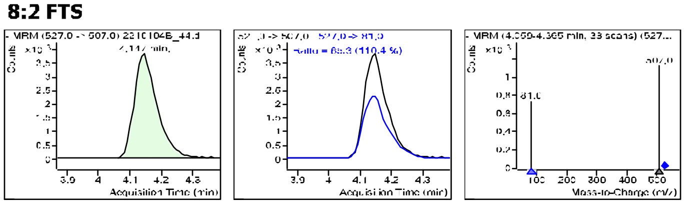

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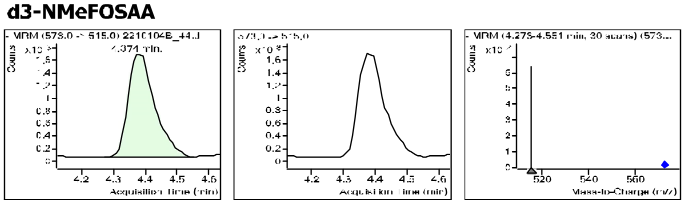

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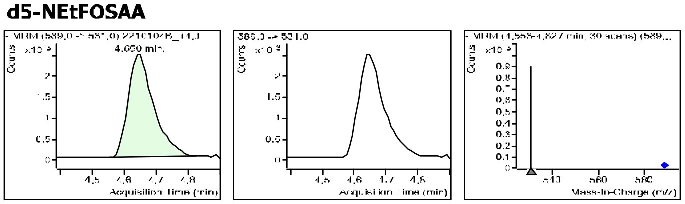

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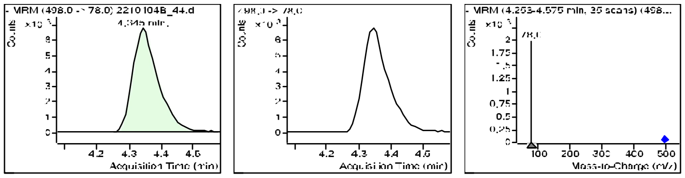

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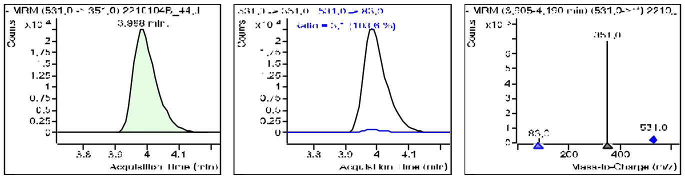

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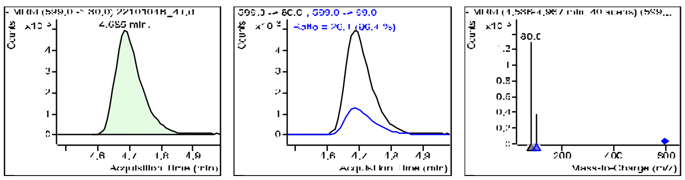

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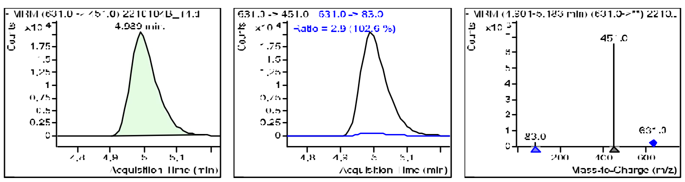

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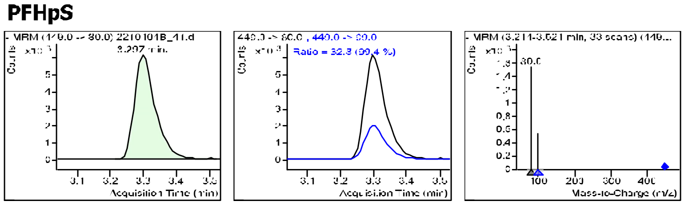
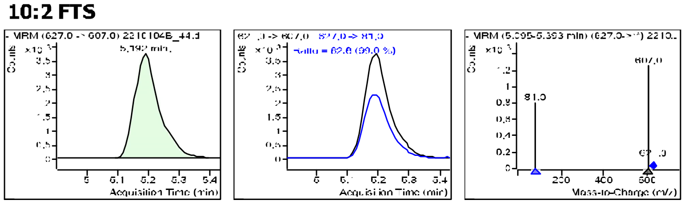


10:2 FTS



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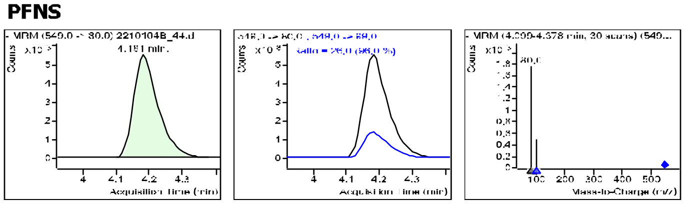
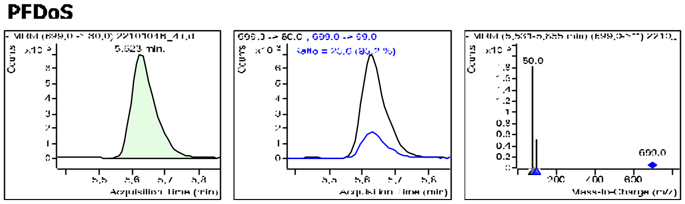
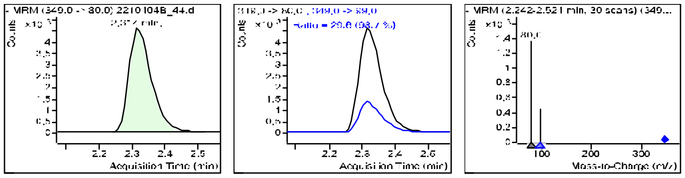


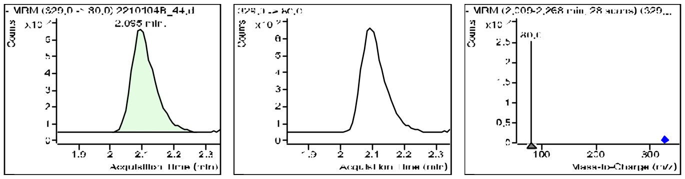
PFDoS



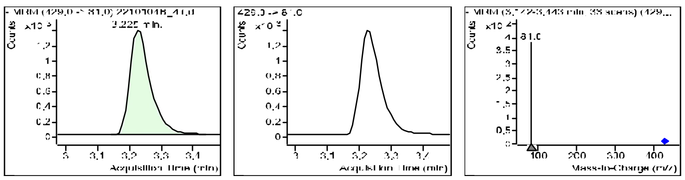
PFPeS



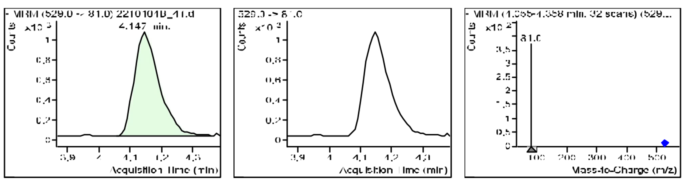
M2 4:2 FTS



M2 6:2 FTS



M2 8:2 FTS



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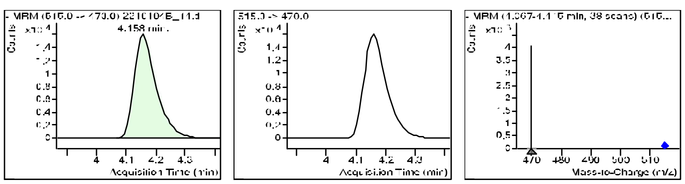

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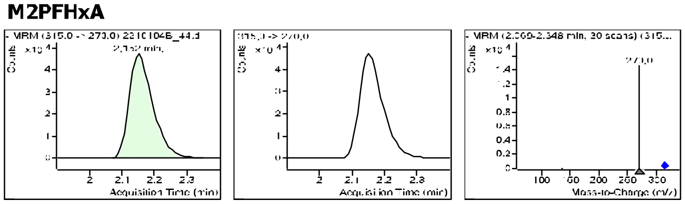

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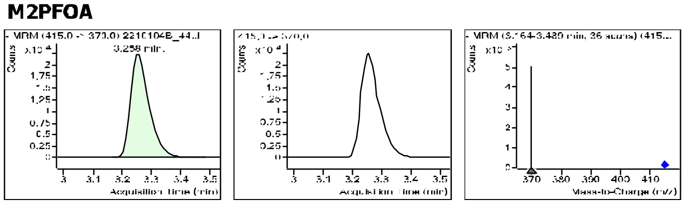

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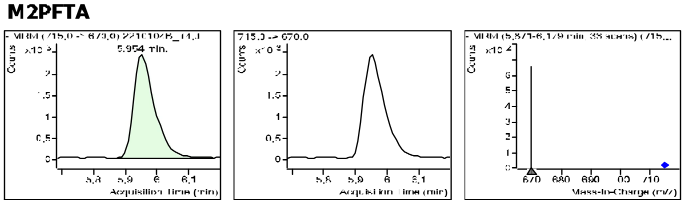

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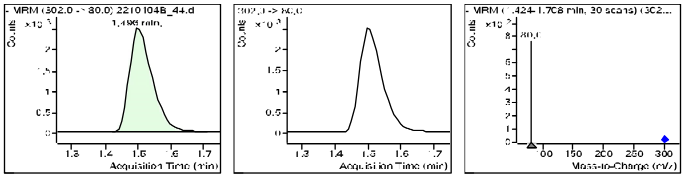

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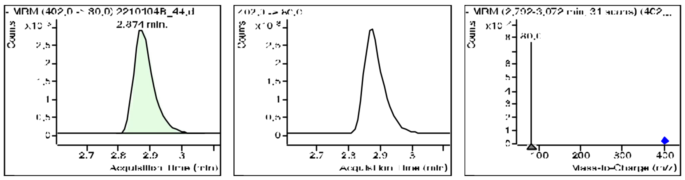

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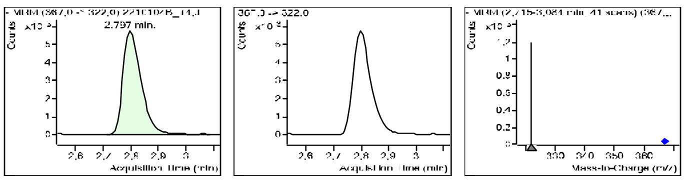

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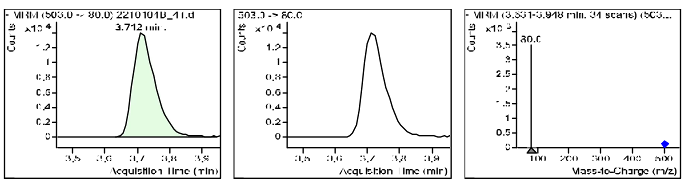

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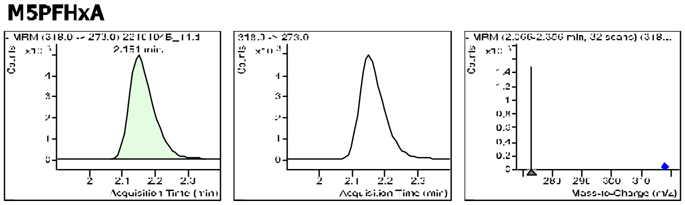

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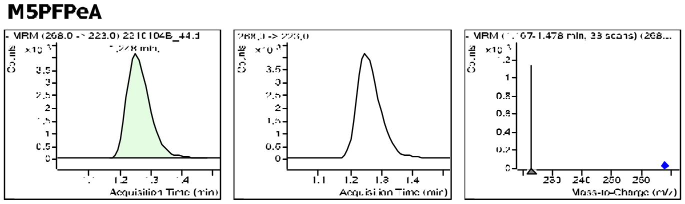

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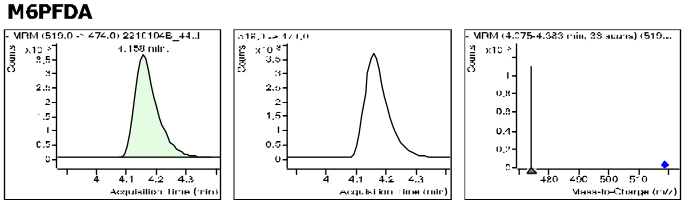

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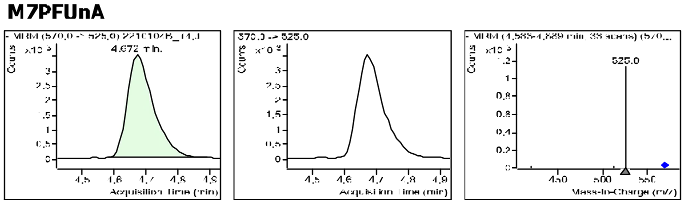

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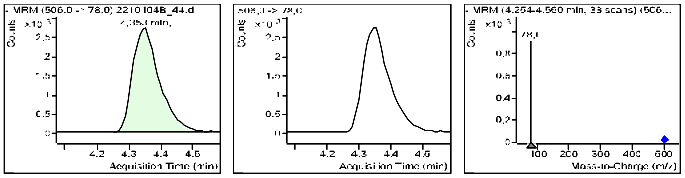

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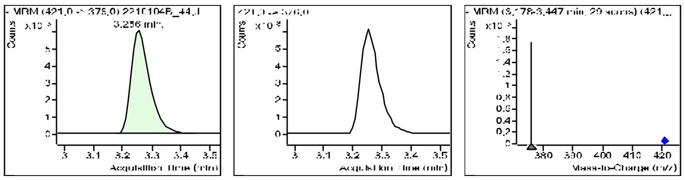

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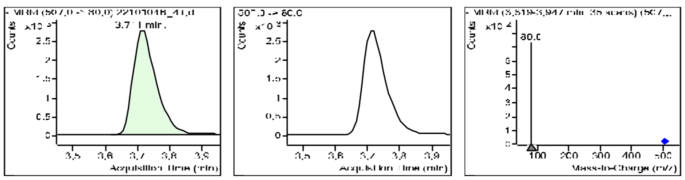

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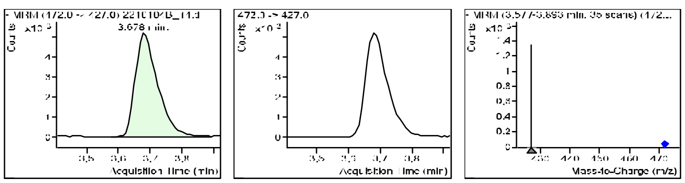

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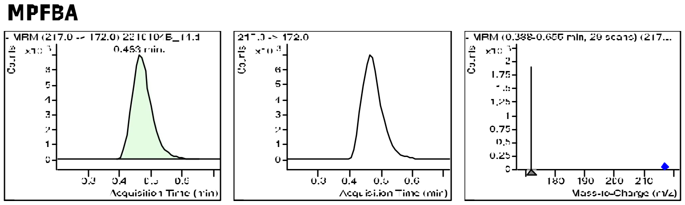

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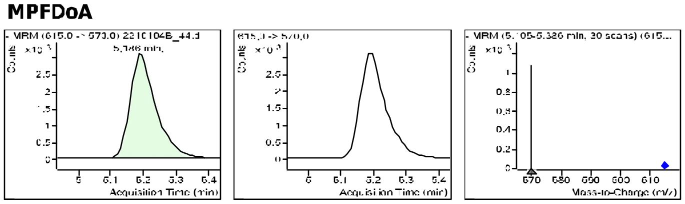

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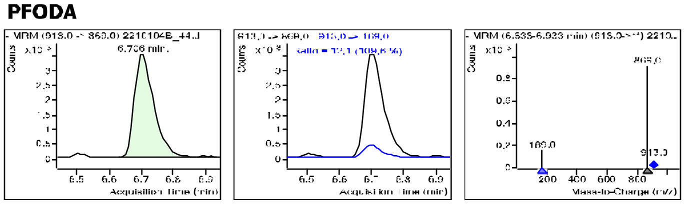

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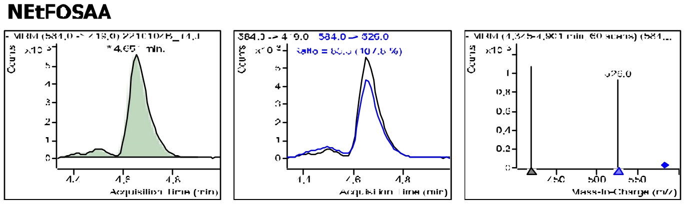

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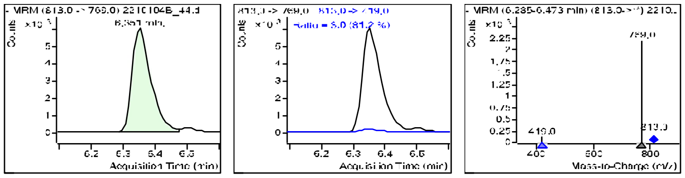

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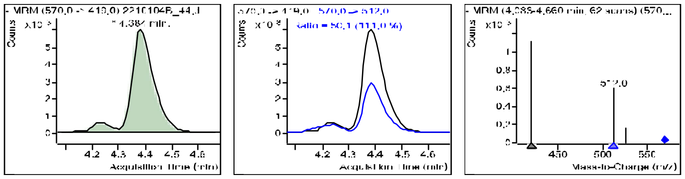

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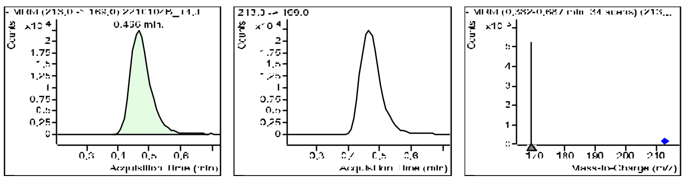

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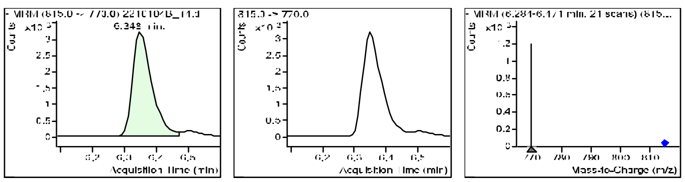

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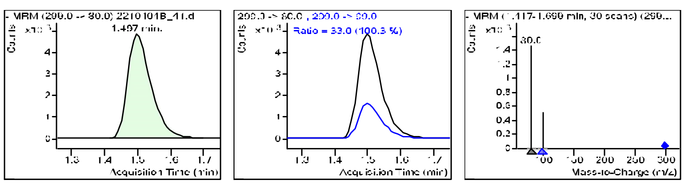

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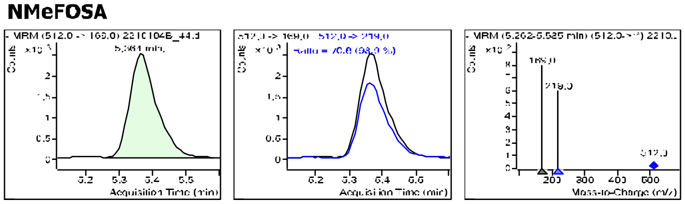

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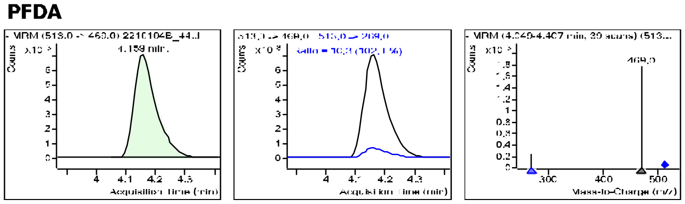

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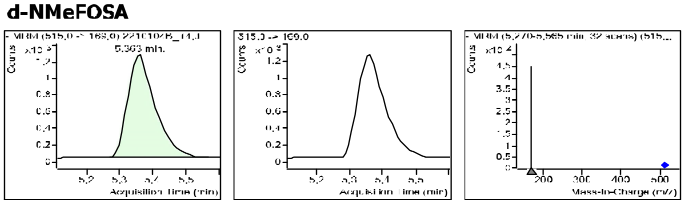

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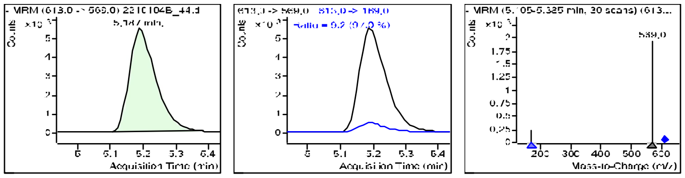

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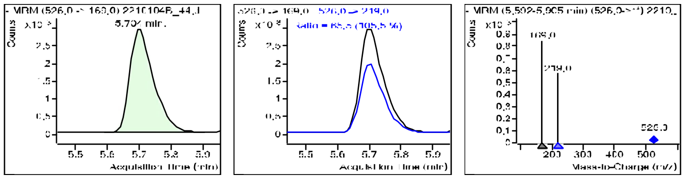

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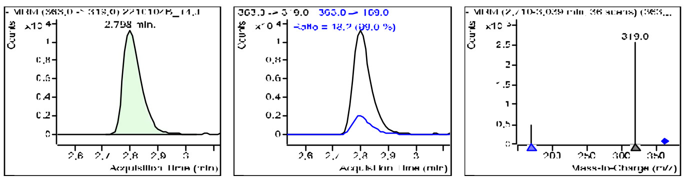

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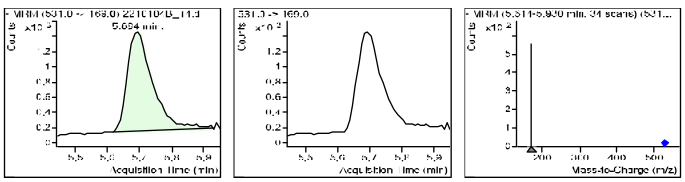

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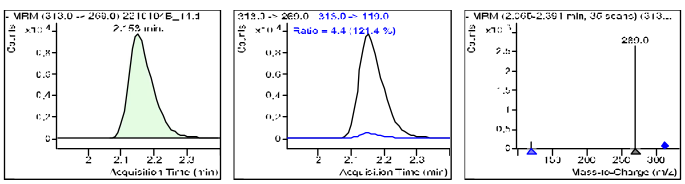

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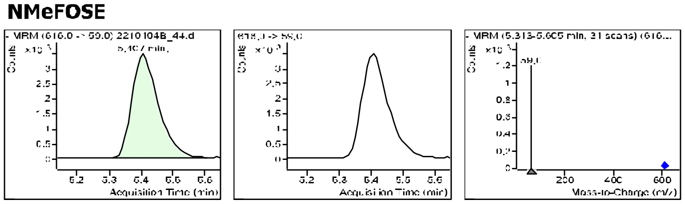

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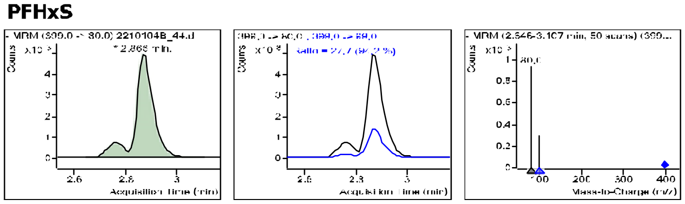

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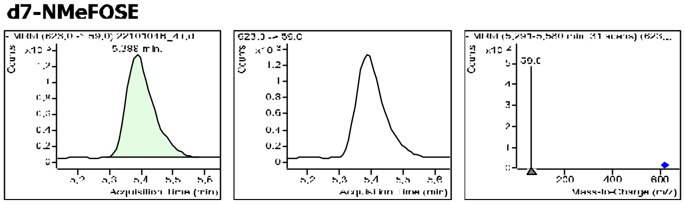

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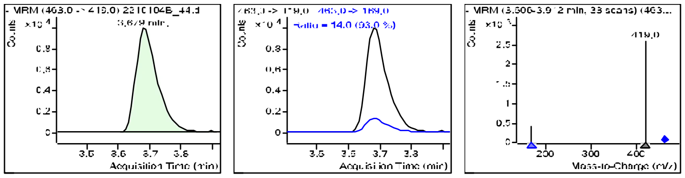

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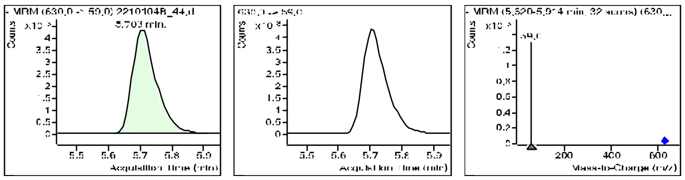

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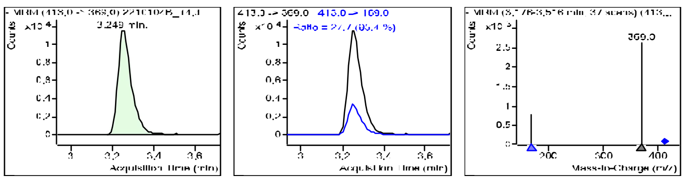

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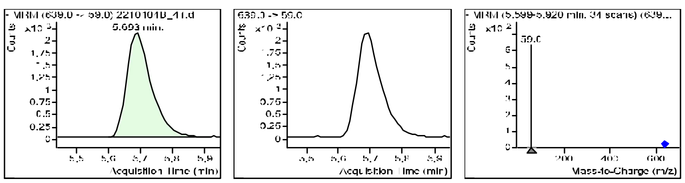

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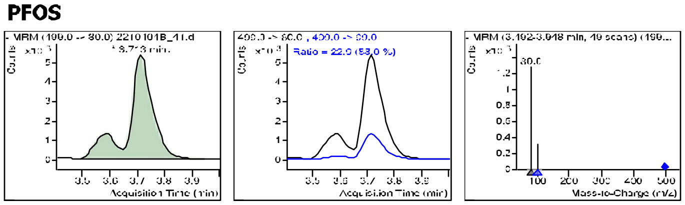

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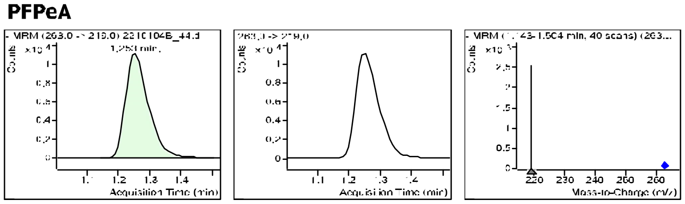

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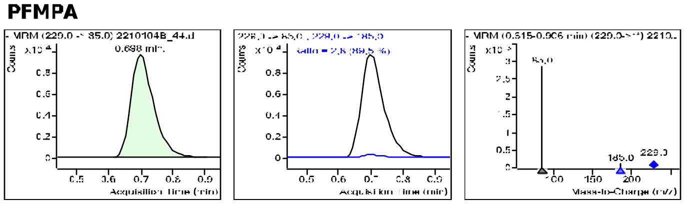

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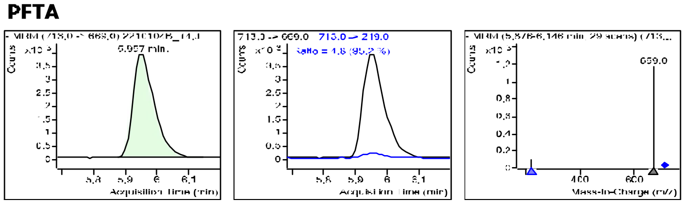

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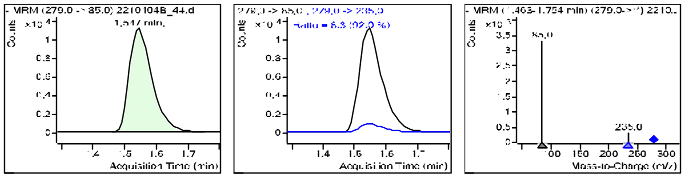

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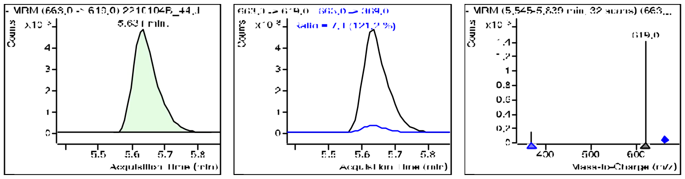

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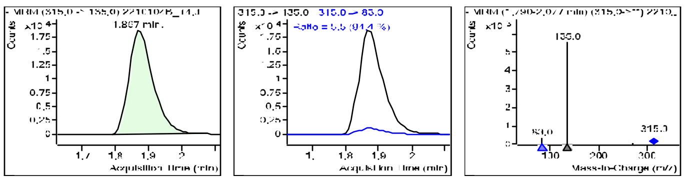

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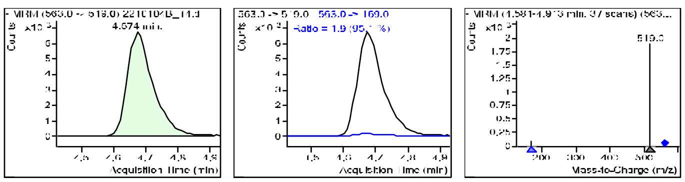

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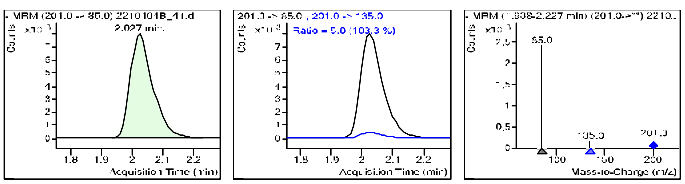

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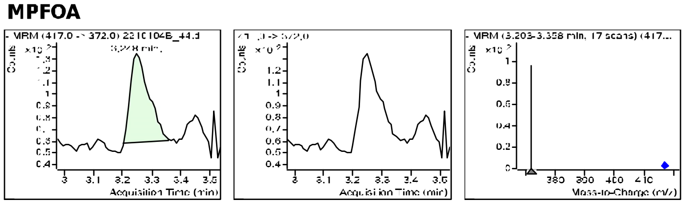

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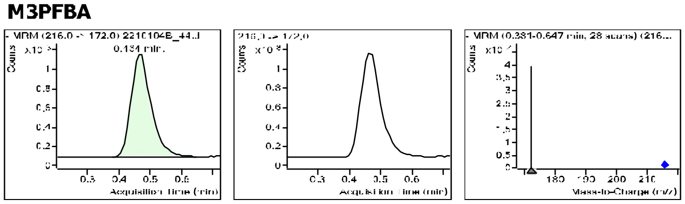


PFAS Isotope Dilution QSM B15

Form 7S

Sensitivity Check

7S

ORGANICS INSTRUMENT SENSITIVITY CHECK

Report No:	220122279	Instrument ID:	QQQ1
Analysis Date:	12/24/2020 14:12	Lab File ID:	2201224A_16.d
Analytical Method:	EPA 537 Mod Isotope Dilution	Analytical Batch:	700789

ANALYTE	UNITS	TRUE	FOUND	% REC	LCL	UCL	Q
6:2 Fluorotelomersulfonic acid	ng/L	9.52	9.76	103	70	130	
8:2 Fluorotelomersulfonic acid	ng/L	9.60	8.88	93	70	130	
Perfluorobutanoic acid	ng/L	10.0	8.16	81	70	130	
Perfluorobutanesulfonic acid	ng/L	8.88	7.22	81	70	130	
Perfluorodecanoic acid	ng/L	10.0	8.24	82	70	130	
Perfluoroheptanoic acid	ng/L	10.0	8.88	89	70	130	
Perfluorohexanoic acid	ng/L	10.0	8.80	88	70	130	
Perfluorohexanesulfonic acid	ng/L	9.12	8.80	97	70	130	
Perfluorononanoic acid	ng/L	10.0	7.27	73	70	130	
Perfluorooctanoic acid	ng/L	10.0	8.72	87	70	130	
Perfluorooctanesulfonic acid	ng/L	9.28	8.88	96	70	130	
Perfluoropentanoic acid	ng/L	10.0	8.56	85	70	130	
Perfluoroundecanoic acid	ng/L	10.0	7.88	79	70	130	

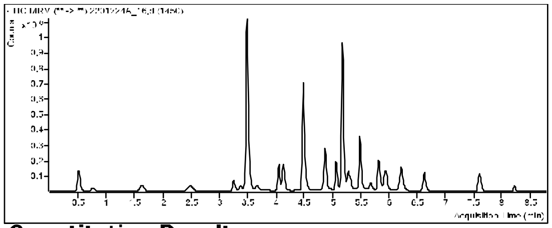
FORM 7S - ORG

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_16.d	**Position**	Vial 10	**Samp Name**	1450	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	QC	**Comment**	MRA,QQQ1
Acq Date	12/24/2020 14:12						

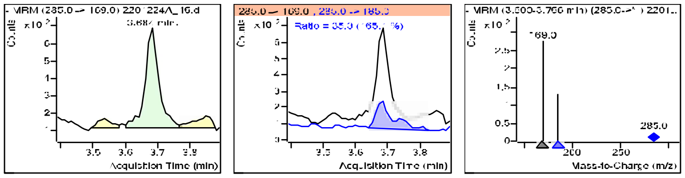
Sample Chromatogram



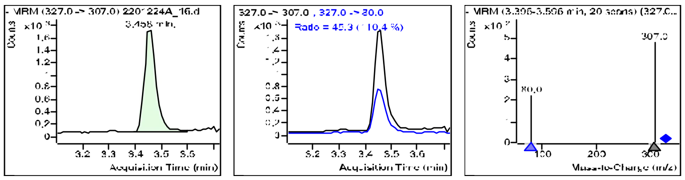
Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	197455.090	5.176				115.40	23.0791	115.40	9718.16	1.77	
M2PFHxA	287663.157	3.491				107.91	43.1630	107.91	73215.95	1.40	
M2PFOA	138338.927	4.489				109.49	21.8983	109.49	22585.88	1.55	
M4PFOS	43371.660	4.873				89.11	17.8229	89.11	2959.46	1.94	
M3PFBA	6191.703	0.503				0.00	4.8184	96.37	414.96	1.60	
MPFOA	529.027	4.489				0.00	25.9654	103.86	6.20	1.68	
HFPO-DA	1729.689	3.684	M3HFPODA	3113	3.683	106.14	4.3646	116.39	22.42	1.02	
4:2 FTS	5083.412	3.458	M2 4:2 FTS	13009	3.458	117.48	0.9977	85.27	INF	1.32	
6:2 FTS	9658.194	4.467	M2 6:2 FTS	22847	4.466	104.13	1.2227	102.75	253.55	1.90	
ADONA	19302.056	4.138	M8PFOA	23947	4.488	114.16	0.9156	73.24	1675.98	1.35	
8:2 FTS	7685.067	5.175	M2 8:2 FTS	10439	5.175	101.36	1.1121	92.68	969.71	1.34	
FOSA	11045.233	5.282	M8FOSA	20686	5.281	94.02	1.1469	91.75	990.77	1.54	
9Cl-PF3ONS	50246.300	5.059	M8PFOS	4292	4.872	91.07	1.2076	96.61	7410.30	1.91	
PFDS	1967.031	5.494	M6PFDA	35560	5.176	115.05	1.0476	86.58	230.41	1.26	
11Cl-PF3OUdS	11622.250	5.669	M8PFOS	4292	4.872	91.07	1.2189	97.51	932.63	1.92	
PFHpS	3529.476	4.529	M8PFOA	23947	4.488	114.16	0.9703	81.54	383.27	1.36	
10:2 FTS	6388.551	5.827	M2 8:2 FTS	10439	5.175	101.36	1.9460	80.75	451.21	1.36	
PFNS	1530.595	5.194	M9PFNA	28989	4.853	108.86	0.9562	79.68	173.68	1.40	
PFDoS	4704.434	6.189	M8PFOS	4292	4.872	91.07	2.2168	91.61	438.70	1.39	
PFPeS	3227.655	3.647	M5PFHxA	28589	3.490	106.43	1.0466	88.69	230.70	1.24	
PFODA	9305.639	8.216	M2PFHxDA	34139	7.596	100.90	2.4341	97.37	485.71	1.61	
NEtFOSAA	4271.677	5.484	d5-NEtFOSAA	12441	5.474	99.07	1.2245	97.96	559.99	1.27	
PFHxDA	8213.012	7.599	M2PFHxDA	34139	7.596	100.90	2.4676	98.70	69.21	1.40	
NMeFOSAA	3899.529	5.318	d3-NMeFOSAA	9569	5.317	100.43	1.2589	100.71	590.21	1.99	
PFBA	9382.308	0.505	MPFBA	35830	0.511	101.40	1.0158	81.26	197.32	1.49	
PFBS	3731.138	2.465	M3PFBS	13436	2.463	113.90	0.9016	81.22	253.32	1.10	
NMeFOSA	3440.706	5.928	d-NMeFOSA	16378	5.927	97.42	2.2555	90.22	748.69	1.43	
PFDA	11016.058	5.176	M6PFDA	35560	5.176	115.05	1.0271	82.17	203.68	1.69	
PFDoA	8711.744	5.818	MPFDoA	37283	5.818	99.02	1.1292	90.34	706.01	1.81	
NEtFOSA	3282.326	6.227	d-NEtFOSA	11740	6.226	98.92	2.0292	81.17	307.02	1.67	
PFHpA	8593.214	4.057	M4PFHpA	37887	4.056	107.36	1.1102	88.82	70.66	1.48	
PFHxA	8327.423	3.493	M5PFHxA	28589	3.490	106.43	1.1038	88.31	166.49	1.29	
NMeFOSE	6015.001	5.953	d7-NMeFOSE	23979	5.943	103.06	2.3991	95.96	786.49	1.83	
PFHxS	4666.840	4.126	M3PFHxS	9432	4.126	94.46	1.1043	96.87	303.35	1.37	m
PFNA	8201.431	4.853	M9PFNA	28989	4.853	108.86	0.9086	72.69	78.25	1.94	
NEtFOSE	4809.851	6.244	d9-NEtFOSE	22019	6.223	105.92	1.9826	79.30	206.04	1.47	
PFOA	7367.210	4.489	M8PFOA	23947	4.488	114.16	1.0917	87.33	97.04	1.55	
PFOS	4344.672	4.873	M8PFOS	4292	4.872	91.07	1.1117	95.83	450.54	1.85	m
PFPeA	4266.916	1.627	M5PFPeA	17001	1.624	101.10	1.0675	85.40	90.48	1.21	
PFMPA	7661.757	0.755	M5PFPeA	17001	1.624	101.10	1.9812	79.25	182.45	1.30	
PFTA	7394.875	6.624	M2PFTA	32554	6.623	102.43	1.2802	102.41	361.28	1.62	
PFMBA	7767.379	2.600	M5PFHxA	28589	3.490	106.43	2.0072	80.29	530.75	1.31	
PFTrDA	11627.412	6.201	MPFDoA	37283	5.818	99.02	1.4562	116.49	195.16	1.41	
PFEESA	19801.023	3.253	M3PFHxS	9432	4.126	94.46	2.2757	102.28	173.46	1.30	
PFUnA	13416.087	5.486	M7PFUnA	63729	5.485	121.44	0.9848	78.79	829.77	1.60	
NFDHA	7787.555	3.372	M4PFHpA	37887	4.056	107.36	2.0863	83.45	283.98	1.91	

HFPO-DA



4:2 FTS



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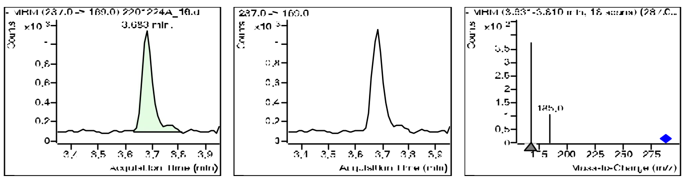

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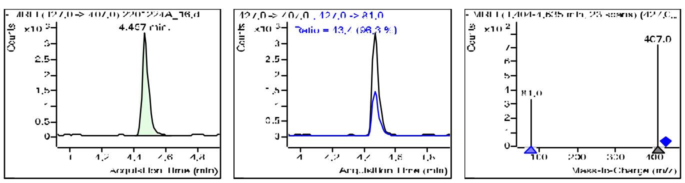

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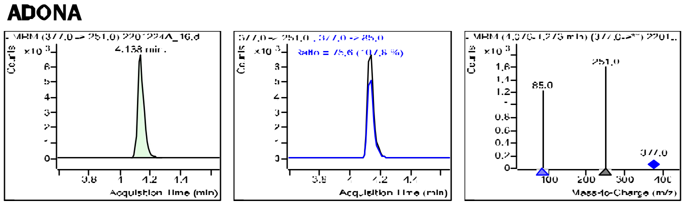

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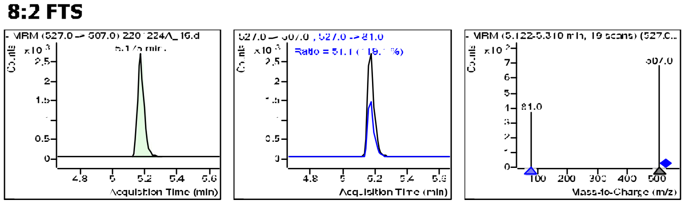

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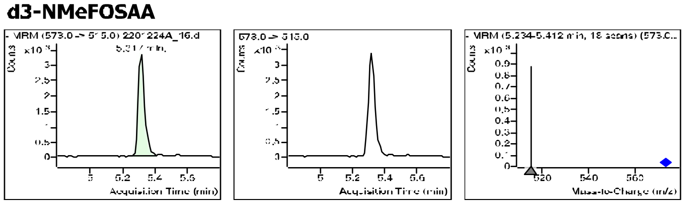

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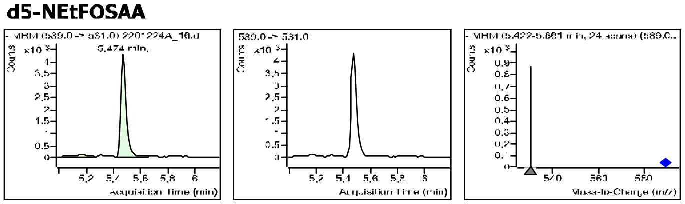

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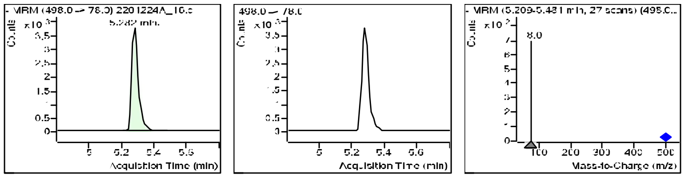

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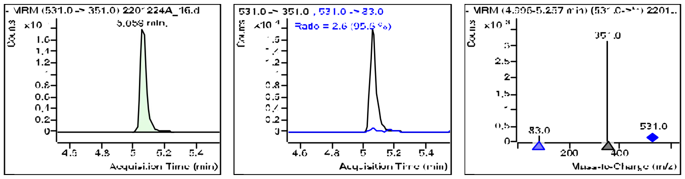

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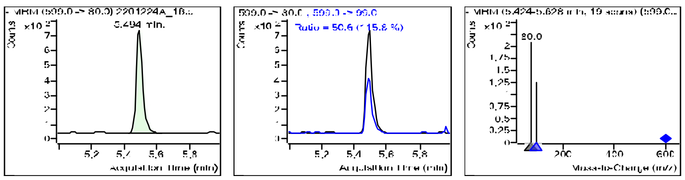

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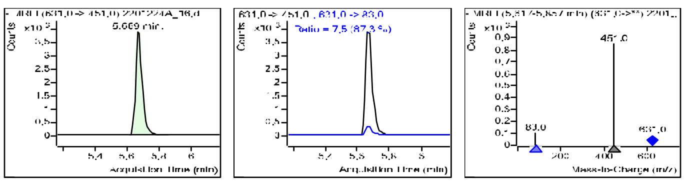

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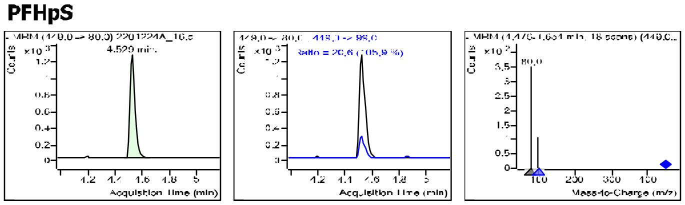

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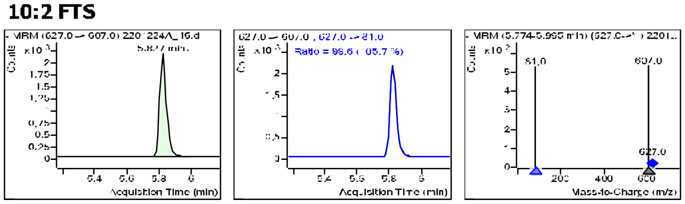

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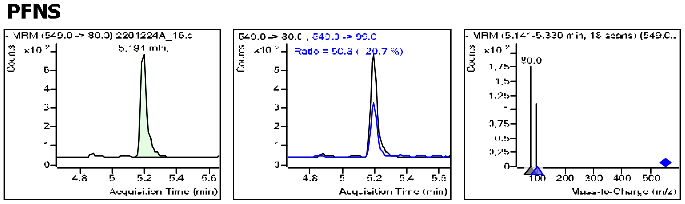

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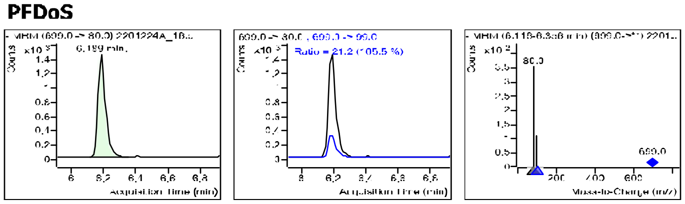

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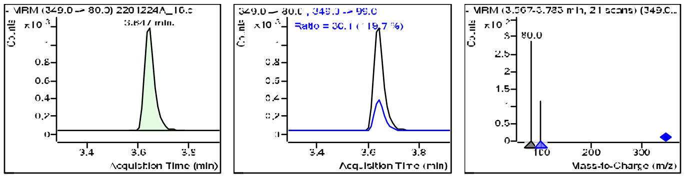

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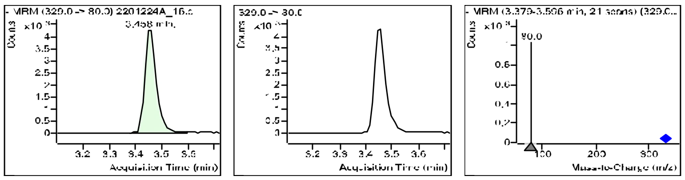

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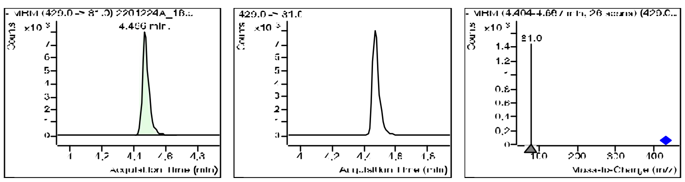

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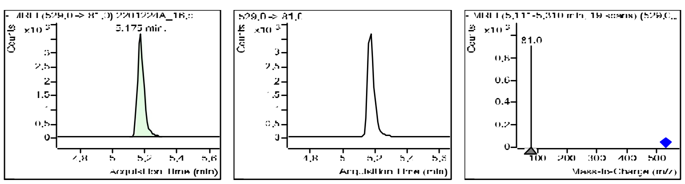

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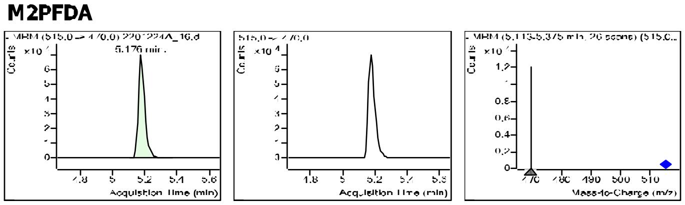

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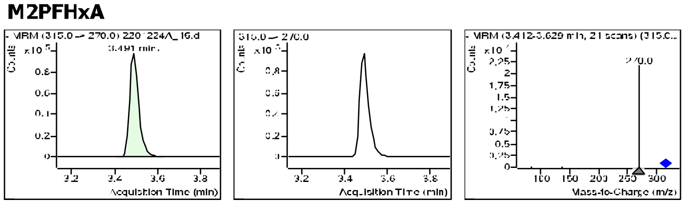

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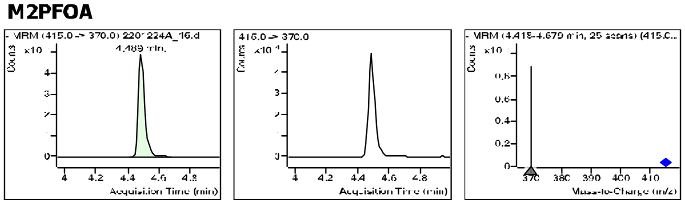

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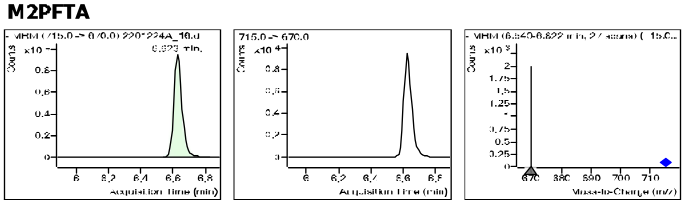

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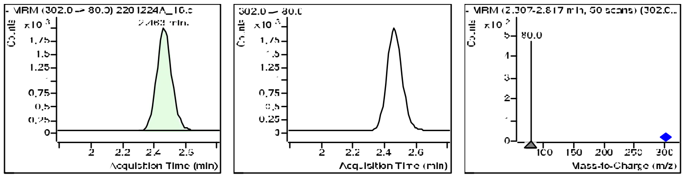

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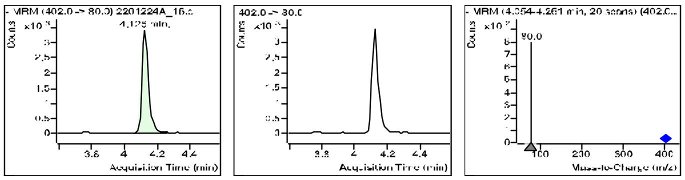

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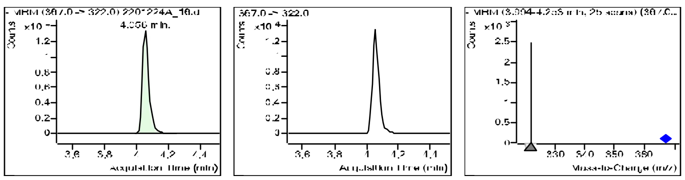

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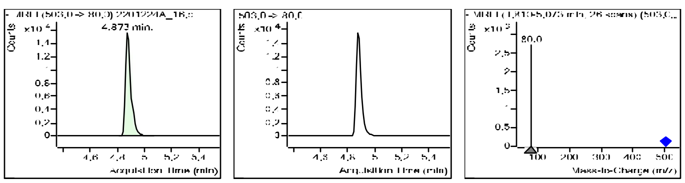

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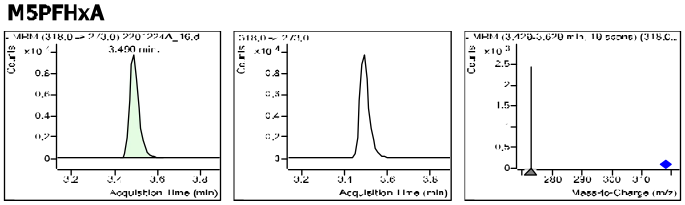

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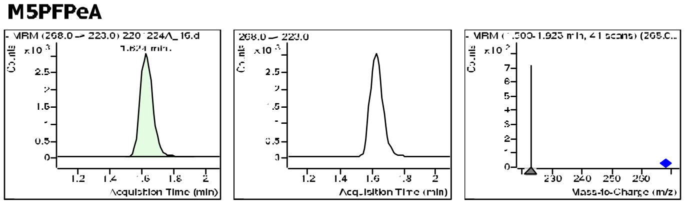

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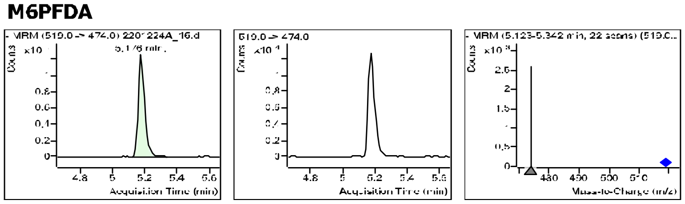

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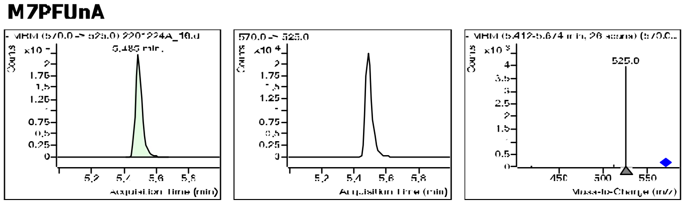

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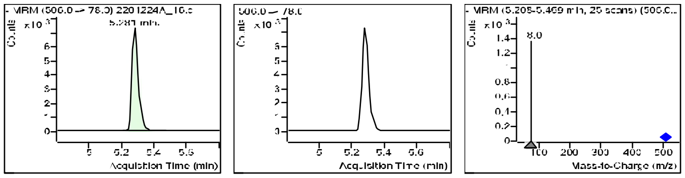

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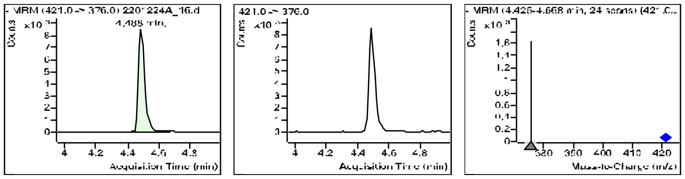

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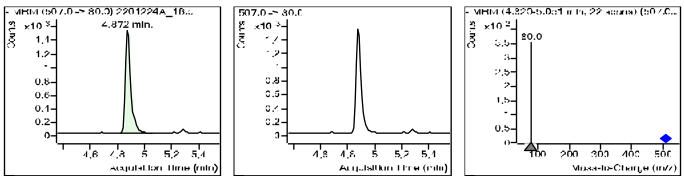

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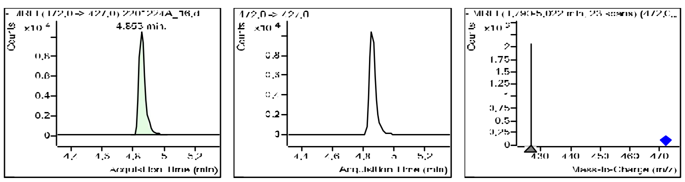

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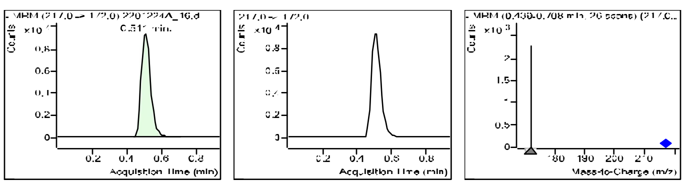

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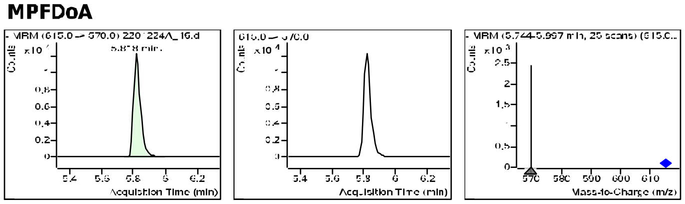

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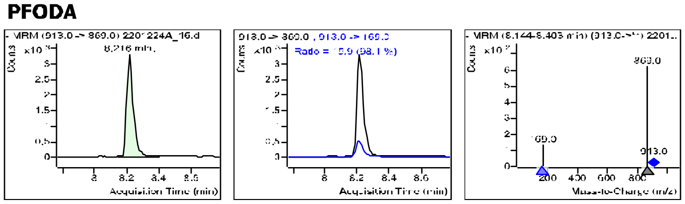

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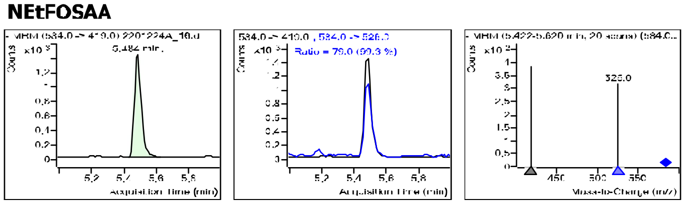

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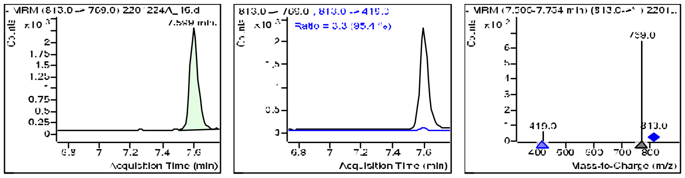

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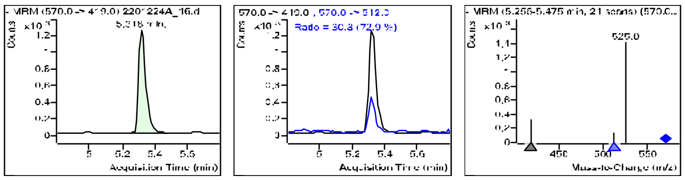

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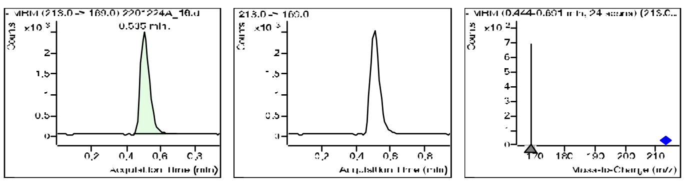

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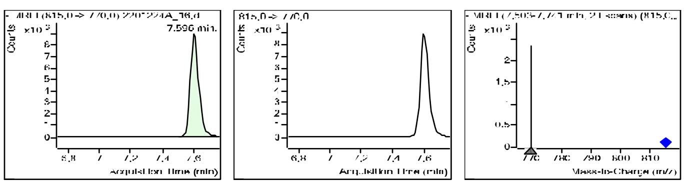

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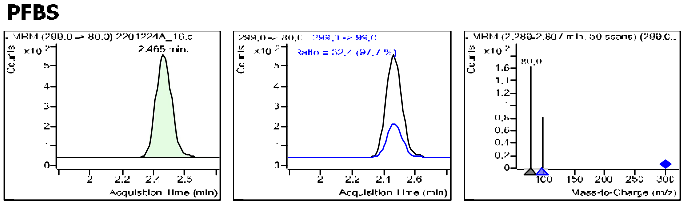

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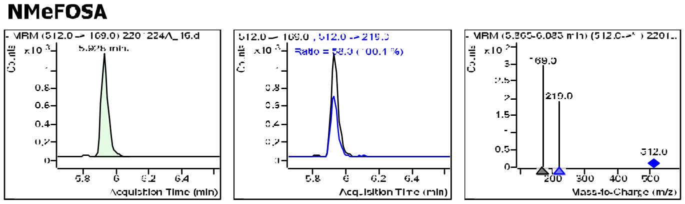

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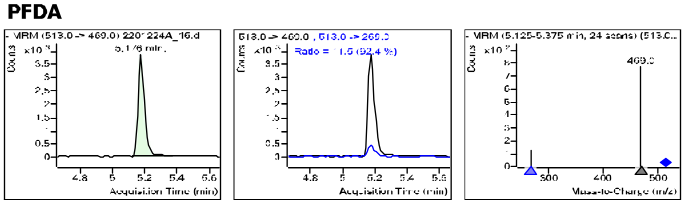

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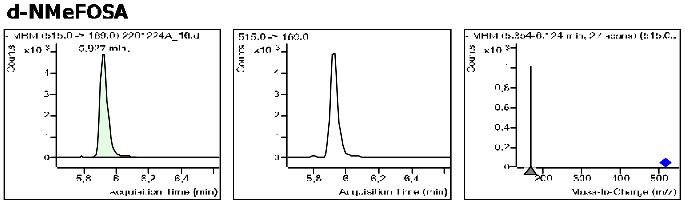

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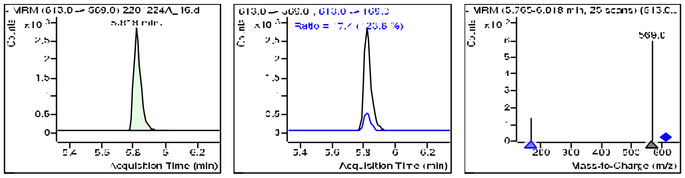

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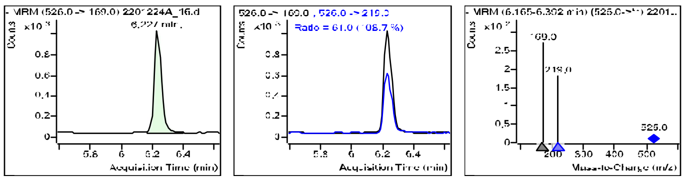

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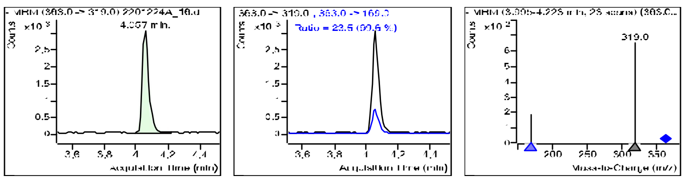

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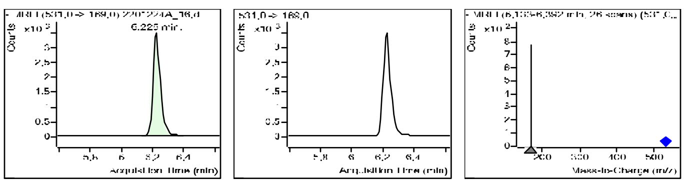

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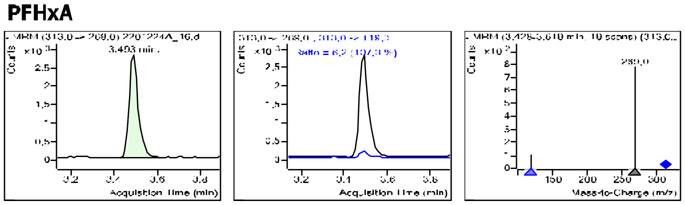

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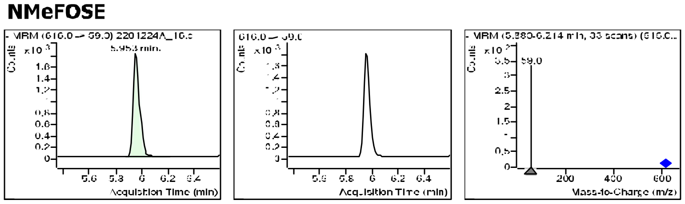

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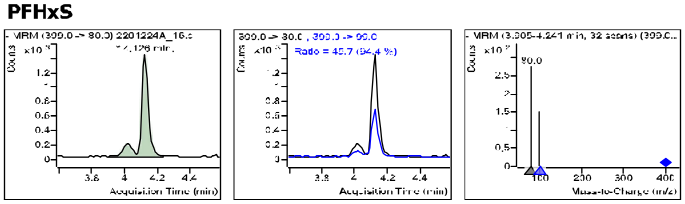

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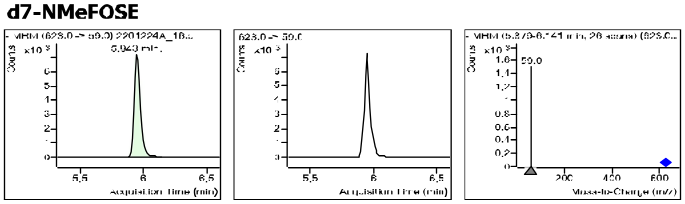

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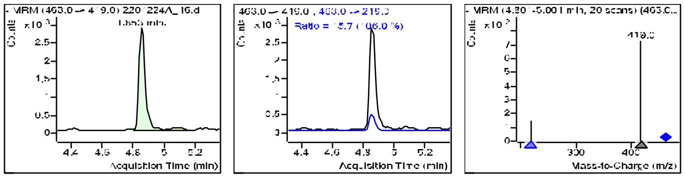

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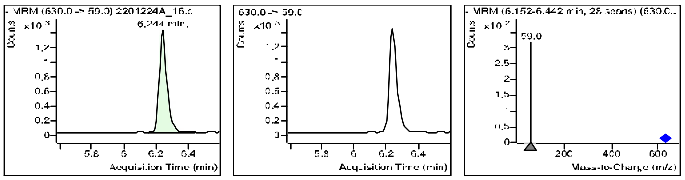

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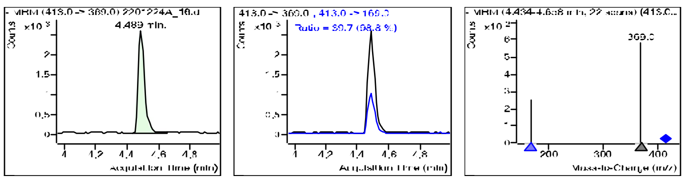

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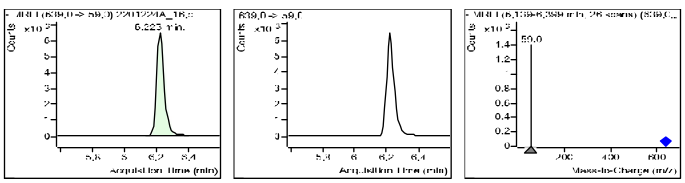

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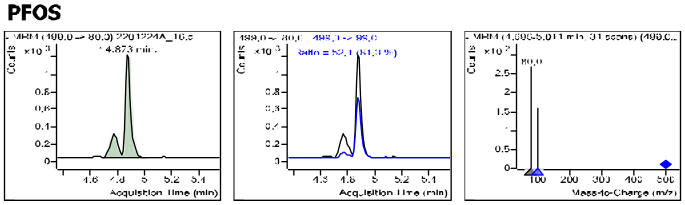

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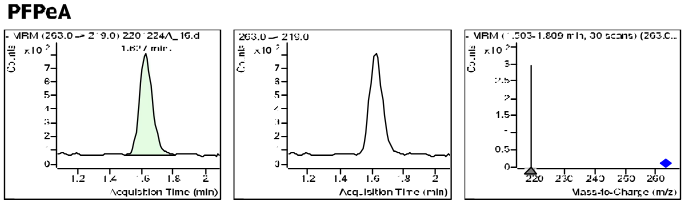

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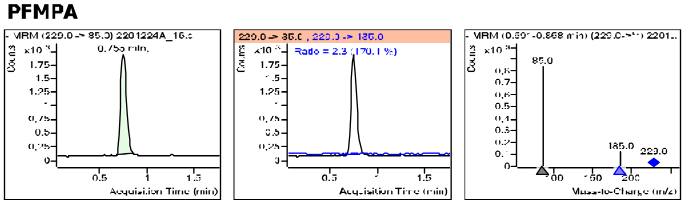

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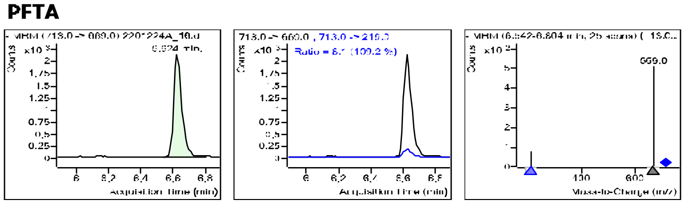

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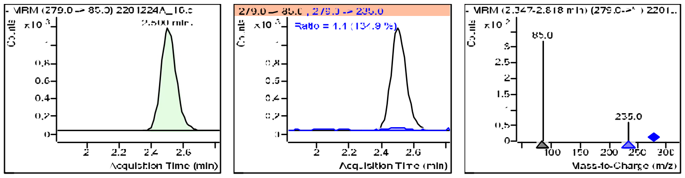

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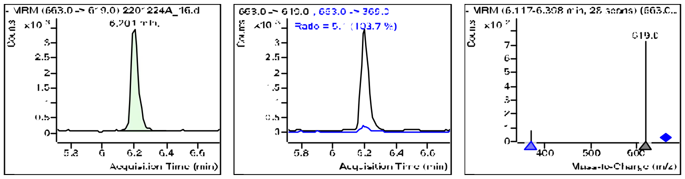

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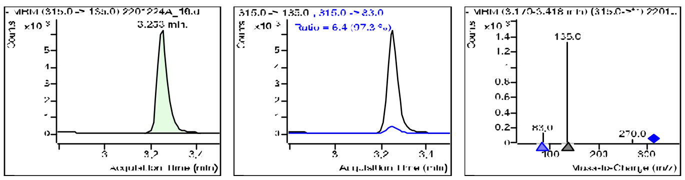

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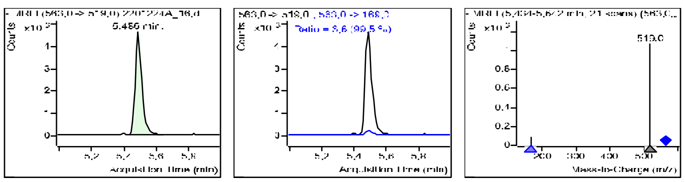

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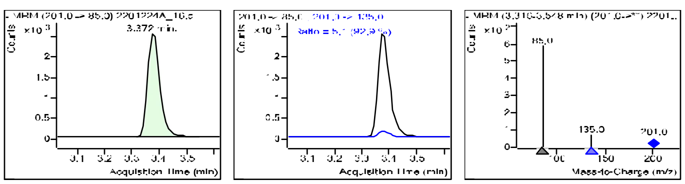

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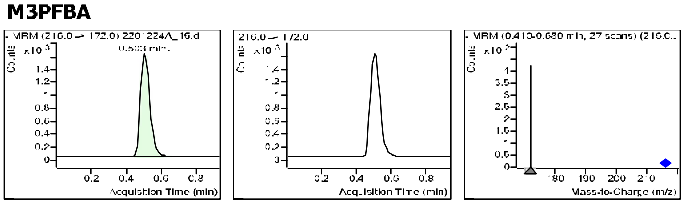

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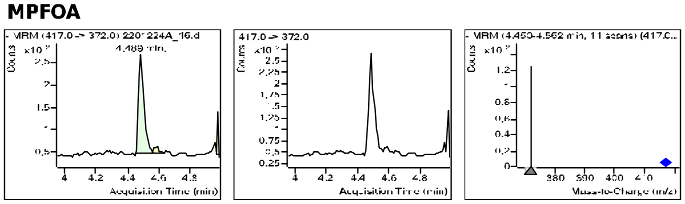


7S

ORGANICS INSTRUMENT SENSITIVITY CHECK

Report No:	220122279	Instrument ID:	QQQ1
Analysis Date:	12/25/2020 00:19	Lab File ID:	2201224A_50.d
Analytical Method:	EPA 537 Mod Isotope Dilution	Analytical Batch:	700789

ANALYTE	UNITS	TRUE	FOUND	% REC	LCL	UCL	Q
6:2 Fluorotelomersulfonic acid	ng/L	9.52	8.00	84	70	130	
8:2 Fluorotelomersulfonic acid	ng/L	9.60	8.40	88	70	130	
Perfluorobutanoic acid	ng/L	10.0	8.16	82	70	130	
Perfluorobutanesulfonic acid	ng/L	8.88	6.50	73	70	130	
Perfluorodecanoic acid	ng/L	10.0	9.12	92	70	130	
Perfluoroheptanoic acid	ng/L	10.0	7.94	79	70	130	
Perfluorohexanoic acid	ng/L	10.0	8.88	89	70	130	
Perfluorohexanesulfonic acid	ng/L	9.12	8.72	95	70	130	
Perfluorononanoic acid	ng/L	10.0	7.62	76	70	130	
Perfluorooctanoic acid	ng/L	10.0	9.92	99	70	130	
Perfluorooctanesulfonic acid	ng/L	9.28	8.00	87	70	130	
Perfluoropentanoic acid	ng/L	10.0	8.32	83	70	130	
Perfluoroundecanoic acid	ng/L	10.0	8.64	86	70	130	

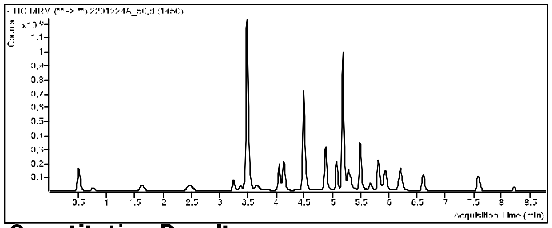
FORM 7S - ORG

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2201224ACAL\QuantResults\2201224A.batch.bin
Last Calib Update 12/24/2020 15:17

Data File	2201224A_50.d	**Position**	Vial 43	**Samp Name**	1450	**Dilution**	1
Acq Method	PFASWiscExpan.m	**Inj Vol**	2	**Samp Type**	QC	**Comment**	MRA,QQQ1;CCV
Acq Date	12/25/2020 0:19						

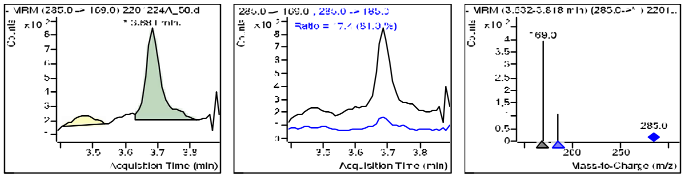
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	203764.311	5.186				119.08	23.8165	119.08	10128.64	1.53	
M2PFHxA	323696.386	3.491				121.42	48.5697	121.42	6983.31	1.34	
M2PFOA	148988.833	4.499				117.92	23.5841	117.92	19991.82	1.33	
M4PFOS	51533.860	4.883				105.88	21.1770	105.88	3638.13	1.71	
M3PFBA	7089.077	0.503				0.00	5.5167	110.33	239.30	1.53	
MPFOA	465.703	4.499				0.00	22.8574	91.43	25.45	2.30	
HFPO-DA	2090.702	3.684	M3HFPODA	3505	3.683	119.52	4.6849	124.93	8.79	1.92	m
4:2 FTS	4897.659	3.448	M2 4:2 FTS	13436	3.447	121.33	0.9307	79.55	241.46	1.98	
6:2 FTS	8325.891	4.477	M2 6:2 FTS	24001	4.477	109.38	1.0034	84.32	373.86	1.64	
ADONA	23152.791	4.138	M8PFOA	23367	4.499	111.40	1.1254	90.04	1458.14	1.99	
8:2 FTS	8053.931	5.185	M2 8:2 FTS	11585	5.185	112.49	1.0502	87.52	552.99	1.28	
FOSA	14755.194	5.293	M8FOSA	24464	5.291	111.19	1.2955	103.64	1228.31	1.31	
9Cl-PF3ONS	54474.241	5.069	M8PFOS	4985	4.882	105.78	1.1272	90.17	5784.07	1.75	
PFDS	2500.903	5.494	M6PFDA	35099	5.186	113.56	1.3495	111.53	812.96	1.66	
11Cl-PF3OUdS	11963.999	5.669	M8PFOS	4985	4.882	105.78	1.0803	86.43	945.99	1.87	
PFHpS	4692.878	4.539	M8PFOA	23367	4.499	111.40	1.3222	111.11	511.93	1.33	
10:2 FTS	6549.367	5.816	M2 8:2 FTS	11585	5.185	112.49	1.7976	74.59	602.21	1.89	
PFNS	1887.094	5.194	M9PFNA	28176	4.863	105.81	1.2129	101.08	415.74	1.72	
PFDoS	5470.019	6.168	M8PFOS	4985	4.882	105.78	2.1990	90.87	351.15	1.70	
PFPeS	4371.382	3.647	M5PFHxA	32644	3.490	121.52	1.2413	105.20	240.88	1.29	
PFODA	8732.866	8.206	M2PFHxDA	35564	7.585	105.11	2.1928	87.71	688.42	2.06	
NEtFOSAA	4748.388	5.484	d5-NEtFOSAA	13517	5.474	107.63	1.2529	100.23	565.72	1.44	
PFHxDA	8358.239	7.579	M2PFHxDA	35564	7.585	105.11	2.4106	96.43	50.20	1.66	
NMeFOSAA	4179.361	5.329	d3-NMeFOSAA	11784	5.328	123.67	1.0956	87.65	475.71	1.26	
PFBA	11466.918	0.505	MPFBA	43642	0.501	123.51	1.0193	81.54	180.87	1.39	
PFBS	4390.153	2.465	M3PFBS	17541	2.452	148.70	0.8125	73.20	108.77	1.00	
NMeFOSA	3614.252	5.917	d-NMeFOSA	17784	5.917	105.78	2.1819	87.28	58.97	1.75	
PFDA	12119.703	5.187	M6PFDA	35099	5.186	113.56	1.1449	91.59	959.31	1.59	
PFDoA	8326.775	5.818	MPFDoA	41379	5.818	109.89	0.9725	77.80	8312.94	1.46	
NEtFOSA	3891.388	6.227	d-NEtFOSA	12508	6.205	105.40	2.2580	90.32	256.45	1.16	
PFHpA	8614.854	4.057	M4PFHpA	42464	4.067	120.33	0.9931	79.45	156.83	1.97	
PFHxA	9569.994	3.493	M5PFHxA	32644	3.490	121.52	1.1110	88.88	45.44	1.30	
NMeFOSE	5391.031	5.953	d7-NMeFOSE	26678	5.943	114.66	1.9327	77.31	531.07	1.60	
PFHxS	5756.728	4.126	M3PFHxS	11832	4.136	118.49	1.0859	95.25	160.18	1.98	m
PFNA	8355.985	4.864	M9PFNA	28176	4.863	105.81	0.9524	76.20	78.06	1.58	
NEtFOSE	5427.036	6.233	d9-NEtFOSE	23863	6.212	114.79	2.0642	82.57	659.82	1.16	
PFOA	8161.827	4.500	M8PFOA	23367	4.499	111.40	1.2394	99.15	245.97	1.27	
PFOS	4546.573	4.883	M8PFOS	4985	4.882	105.78	1.0016	86.34	405.26	1.68	m
PFPeA	4786.824	1.617	M5PFPeA	19591	1.624	116.51	1.0392	83.14	54.09	1.38	
PFMPA	9215.251	0.755	M5PFPeA	19591	1.624	116.51	2.0679	82.71	279.92	1.17	
PFTA	7009.742	6.603	M2PFTA	32584	6.602	102.52	1.2124	96.99	159.39	1.55	
PFMBA	9122.135	2.500	M5PFHxA	32644	3.490	121.52	2.0645	82.58	518.64	1.07	
PFTrDA	10823.866	6.179	MPFDoA	41379	5.818	109.89	1.2214	97.71	207.06	1.76	
PFEESA	23502.842	3.242	M3PFHxS	11832	4.136	118.49	2.1532	96.77	877.93	1.57	
PFUnA	13985.688	5.486	M7PFUnA	60525	5.496	115.34	1.0810	86.48	388.20	1.94	
NFDHA	9689.718	3.372	M4PFHpA	42464	4.067	120.33	2.3162	92.65	993.07	1.61	

HFPO-DA



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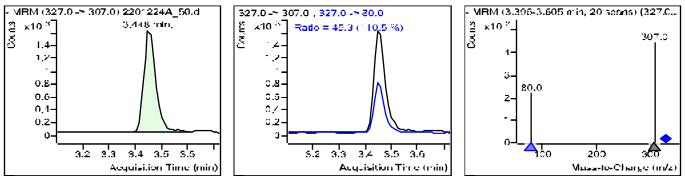

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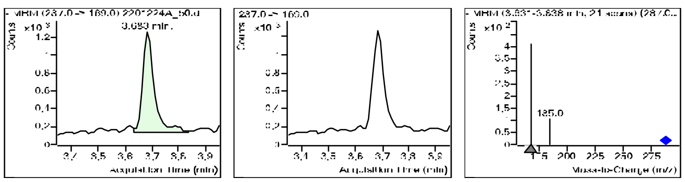

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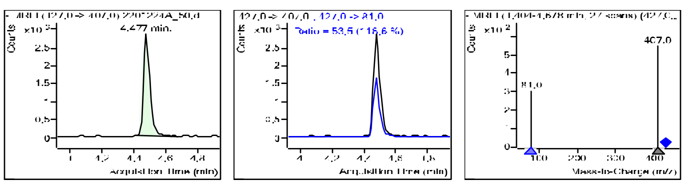
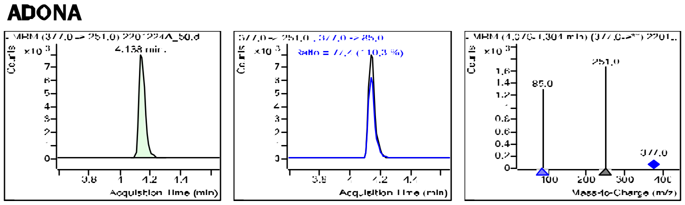
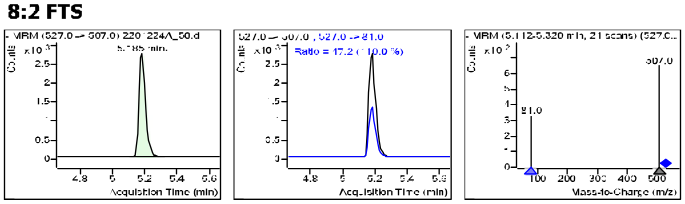


ADONA



8:2 FTS



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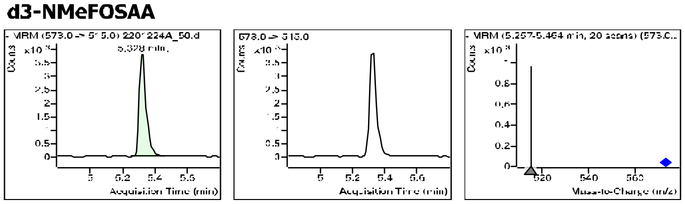

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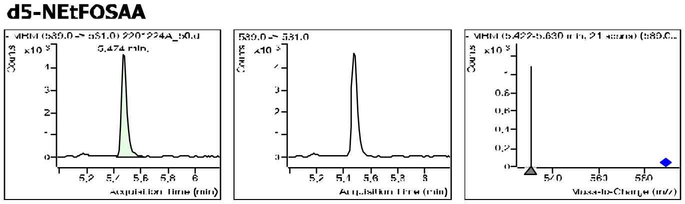
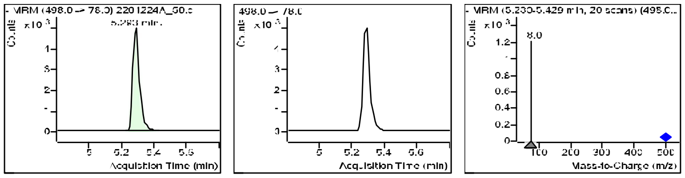


FOSA



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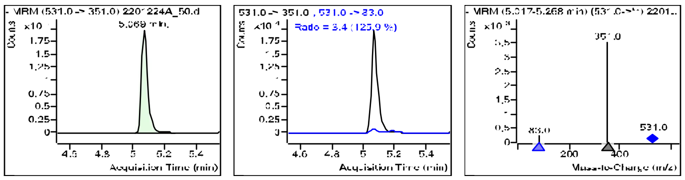

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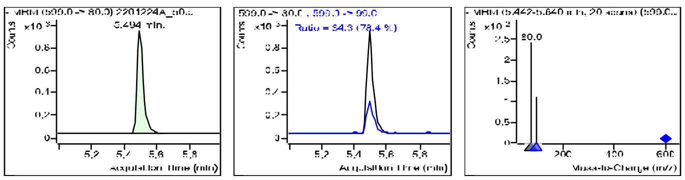

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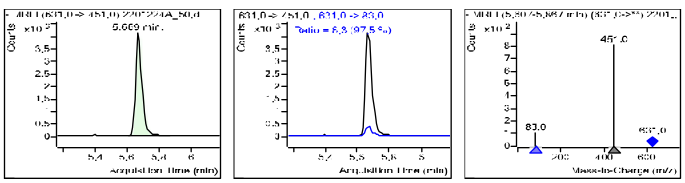

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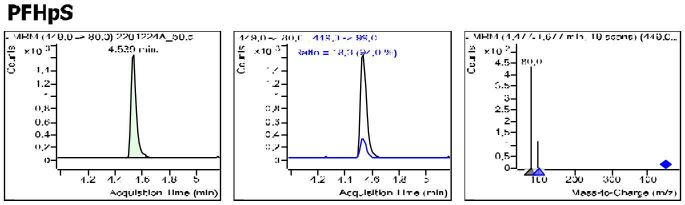
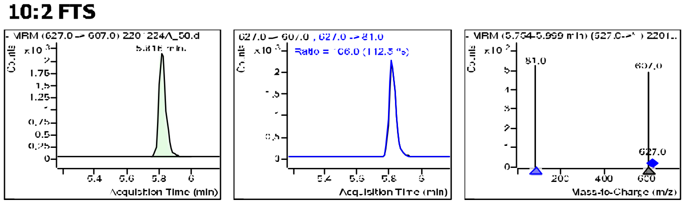


10:2 FTS



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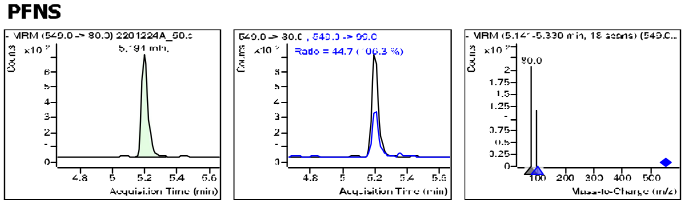

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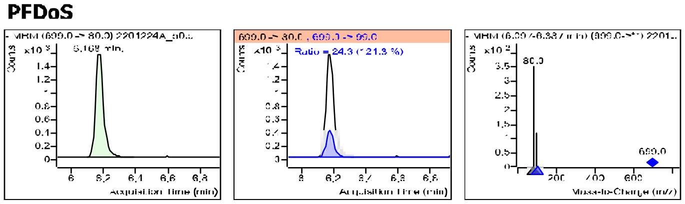

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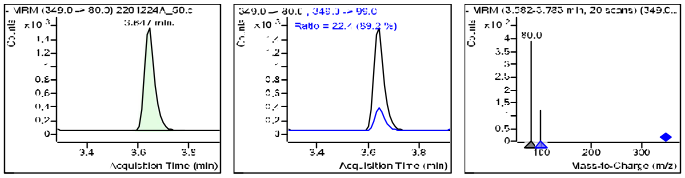
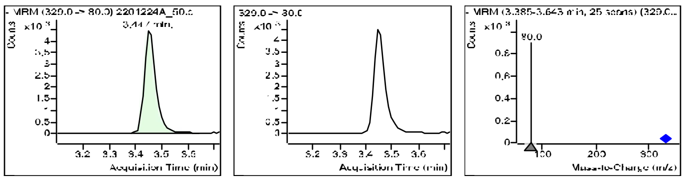
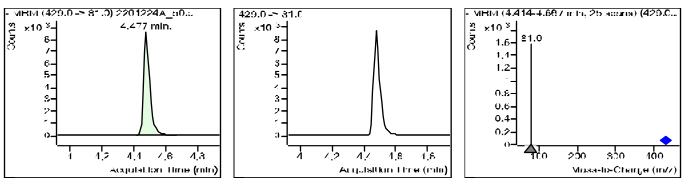


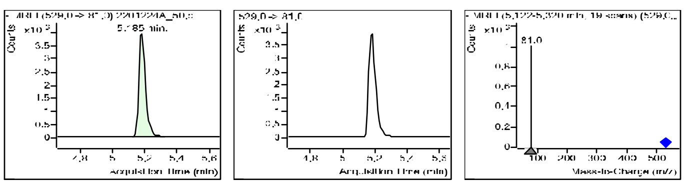
M2 4:2 FTS



M2 6:2 FTS



M2 8:2 FTS



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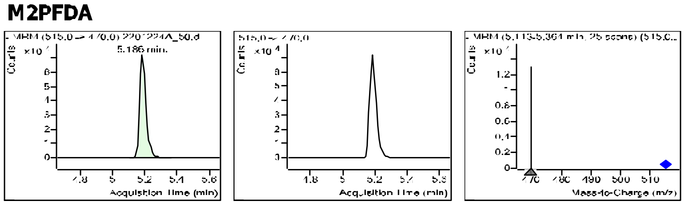

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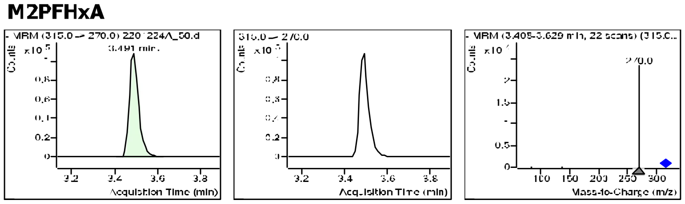

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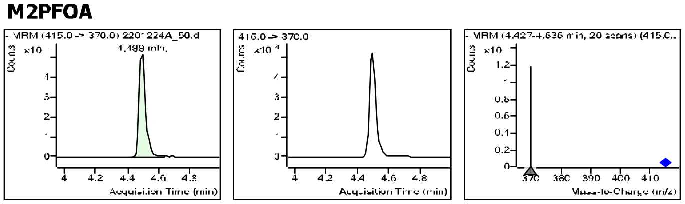

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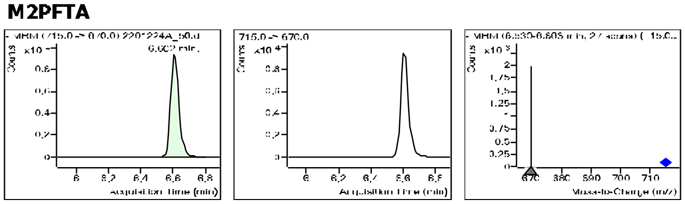

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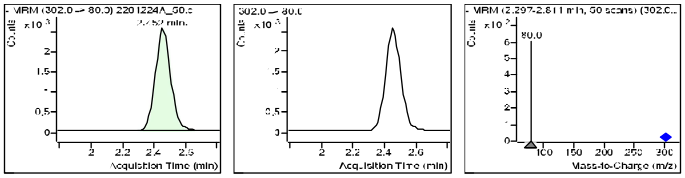

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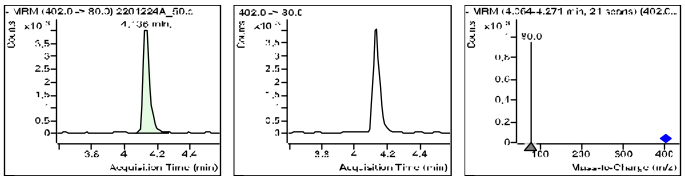

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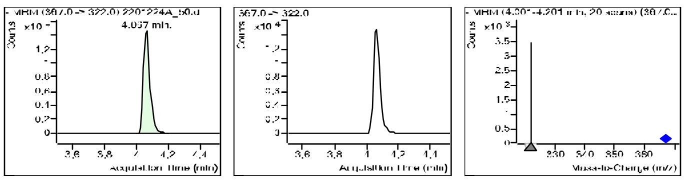

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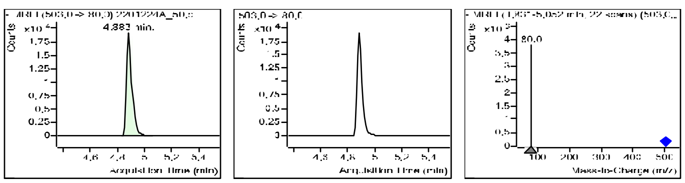

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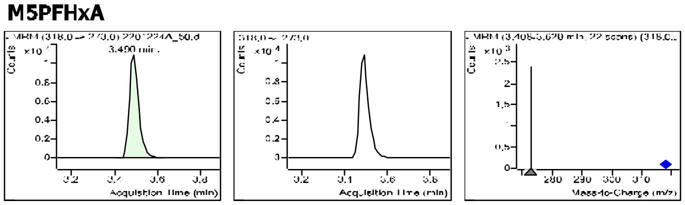

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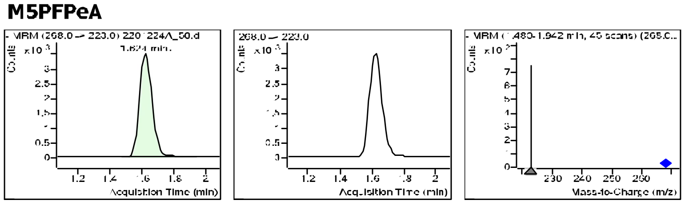

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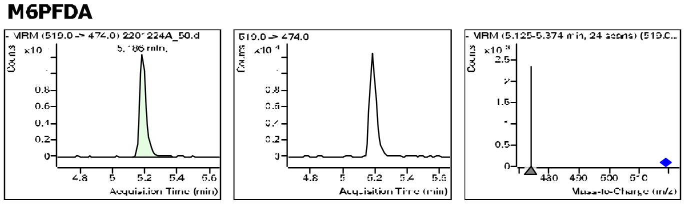

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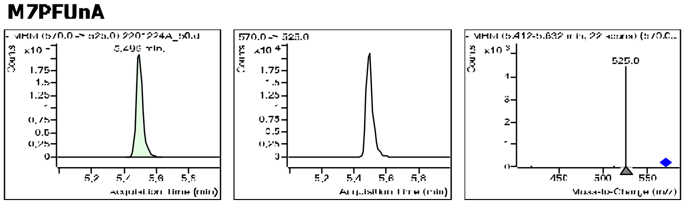

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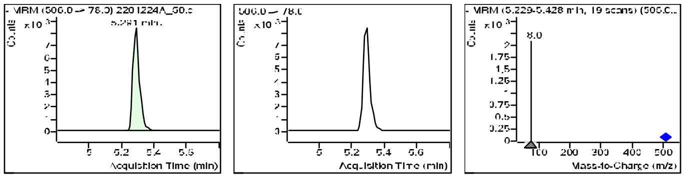

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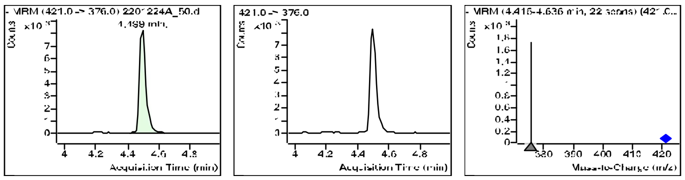

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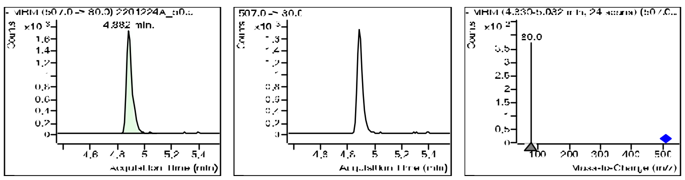

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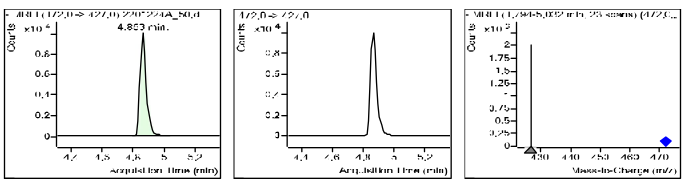

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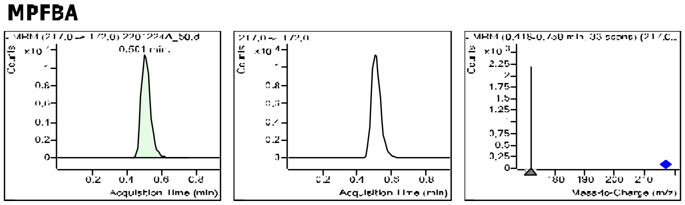

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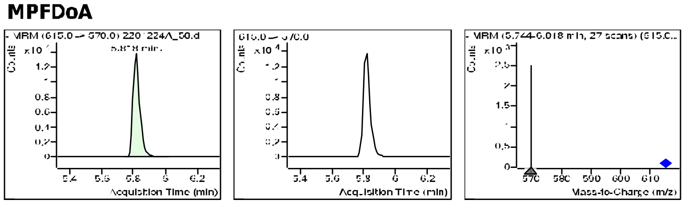

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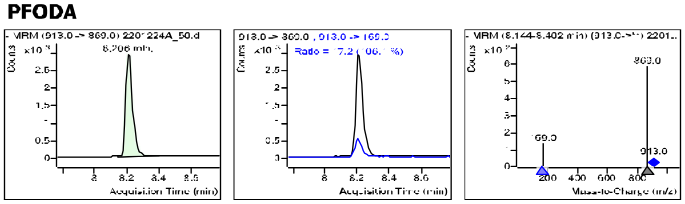

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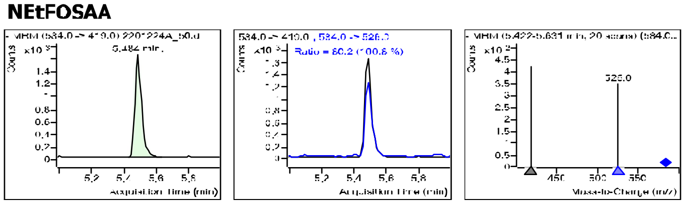
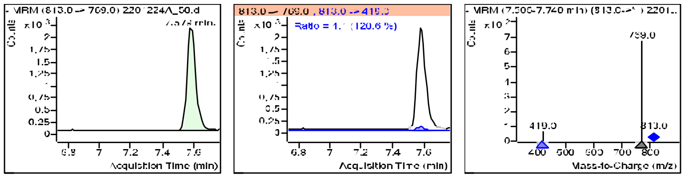


PFHxDA



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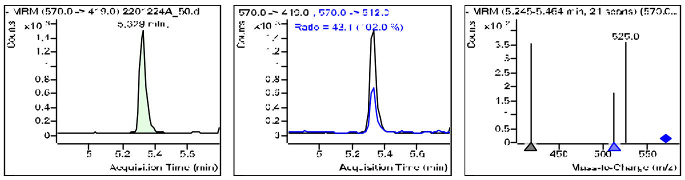

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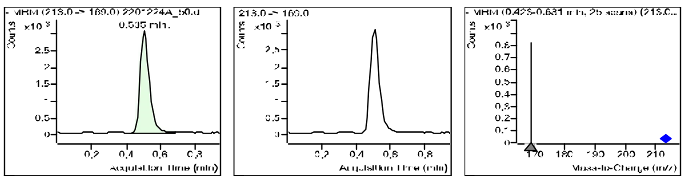

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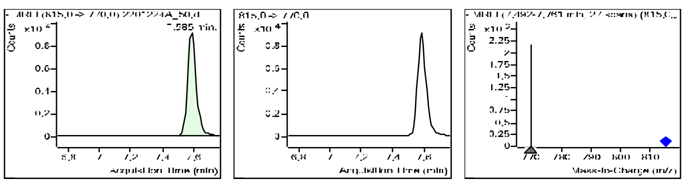

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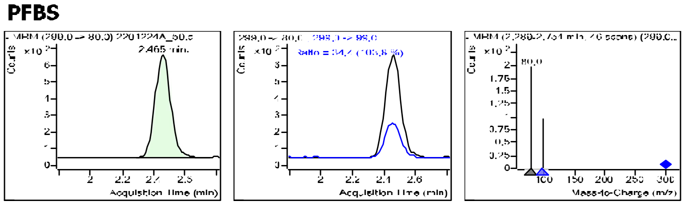

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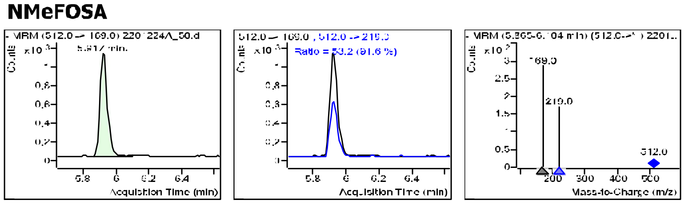

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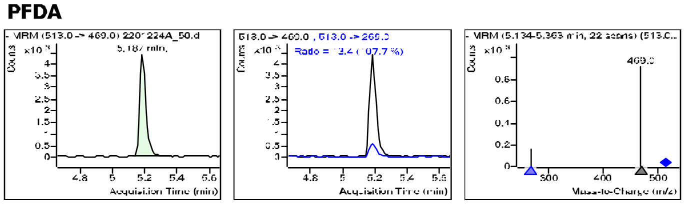
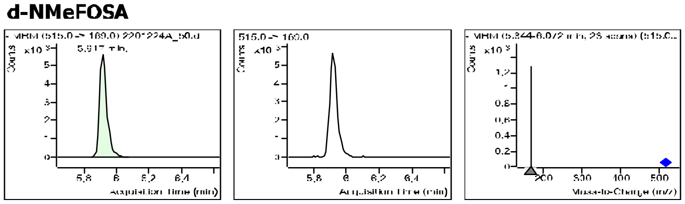


d-NMeFOSA



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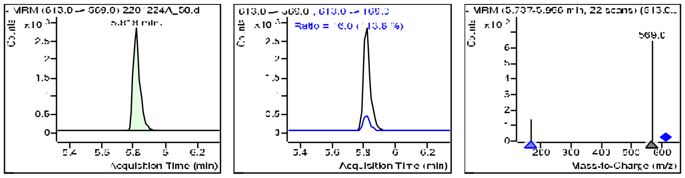
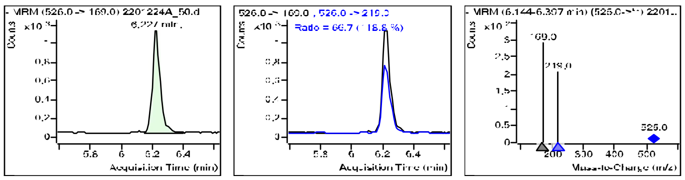


NEtFOSA



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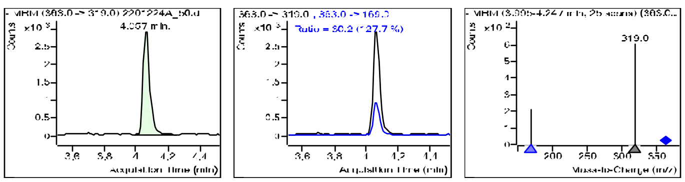

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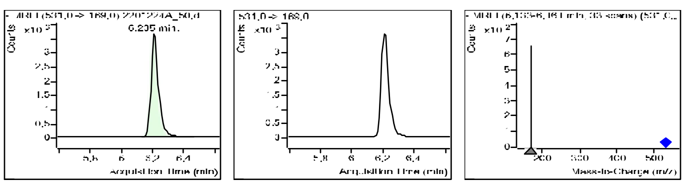

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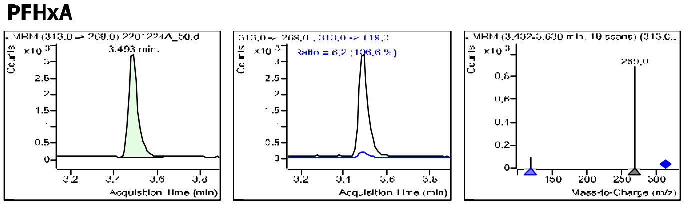

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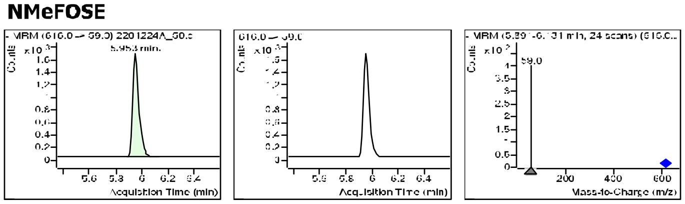

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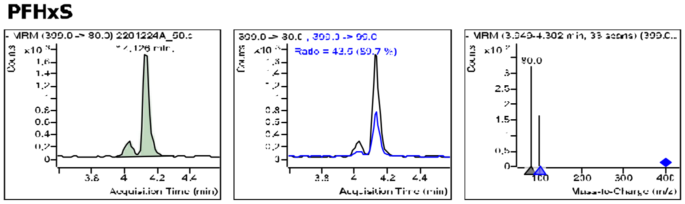

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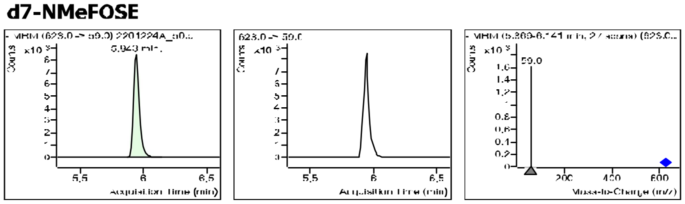

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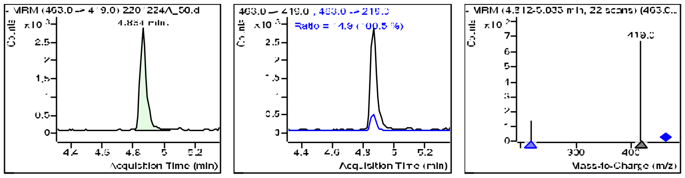

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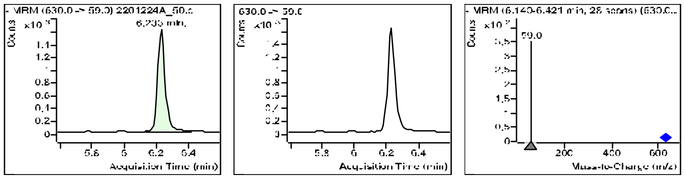

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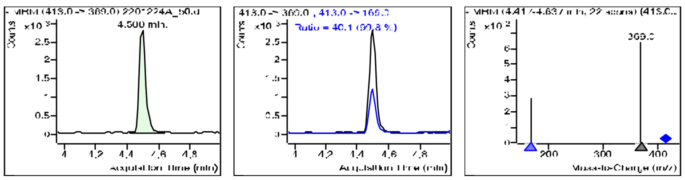

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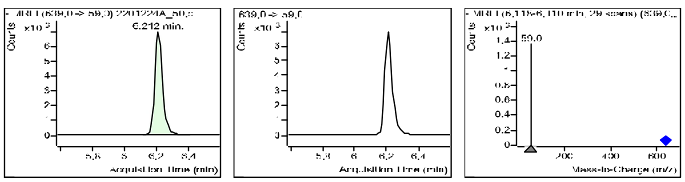

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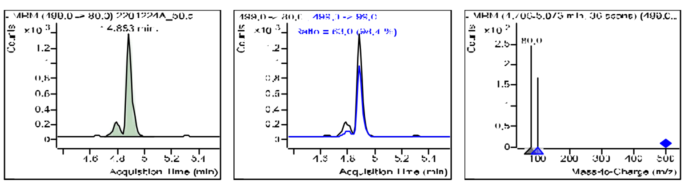

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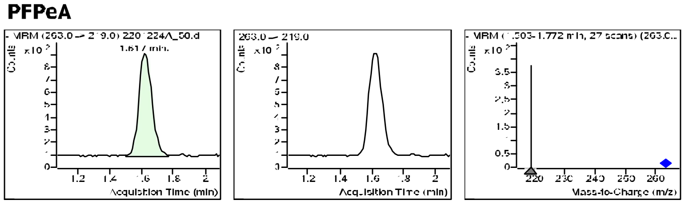

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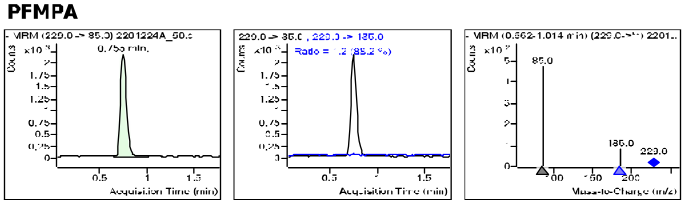

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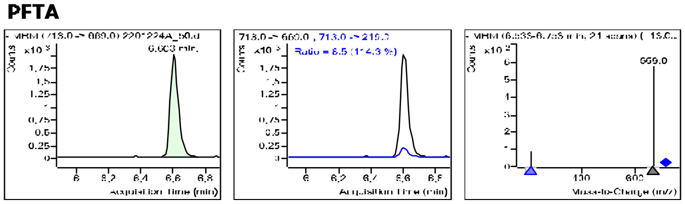

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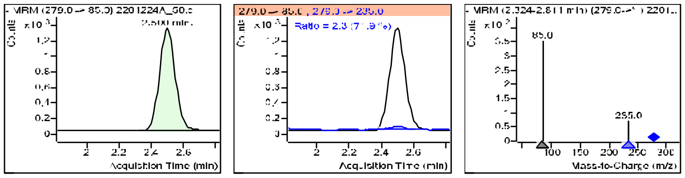

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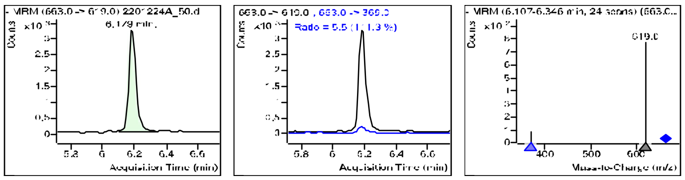

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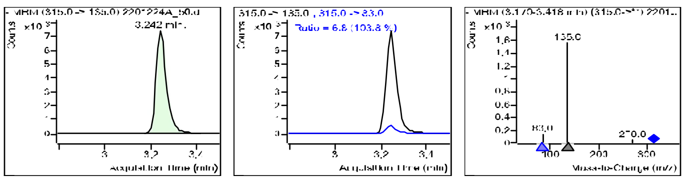

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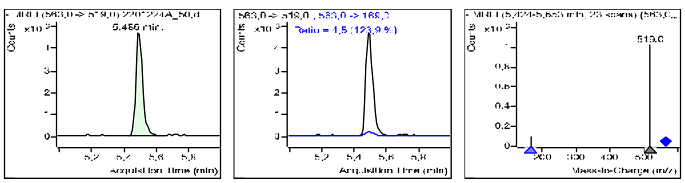

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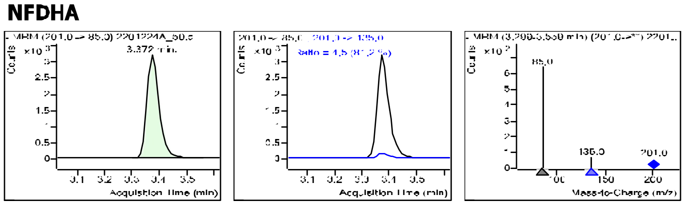

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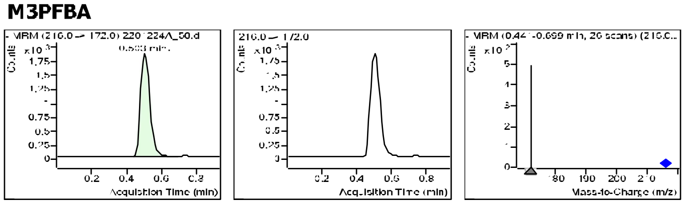

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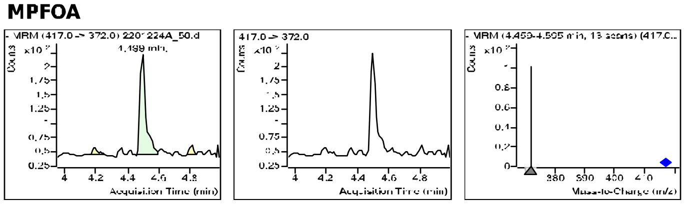


7S

ORGANICS INSTRUMENT SENSITIVITY CHECK

Report No:	220122279	Instrument ID:	QQQ2
Analysis Date:	01/04/2021 19:26	Lab File ID:	2210104B_13.d
Analytical Method:	EPA 537 Mod Isotope Dilution	Analytical Batch:	701166

ANALYTE	UNITS	TRUE	FOUND	% REC	LCL	UCL	Q
6:2 Fluorotelomersulfonic acid	ng/L	3.81	3.84	101	70	130	
8:2 Fluorotelomersulfonic acid	ng/L	3.84	4.00	104	70	130	
Perfluorobutanoic acid	ng/L	4.00	3.22	81	70	130	
Perfluorobutanesulfonic acid	ng/L	3.55	2.96	83	70	130	
Perfluorodecanoic acid	ng/L	4.00	3.17	79	70	130	
Perfluoroheptanoic acid	ng/L	4.00	3.36	84	70	130	
Perfluorohexanoic acid	ng/L	4.00	3.42	86	70	130	
Perfluorohexanesulfonic acid	ng/L	3.66	2.76	75	70	130	
Perfluorononanoic acid	ng/L	4.00	2.98	74	70	130	
Perfluorooctanoic acid	ng/L	4.00	3.74	94	70	130	
Perfluorooctanesulfonic acid	ng/L	3.71	3.45	93	70	130	
Perfluoropentanoic acid	ng/L	4.00	3.20	80	70	130	
Perfluoroundecanoic acid	ng/L	4.00	2.95	74	70	130	

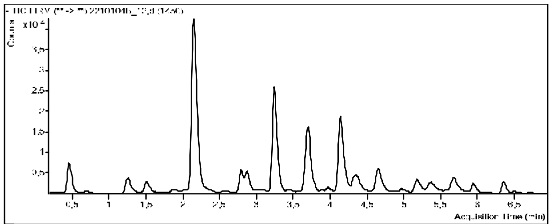
FORM 7S - ORG

Quantitative Analysis Sample Report

Batch Data Path D:\MassHunter\Data\2210104ACAL\QuantResults\22010104A.batch.bin
Last Calib Update 1/5/2021 14:27

Data File	2210104B_13.d	**Position**	P2-A1	**Samp Name**	1450	**Dilution**	1
Acq Method	PFAS40Poroshell093020 :	**Inj Vol**	2	**Samp Type**	QC	**Comment**	MRA,QQQ2;Cal
Acq Date	1/4/2021 19:26						

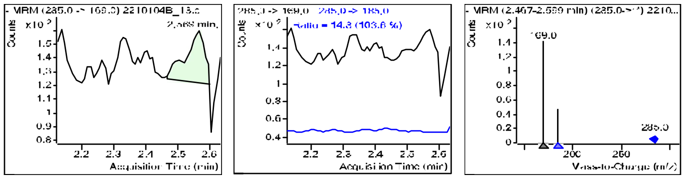
Sample Chromatogram



Quantitation Results

Compound	Response	RT	ISTD	ISTD Resp	ISTD RT	ISTD/Surr %Rec	Conc (ng/mL)	Spike %Rec	SNR	Symm	MInt
M2PFDA	70628.034	4.149				101.71	20.3411	101.71	2002.15	1.49	
M2PFHxA	193244.909	2.152				99.48	39.7919	99.48	5622.86	1.59	
M2PFOA	80471.654	3.248				101.75	20.3496	101.75	3373.19	1.42	
M4PFOS	50831.405	3.703				100.56	20.1118	100.56	7800.45	1.52	
MPFOA	375.916	3.248				0.00	33.6249	134.50	3.41	3.50	
M3PFBA	3802.000	0.464				0.00	5.1857	103.71	66.81	1.58	
HFPO-DA	152.459	2.569	M3HFPODA	903	2.384	134.99	1.1130	111.30	0.33	0.63	
4:2 FTS	338.239	2.086	M2 4:2 FTS	2464	2.095	99.84	0.4349	92.83	5.94	2.19	
6:2 FTS	695.015	3.226	M2 6:2 FTS	4498	3.225	99.51	0.4797	100.88	12.34	1.35	
ADONA	5608.958	2.887	M8PFOA	23485	3.247	107.00	0.3580	75.76	210.84	1.44	
8:2 FTS	745.624	4.138	M2 8:2 FTS	4155	4.138	100.20	0.4996	104.09	5.44	1.61	
FOSA	1784.022	4.335	M8FOSA	13561	4.335	100.51	0.4812	96.23	68.34	1.57	
9Cl-PF3ONS	4175.293	3.970	M8PFOS	10244	3.711	99.42	0.4259	91.30	67.92	1.65	
PFDS	1048.297	4.685	M6PFDA	15843	4.149	101.75	0.4061	84.17	35.62	1.32	
11Cl-PF3OUdS	3840.192	4.989	M8PFOS	10244	3.711	99.42	0.4149	87.99	116.28	1.37	
PFHpS	1101.872	3.297	M8PFOA	23485	3.247	107.00	0.4163	87.37	23.93	1.42	
10:2 FTS	726.669	5.192	M2 8:2 FTS	4155	4.138	100.20	0.4854	100.70	23.89	1.37	
PFNS	1054.718	4.172	M9PFNA	21355	3.669	103.30	0.3913	81.35	19.50	1.49	
PFDoS	1238.126	5.623	M8PFOS	10244	3.711	99.42	0.4009	82.83	29.77	1.59	
PFPeS	936.979	2.323	M5PFHxA	20562	2.151	99.24	0.4532	96.31	16.11	1.43	
PFODA	656.146	6.706	M2PFHxDA	10769	6.348	96.49	0.5119	102.38	30.24	1.60	
NEtFOSAA	1195.071	4.651	d5-NEtFOSAA	11968	4.641	110.48	0.3531	70.62	9.50	0.96	m
PFHxDA	1110.585	6.351	M2PFHxDA	10769	6.348	96.49	0.5615	112.30	25.94	1.73	
NMeFOSAA	1641.208	4.394	d3-NMeFOSAA	8417	4.374	109.06	0.4743	94.87	27.51	0.91	m
PFBA	3518.899	0.466	MPFBA	23556	0.463	96.09	0.4025	80.50	128.31	1.40	
PFBS	904.874	1.516	M3PFBS	9604	1.505	104.94	0.3695	83.32	14.23	1.13	
NMeFOSA	550.612	5.345	d-NMeFOSA	5729	5.353	95.26	0.4641	92.81	2.04	1.65	
PFDA	1458.181	4.150	M6PFDA	15843	4.149	101.75	0.3963	79.27	20.59	1.83	
PFDoA	1236.154	5.178	MPFDoA	14236	5.186	105.26	0.4536	90.72	1.62	1.55	
NEtFOSA	569.285	5.685	d-NEtFOSA	6045	5.684	96.49	0.3743	74.87	7.80	1.68	
PFHpA	2137.772	2.808	M4PFHpA	21408	2.797	104.43	0.4196	83.92	73.40	1.29	
PFHxA	2009.284	2.143	M5PFHxA	20562	2.151	99.24	0.4283	85.65	8.45	1.89	
NMeFOSE	939.838	5.398	d7-NMeFOSE	6984	5.379	95.54	0.4584	91.67	32.34	1.48	
PFHxS	952.348	2.875	M3PFHxS	10176	2.874	106.57	0.3447	75.43	41.92	1.35	m
PFNA	1760.263	3.679	M9PFNA	21355	3.669	103.30	0.3724	74.49	2.05	1.44	
NEtFOSE	951.300	5.703	d9-NEtFOSE	9252	5.682	93.82	0.5016	100.31	38.97	1.47	
PFOA	2387.687	3.249	M8PFOA	23485	3.247	107.00	0.4677	93.53	95.45	1.67	
PFOS	1406.696	3.713	M8PFOS	10244	3.711	99.42	0.4311	92.90	9.48	0.75	m
PFPeA	2165.872	1.265	M5PFPeA	16936	1.263	99.76	0.4004	80.08	15.32	1.33	
PFMPA	1810.637	0.698	M5PFPeA	16936	1.263	99.76	0.3826	76.51	58.83	1.43	
PFTA	878.589	5.957	M2PFTA	9293	5.944	98.26	0.5485	109.70	58.00	1.40	
PFMBA	2104.727	1.547	M5PFHxA	20562	2.151	99.24	0.4112	82.25	35.96	1.56	
PFTrDA	921.685	5.625	MPFDoA	14236	5.186	105.26	0.4278	85.56	20.46	1.79	
PFEESA	3360.539	1.876	M3PFHxS	10176	2.874	106.57	0.3778	84.90	11.19	1.37	
PFUnA	1354.239	4.665	M7PFUnA	17452	4.662	104.53	0.3694	73.87	30.72	1.57	
NFDHA	1509.358	2.027	M4PFHpA	21408	2.797	104.43	0.3567	71.34	26.02	1.43	

HFPO-DA



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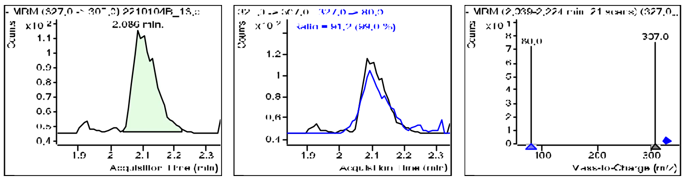
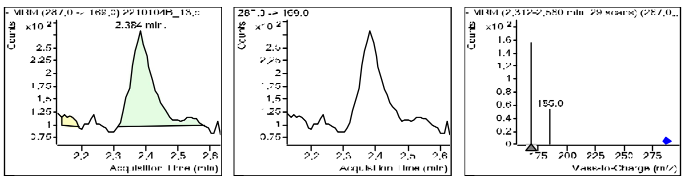
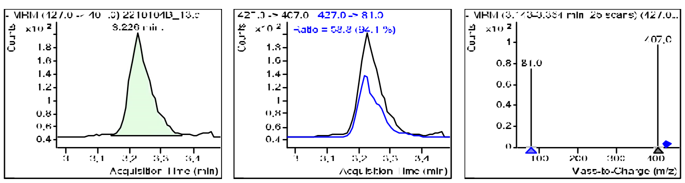


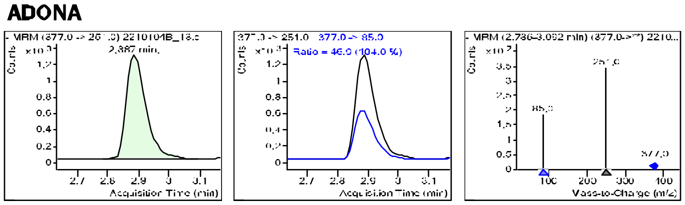
M3HFPODA



6:2 FTS



ADONA



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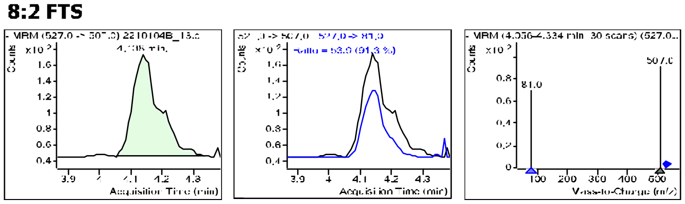

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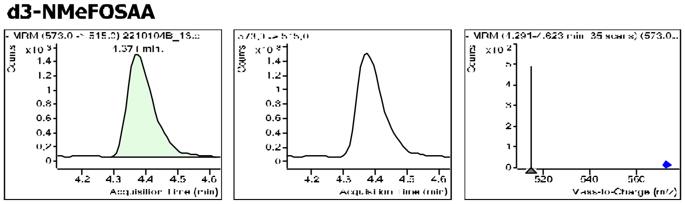

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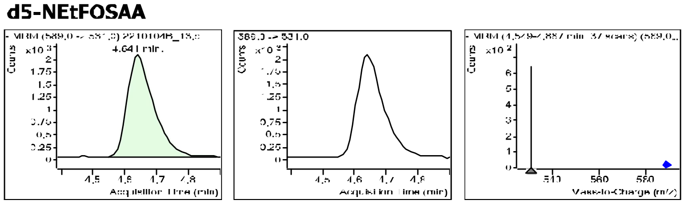

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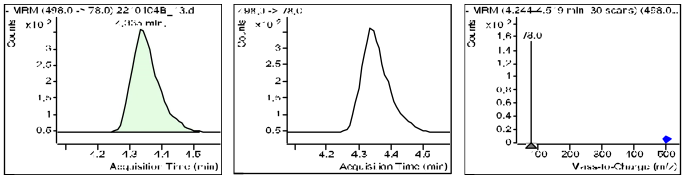

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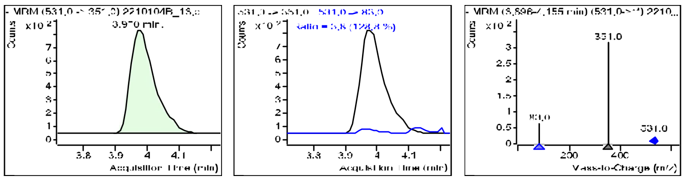

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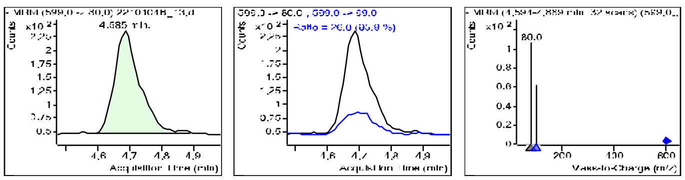

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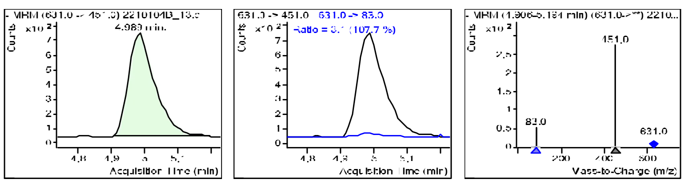

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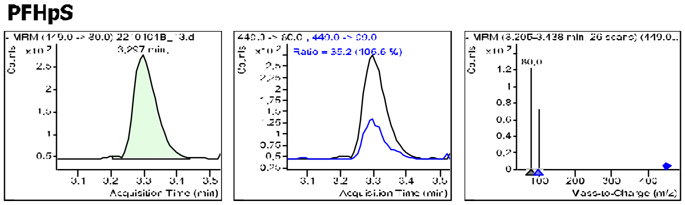
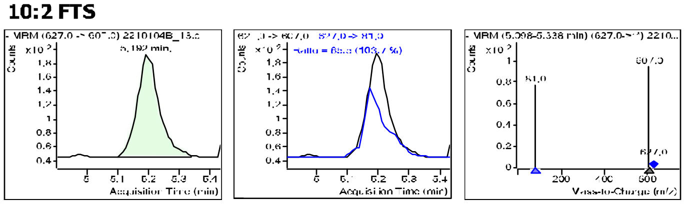


10:2 FTS



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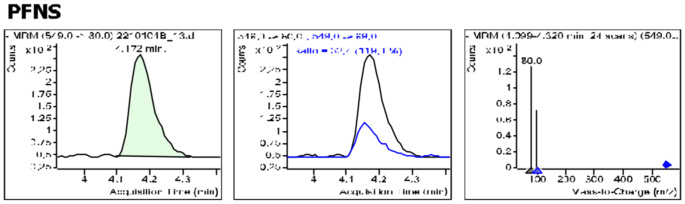

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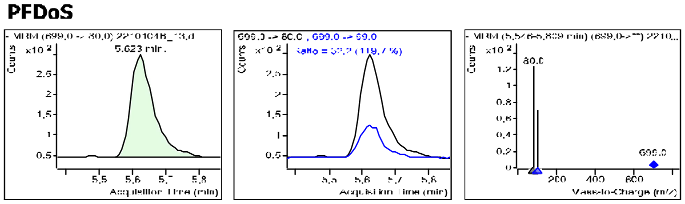
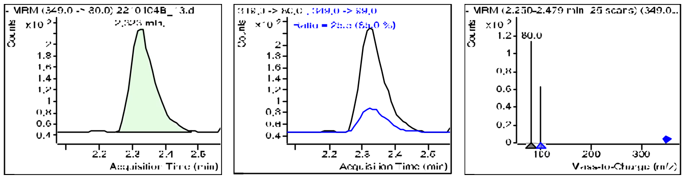
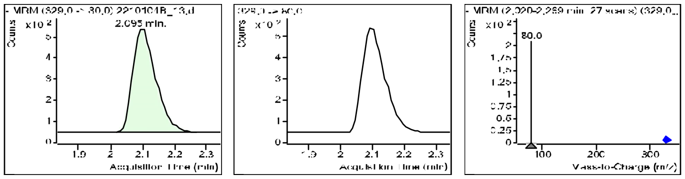


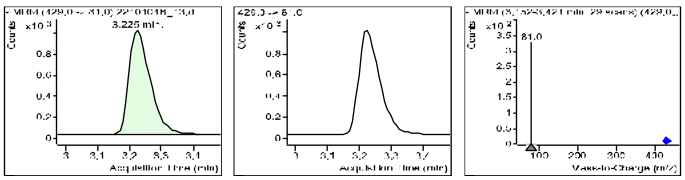
PFPeS



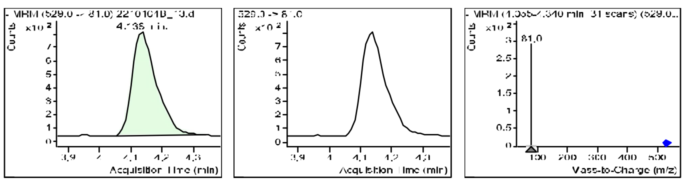
M2 4:2 FTS



M2 6:2 FTS



M2 8:2 FTS



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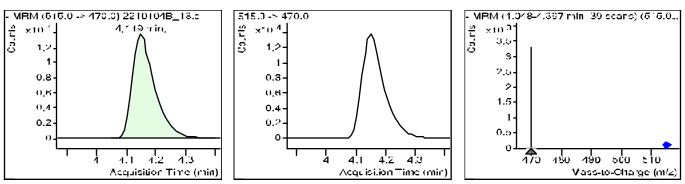

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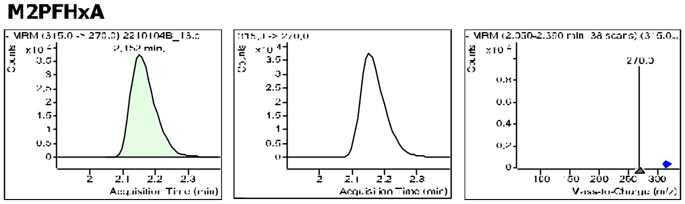

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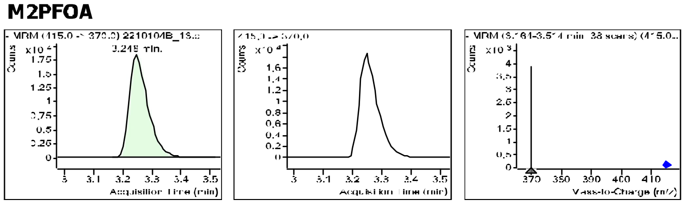

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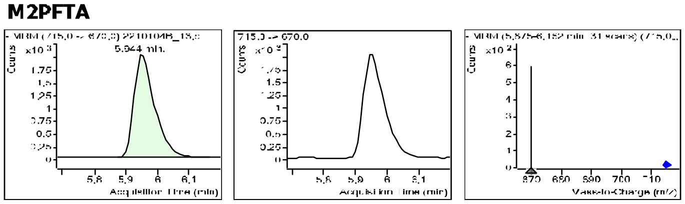

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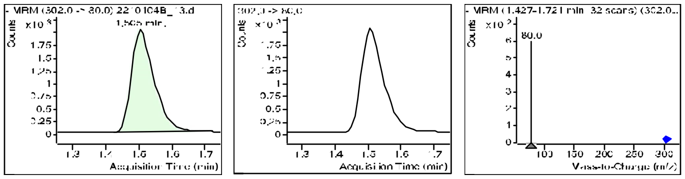

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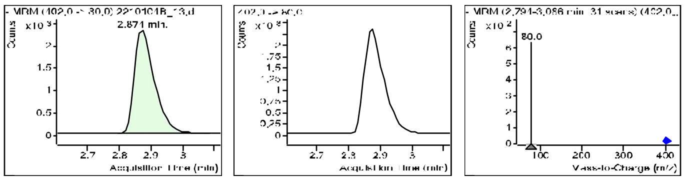

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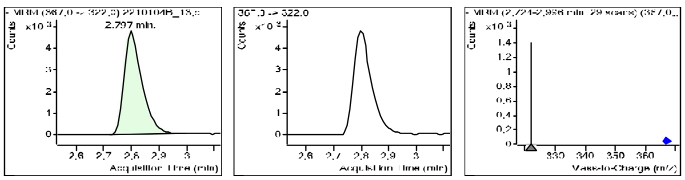

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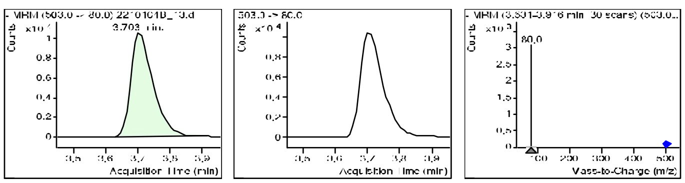

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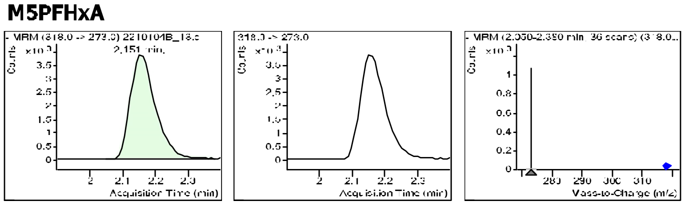

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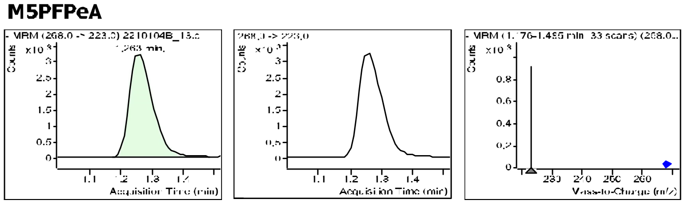

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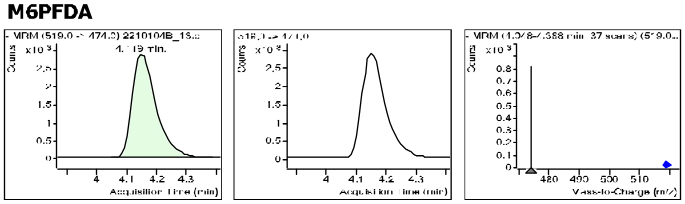

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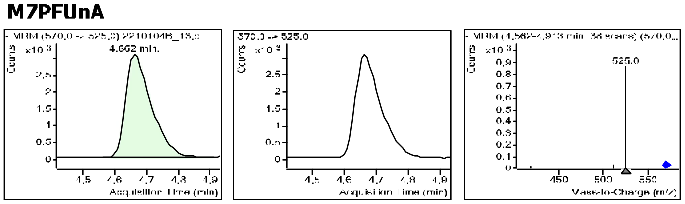

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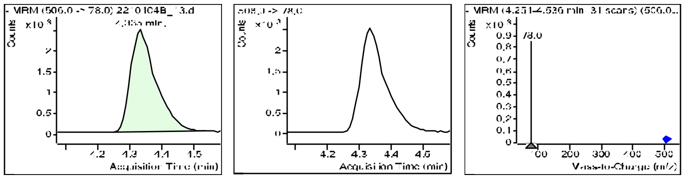

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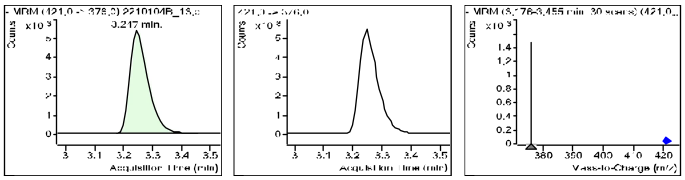

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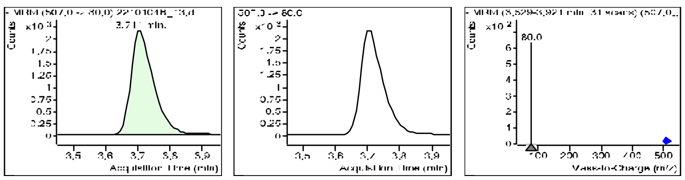

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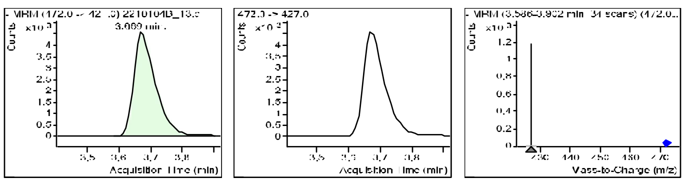

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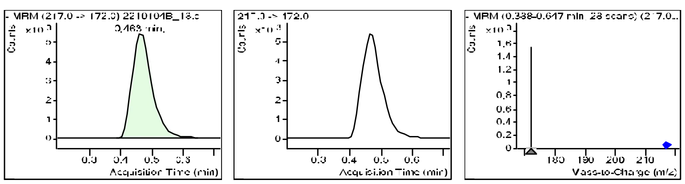

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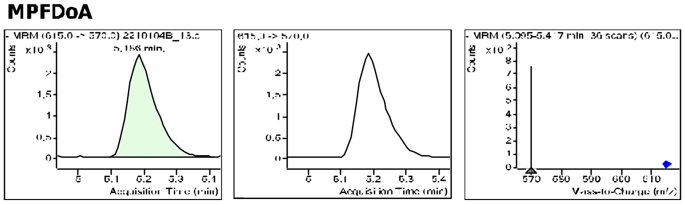

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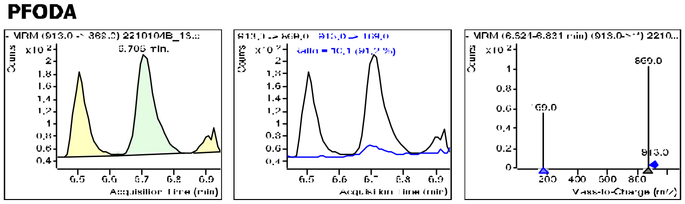

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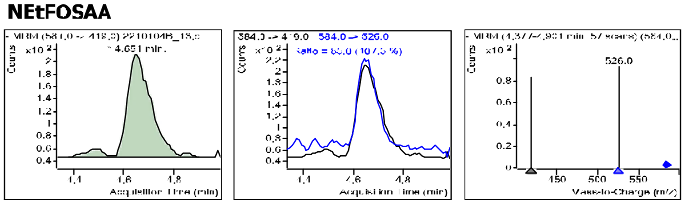

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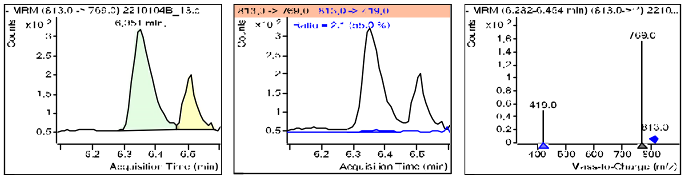

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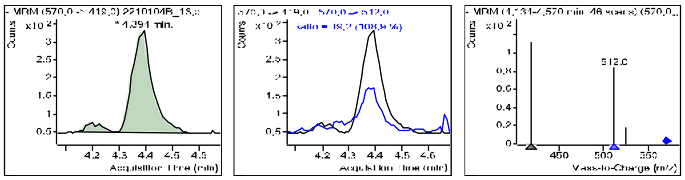

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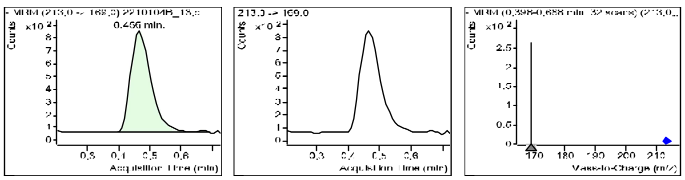

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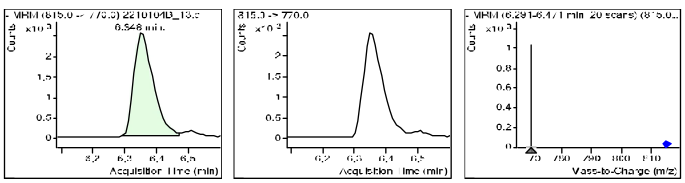

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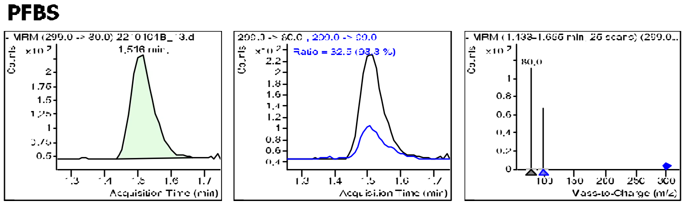

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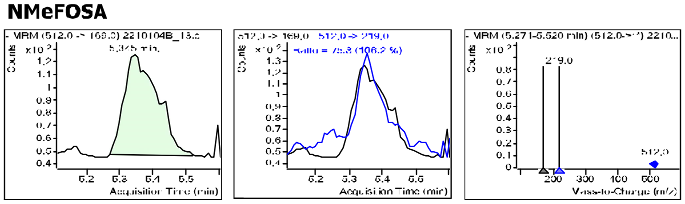

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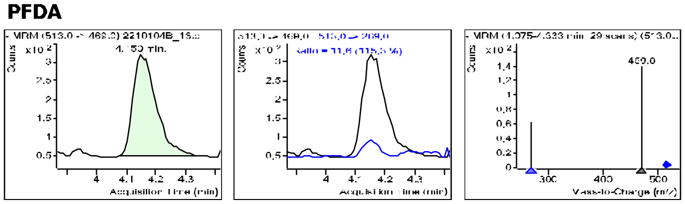

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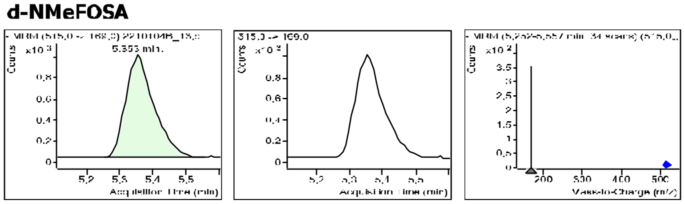

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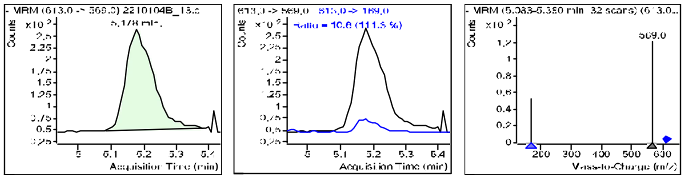

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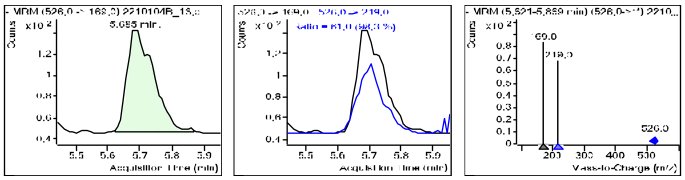

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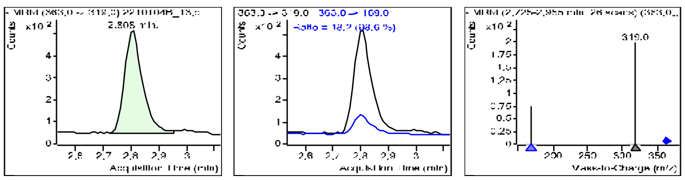

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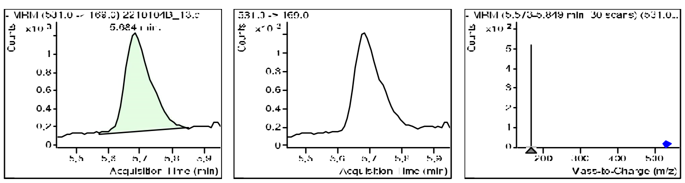

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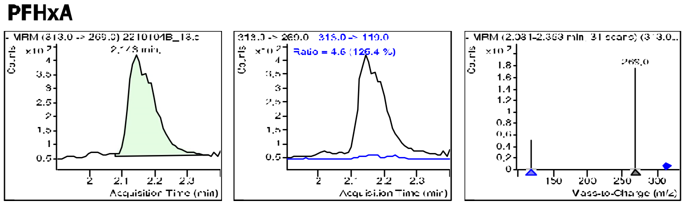

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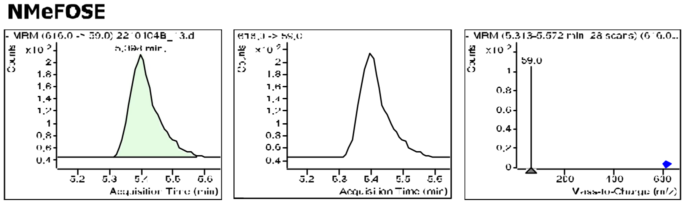

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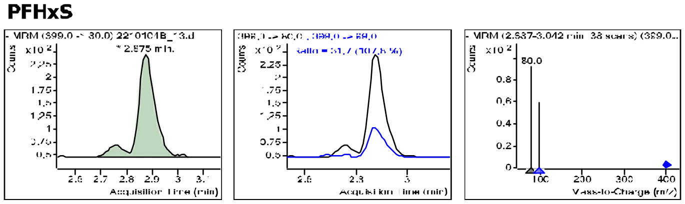

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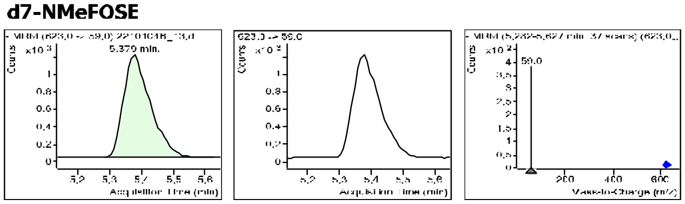

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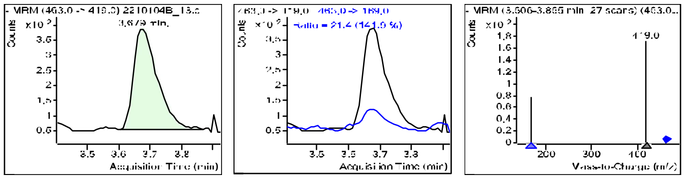

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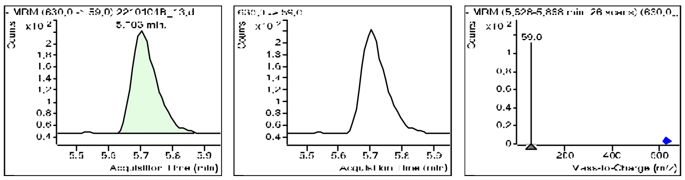

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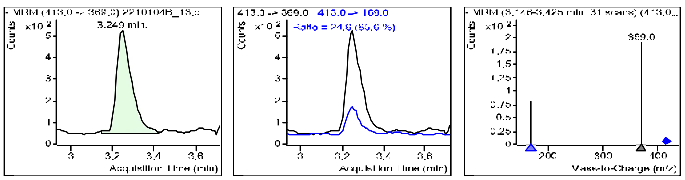

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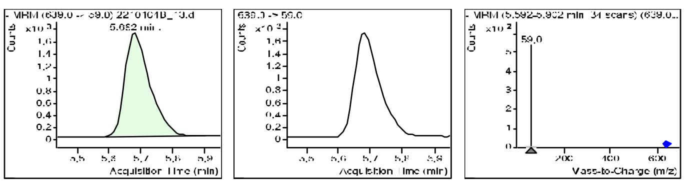

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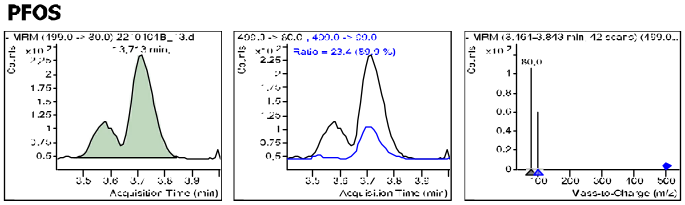

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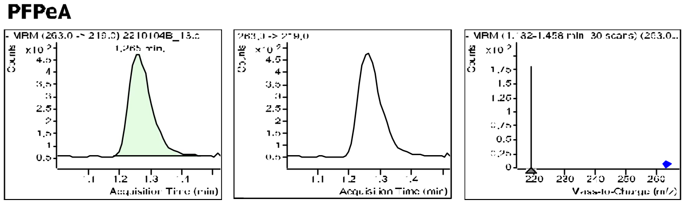

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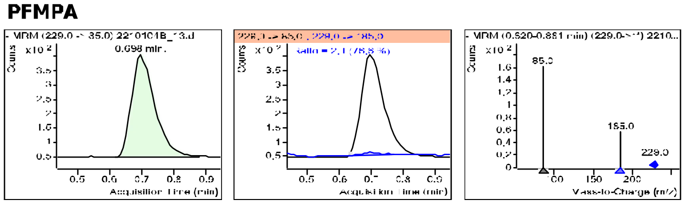

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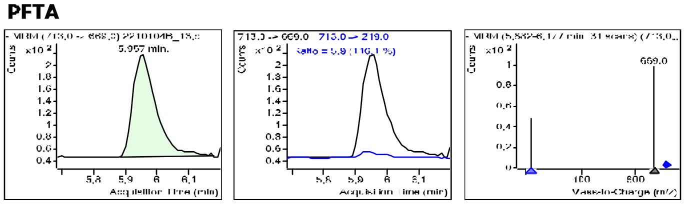

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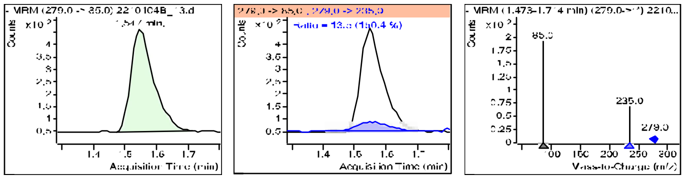

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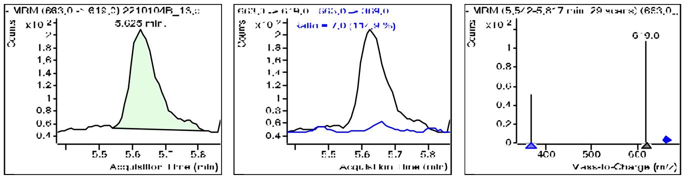

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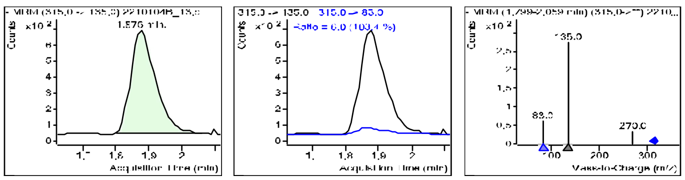

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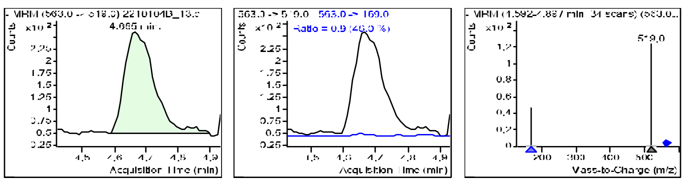

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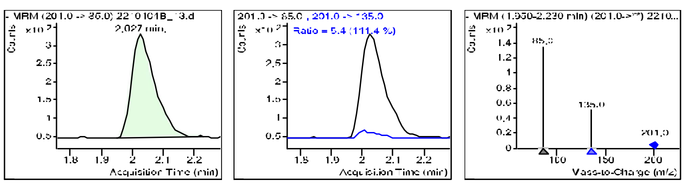

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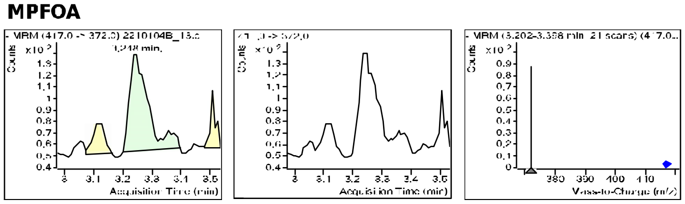

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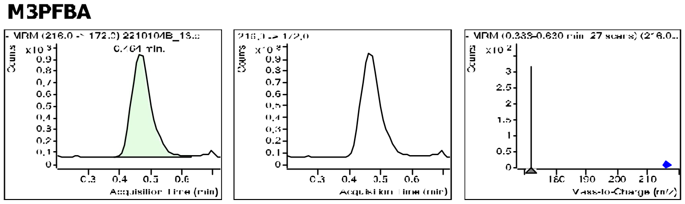

8E

EXTRACTED INTERNAL STANDARD RECOVERY

Report No: 220122279 Recovery Limits: 50 - 150

Client Sample ID	LAB SampleID	EIS1	#	EIS2	#	EIS3	#	EIS4	#	EIS5	#	EIS6	#	EIS7	#
SMP 1, EXP 12C	22012227901	100		103		94		96		95		98		97	
SMP 2, EXP 12T	22012227902	104		109		101		100		107		107		103	
SMP 3, EXP 13C	22012227903	102		108		97		101		102		104		105	
SMP 4, EXP 13T	22012227904	149		69		77		124		90		85		83	
SMP 5, EXP 12, IMP 1A REP A,B	22012227905	104		104		136		111		117		114		109	
SMP 6, EXP 12, IMP 3A REP A-F	22012227906	106		107		137		108		111		107		107	
SMP 6, EXP 12, IMP 3A REP A-F-	22012227907	104		106		137		115		117		112		108	
SMP 6, EXP 12, IMP 3A REP A-F-	22012227908	107		106		140		119		120		117		112	
SMP 7, EXP 13, IMP 1A REP A,B	22012227909	104		103		128		110		109		106		102	
SMP 8, EXP 13, IMP 3A REP A,B	22012227910	103		121		132		111		114		107		106	
MB2127843	2127843	112		118		141		111		114		117		113	
LCS2127844	2127844	92		103		127		104		100		105		98	
LCSD2127845	2127845	97		96		127		114		107		107		103	
MB2128031	2128031	111		115		106		110		108		105		101	
LCS2128032	2128032	119		117		105		108		106		105		98	

Client Sample ID	LAB SampleID	EIS8	#	EIS9	#	EIS10	#	EIS11	#	EIS12	#	EIS13	#		
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SMP 2, EXP 12T	22012227902	108		108		105		105		107		102			
SMP 3, EXP 13C	22012227903	106		111		104		102		102		101			
SMP 4, EXP 13T	22012227904	130		96		109		90		113		92			
SMP 5, EXP 12, IMP 1A REP A,B	22012227905	118		111		113		120		107		114			
SMP 6, EXP 12, IMP 3A REP A-F	22012227906	115		110		105		105		101		111			
SMP 6, EXP 12, IMP 3A REP A-F-	22012227907	112		114		107		111		101		113			
SMP 6, EXP 12, IMP 3A REP A-F-	22012227908	115		114		113		128		103		113			
SMP 7, EXP 13, IMP 1A REP A,B	22012227909	113		111		102		116		101		106			
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LCS2127844	2127844	100		104		96		89		89		102			
LCSD2127845	2127845	107		60		104		91		98		105			
MB2128031	2128031	108		111		109		112		113		96			
LCS2128032	2128032	107		110		110		109		109		95			

EIS1: M2 6:2 FTS EIS2: M2 8:2 FTS EIS3: M3PFBS EIS4: M3PFHxS

EIS5: M4PFHpA EIS6: M5PFHxA EIS7: M5PFPeA EIS8: M6PFDA

EIS9: M7PFUnA EIS10: M8PFOA EIS11: M8PFOS EIS12: M9PFNA

EIS13: MPFBA

FORM 8E - ORG

8E

EXTRACTED INTERNAL STANDARD RECOVERY

Report No: 220122279 Recovery Limits: 50 - 150

Client Sample ID	LAB SampleID	EIS1	#	EIS2	#	EIS3	#	EIS4	#	EIS5	#	EIS6	#	EIS7	#
LCSD2128033	2128033	116		115		105		106		112		105		99	
SMP 1, EXP 12CDUP	2131564					101		96		96					
SMP 1, EXP 12CMS	2131565	97		100								95		95	
SMP 2, EXP 12TDUP	2131566					100		99							
SMP 2, EXP 12TMS	2131567	106		105						106		103		100	
SMP 3, EXP 13CDUP	2131568					99		104		99					
SMP 3, EXP 13CMS	2131569	97		105								94		93	

Client Sample ID	LAB SampleID	EIS8	#	EIS9	#	EIS10	#	EIS11	#	EIS12	#	EIS13	#		
LCSD2128033	2128033	112		110		110		109		111		99			
SMP 1, EXP 12CDUP	2131564					104		99		102					
SMP 1, EXP 12CMS	2131565	98		99								98			
SMP 2, EXP 12TDUP	2131566							102							
SMP 2, EXP 12TMS	2131567	105		108		108				107		100			
SMP 3, EXP 13CDUP	2131568					108		106		100					
SMP 3, EXP 13CMS	2131569	96		95								95			

EIS1: M2 6:2 FTS
EIS2: M2 8:2 FTS
EIS3: M3PFBS
EIS4: M3PFHxS
EIS5: M4PFHpA
EIS6: M5PFHxA
EIS7: M5PFPeA
EIS8: M6PFDA
EIS9: M7PFUnA
EIS10: M8PFOA
EIS11: M8PFOS
EIS12: M9PFNA
EIS13: MPFBA

FORM 8E - ORG

PFAS Isotope Dilution QSM B15

Form 8I

Injection Internal Std

8I

INJECTION INTERNAL STANDARD AREA SUMMARY

Report No:	220122279	Standard ID:	1205 (ICAL Midpoint)
Analyst:	MRA	Instrument ID:	QQQ1
Analysis Date:	12/24/20 12:22	Lab File ID:	2201224A_10.d
Analytical Method:	PFAS Isotope Dilution QSM B15	Analytical Batch:	700789

		M2PFDA		M2PFHxA		M2PFOA		M4PFOS	
		Area		*Area*		*Area*		*Area*	
STANDARD		173420		265102		125809		42115	
CLIENT SAMPLE ID	***LAB SAMP ID***		*#*		*#*		*#*		*#*
MB2127843	2127843	213892		351309		158138		59266	
LCS2127844	2127844	185266		315434		144963		53381	
LCSD2127845	2127845	193372		315000		148449		52290	
SMP 5, EXP 12, IMP 1A REP A,B	22012227905	228055		370802		173123		65326	*
SMP 6, EXP 12, IMP 3A REP A-F	22012227906	179052		283730		129203		46984	
SMP 6, EXP 12, IMP 3A REP A-F-	22012227907	211600		357544		160471		59186	
SMP 6, EXP 12, IMP 3A REP A-F-	22012227908	203696		340553		159378		59820	
SMP 7, EXP 13, IMP 1A REP A,B	22012227909	206472		335707		157514		56740	
SMP 8, EXP 13, IMP 3A REP A,B	22012227910	203306		335168		155655		59958	

*for information only

AREA UPPER LIMIT = +50% of internal standard area

AREA LOWER LIMIT = -50% of internal standard area

Column used to flag values outside QC limits

* Value outside QC limits

FORM 8I - ORG

8I

INJECTION INTERNAL STANDARD AREA SUMMARY

Report No:	220122279	Standard ID:	1205 (ICAL Midpoint)
Analyst:	MRA	Instrument ID:	QQQ2
Analysis Date:	01/04/21 17:55	Lab File ID:	2210104B_06.d
Analytical Method:	PFAS Isotope Dilution QSM B15	Analytical Batch:	701166

CLIENT SAMPLE ID	LAB SAMP ID	M2PFDA Area	#	M2PFHxA Area	#	M2PFOA Area	#	M4PFOS Area	#
STANDARD		64922		181436		73467		48670	
MB2128031	2128031	78795		206846		86232		55196	
LCS2128032	2128032	76114		205763		85981		55147	
LCSD2128033	2128033	76610		207089		85605		55148	
SMP 1, EXP 12CDUP	2131564	68597		196781		77025		48978	
SMP 1, EXP 12CMS	2131565	64600		180167		72035		44918	
SMP 2, EXP 12TDUP	2131566	88880		242564		102274		62279	
SMP 2, EXP 12TMS	2131567	90303		248842		107276		65232	
SMP 3, EXP 13CDUP	2131568	73476		202367		82542		50963	
SMP 3, EXP 13CMS	2131569	67606		188337		76767		48024	
SMP 1, EXP 12C	22012227901	62826		177012		71725		45361	
SMP 2, EXP 12T	22012227902	91858		245330		98408		62469	
SMP 3, EXP 13C	22012227903	74222		205684		83601		50580	
SMP 4, EXP 13T	22012227904	71319		197172		79104		48869	

AREA UPPER LIMIT = +50% of internal standard area

AREA LOWER LIMIT = -50% of internal standard area

Column used to flag values outside QC limits

* Value outside QC limits

FORM 8I - ORG

PFAS Isotope Dilution QSM B15

RunLogs

QQQ1 Run Log

Analyst:	BMH	Expiration:
Instrument:	QQQ1	
Batch:	2201224A	
Current ICAL Bath:	2201224ACAL/2201224ACALDW	
20mM Amm Acetate	016-5-5	12/26/2020
Methanol	2129592	6/30/2025
Calibration Std	016-3-6	6/2/2021
ICV Std	012-68-1	3/25/2021
EIS Mix	016-4-8	6/11/2021
IIS Mix	016-4-7	6/21/2021

Name	Data File	Type	Acq. Date-Time	Comment	Dil.
MeOH Shot	2201224A_01.d	MeOH Shot	12/24/2020 10:04	MRA, MeOH SHOT/INSTRUMENT IDLE	1
1201	2201224A_02.d	Cal	12/24/2020 10:18	MRA,QQQ1;Cal	1
1202	2201224A_03.d	Cal	12/24/2020 10:32	MRA,QQQ1;Cal	1
1203	2201224A_04.d	Cal	12/24/2020 10:46	MRA,QQQ1;Cal	1
1204	2201224A_05.d	Cal	12/24/2020 11:00	MRA,QQQ1;Cal	1
1205	2201224A_06.d	Cal	12/24/2020 11:15	MRA,QQQ1;Cal	1
1206	2201224A_07.d	Cal	12/24/2020 11:29	MRA,QQQ1;Cal	1
1207	2201224A_08.d	Cal	12/24/2020 11:43	MRA,QQQ1;Cal	1
MeOH Shot	2201224A_09.d	MeOH Shot	12/24/2020 12:08	MRA, MeOH SHOT/INSTRUMENT IDLE	1
1205	2201224A_10.d	Cal	12/24/2020 12:22	MRA,QQQ1;Cal	1
MeOH Shot	2201224A_11.d	MeOH Shot	12/24/2020 12:36	MRA, MeOH SHOT/INSTRUMENT IDLE	1
1500	2201224A_12.d	Sample	12/24/2020 12:50	MRA,QQQ1	1
1600	2201224A_13.d	Sample	12/24/2020 13:04	MRA,QQQ1	1
1450	2201224A_14.d	QC	12/24/2020 13:19	MRA,QQQ1	1
MeOH Shot	2201224A_15.d	MeOH Shot	12/24/2020 13:58	MRA, MeOH SHOT/INSTRUMENT IDLE	1
1450	2201224A_16.d	QC	12/24/2020 14:12	MRA,QQQ1	1
MeOH Shot	2201224A_17.d	MeOH Shot	12/24/2020 16:28	MRA, MeOH SHOT/INSTRUMENT IDLE	1
2127908	2201224A_18.d	Sample	12/24/2020 16:42	MRA,QQQ1;700395 DW	1
2127909	2201224A_19.d	QC	12/24/2020 16:56	MRA,QQQ1;700395 DW	1
2127910	2201224A_20.d	QC	12/24/2020 17:10	MRA,QQQ1;700395 DW	1

22012226501	2201224A_21.d	Sample	12/24/2020 17:25	MRA,QQQ1;700395 DW	1
22012226502	2201224A_22.d	Sample	12/24/2020 17:39	MRA,QQQ1;700395 DW	1
22012226401	2201224A_23.d	Sample	12/24/2020 17:53	MRA,QQQ1;700395 DW	1
22012226503	2201224A_24.d	Sample	12/24/2020 18:07	MRA,QQQ1;700395 DW	1
22012226801	2201224A_25.d	Sample	12/24/2020 18:22	MRA,QQQ1;700395 DW	1
22012226802	2201224A_26.d	Sample	12/24/2020 18:36	MRA,QQQ1;700395 DW	1
2127813	2201224A_27.d	Sample	12/24/2020 18:50	MRA,QQQ1;700356	1
2127814	2201224A_28.d	QC	12/24/2020 19:05	MRA,QQQ1;700356	1
2127815	2201224A_29.d	QC	12/24/2020 19:19	MRA,QQQ1;700356	1
22012226601	2201224A_30.d	Sample	12/24/2020 19:33	MRA,QQQ1;700356	1
22012226602	2201224A_31.d	Sample	12/24/2020 19:48	MRA,QQQ1;700356	1
22012226603	2201224A_32.d	Sample	12/24/2020 20:02	MRA,QQQ1;700356	1
22012226604	2201224A_33.d	Sample	12/24/2020 20:16	MRA,QQQ1;700356	1
1400	2201224A_34.d	QC	12/24/2020 20:30	MRA,QQQ1;CCV	1
22012226605	2201224A_35.d	Sample	12/24/2020 20:45	MRA,QQQ1;700356	1
22012226201 x10	2201224A_36.d	Sample	12/24/2020 20:59	MRA,QQQ1;700356	10
22012226701	2201224A_37.d	Sample	12/24/2020 21:13	MRA,QQQ1;700356	1
22012226702	2201224A_38.d	Sample	12/24/2020 21:28	MRA,QQQ1;700356	1
22012226703	2201224A_39.d	Sample	12/24/2020 21:42	MRA,QQQ1;700356	1
22012226704	2201224A_40.d	Sample	12/24/2020 21:56	MRA,QQQ1;700356	1
2127843	2201224A_41.d	Sample	12/24/2020 22:11	MRA,QQQ1;700361	1
2127844	2201224A_42.d	QC	12/24/2020 22:25	MRA,QQQ1;700361	1
2127845	2201224A_43.d	QC	12/24/2020 22:39	MRA,QQQ1;700361	1
22012227905	2201224A_44.d	Sample	12/24/2020 22:53	MRA,QQQ1;700361	1
22012227906	2201224A_45.d	Sample	12/24/2020 23:08	MRA,QQQ1;700361	1
22012227907	2201224A_46.d	QC	12/24/2020 23:22	MRA,QQQ1;700361	1
22012227908	2201224A_47.d	QC	12/24/2020 23:37	MRA,QQQ1;700361	1
22012227909	2201224A_48.d	Sample	12/24/2020 23:51	MRA,QQQ1;700361	1
22012227910	2201224A_49.d	Sample	12/25/2020 0:05	MRA,QQQ1;700361	1
1450	2201224A_50.d	QC	12/25/2020 0:19	MRA,QQQ1;CCV	1
22012174401	2201224A_51.d	Sample	12/25/2020 0:34	MRA,QQQ1;700361	1
22012174402	2201224A_52.d	Sample	12/25/2020 0:48	MRA,QQQ1;700361	1
22012174403	2201224A_53.d	Sample	12/25/2020 1:02	MRA,QQQ1;700361	1
22012174404	2201224A_54.d	Sample	12/25/2020 1:17	MRA,QQQ1;700361	1

22012174405	2201224A_55.d	Sample	12/25/2020 1:31	MRA,QQQ1;700361	1
22012174406	2201224A_56.d	Sample	12/25/2020 1:45	MRA,QQQ1;700361	1
2120624	2201224A_57.d	Sample	12/25/2020 2:00	MRA,QQQ1;699027	1
2120625	2201224A_58.d	QC	12/25/2020 2:14	MRA,QQQ1;699027	1
2120626	2201224A_59.d	QC	12/25/2020 2:28	MRA,QQQ1;699027	1
22012042801	2201224A_60.d	Sample	12/25/2020 2:42	MRA,QQQ1;699027	1
MeOH Shot	2201224A_61.d	MeOH Shot	12/25/2020 2:57	MRA, MeOH SHOT/INSTRUMENT IDLE	1
22012042802	2201224A_62.d	Sample	12/25/2020 3:11	MRA,QQQ1;699027	1
MeOH Shot	2201224A_63.d	MeOH Shot	12/25/2020 3:25	MRA, MeOH SHOT/INSTRUMENT IDLE	1
2121815	2201224A_64.d	Sample	12/25/2020 3:39	MRA,QQQ1;699273	1
2121816	2201224A_65.d	QC	12/25/2020 3:53	MRA,QQQ1;699273	1
2121817	2201224A_66.d	QC	12/25/2020 4:07	MRA,QQQ1;699273	1
22012042803 x50	2201224A_67.d	Sample	12/25/2020 4:22	MRA,QQQ1;699273	50
22012042804 x50	2201224A_68.d	Sample	12/25/2020 4:36	MRA,QQQ1;699273	50
1400	2201224A_69.d	QC	12/25/2020 4:50	MRA,QQQ1;CCV	1

QQQ2 Run Log

Analyst:	BMH	Expiration:
Instrument:	QQQ2	
Batch:	2210104B	
Current ICAL Bath:	2210104BCAL	
20mM Amm Acetate	016-9-3	1/6/2021
Methanol	2129592	6/30/2025
Calibration Std	016-7-2	6/29/2021
ICV Std	012-68-1	3/25/2021
EIS Mix	016-8-3	6/11/2021
IIS Mix	016-9-1	6/31/2021

Name	Data File	Type	Acq. Date-Time	Comment	Dil.
MeOH Shot	2210104B_01.d	MeOH Shot	1/4/2021 16:50	MRA,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
1201	2210104B_02.d	Cal	1/4/2021 17:03	MRA,QQQ2;Cal	1
1202	2210104B_03.d	Cal	1/4/2021 17:16	MRA,QQQ2;Cal	1
1203	2210104B_04.d	Cal	1/4/2021 17:29	MRA,QQQ2;Cal	1
1204	2210104B_05.d	Cal	1/4/2021 17:42	MRA,QQQ2;Cal	1
1205	2210104B_06.d	Cal	1/4/2021 17:55	MRA,QQQ2;Cal	1
1206	2210104B_07.d	Cal	1/4/2021 18:08	MRA,QQQ2;Cal	1
1207	2210104B_08.d	Cal	1/4/2021 18:21	MRA,QQQ2;Cal	1
MeOH Shot	2210104B_09.d	MeOH Shot	1/4/2021 18:34	MRA,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
1500	2210104B_10.d	Sample	1/4/2021 18:47	MRA,QQQ2;Cal	1
1600	2210104B_11.d	Sample	1/4/2021 19:00	MRA,QQQ2;Cal	1
1450	2210104B_12.d	QC	1/4/2021 19:13	MRA,QQQ2;Cal	1
1450	2210104B_13.d	QC	1/4/2021 19:26	MRA,QQQ2;Cal	1
MeOH Shot	2210104B_14.d	MeOH Shot	1/4/2021 19:39	MRA,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
2121815	2210104B_15.d	Sample	1/4/2021 19:52	MRA,QQQ2;699273	1
2121816	2210104B_16.d	QC	1/4/2021 20:05	MRA,QQQ2;699273	1
2121817	2210104B_17.d	QC	1/4/2021 20:18	MRA,QQQ2;699273	1
22012043201 x10	2210104B_18.d	Sample	1/4/2021 20:31	MRA,QQQ2;699273	10
22012043202 x10	2210104B_19.d	Sample	1/4/2021 20:44	MRA,QQQ2;699273	10
22012043203 x10	2210104B_20.d	Sample	1/4/2021 20:57	MRA,QQQ2;699273	10

22012082902	2210104B_21.d	Sample	1/4/2021 21:10	MRA,QQQ2;699273	1
2128031	2210104B_22.d	Sample	1/4/2021 21:23	MRA,QQQ2;700444	1
2128032	2210104B_23.d	QC	1/4/2021 21:36	MRA,QQQ2;700444	1
2128033	2210104B_24.d	QC	1/4/2021 21:49	MRA,QQQ2;700444	1
22012227901 5000x DAI	2210104B_25.d	Sample	1/4/2021 22:03	MRA,QQQ2;700444	1
22012227901 5000x Dup	2210104B_26.d	Sample	1/4/2021 22:16	MRA,QQQ2;700444	1
22012227901 5000x MS	2210104B_27.d	Sample	1/4/2021 22:29	MRA,QQQ2;700444	1
22012227902 500x DAI	2210104B_28.d	Sample	1/4/2021 22:42	MRA,QQQ2;700444	1
22012227902 500x Dup	2210104B_29.d	Sample	1/4/2021 22:55	MRA,QQQ2;700444	1
22012227902 500x MS	2210104B_30.d	Sample	1/4/2021 23:08	MRA,QQQ2;700444	1
1400	2210104B_31.d	QC	1/4/2021 23:21	BMH,QQQ2;CCV	1
22012227903 5000x DAI	2210104B_32.d	Sample	1/4/2021 23:34	MRA,QQQ2;700444	1
22012227903 5000x Dup	2210104B_33.d	Sample	1/4/2021 23:47	MRA,QQQ2;700444	1
22012227903 5000x MS	2210104B_34.d	Sample	1/5/2021 0:00	MRA,QQQ2;700444	1
22012227904 x50	2210104B_35.d	Sample	1/5/2021 0:13	MRA,QQQ2;700444	50
2127043	2210104B_36.d	Sample	1/5/2021 0:26	MRA,QQQ2;700196	1
2127044	2210104B_37.d	QC	1/5/2021 0:39	MRA,QQQ2;700196	1
2127045	2210104B_38.d	QC	1/5/2021 0:52	MRA,QQQ2;700196	1
22012184001	2210104B_39.d	Sample	1/5/2021 1:05	MRA,QQQ2;700196	1
22012184013	2210104B_40.d	Sample	1/5/2021 1:18	MRA,QQQ2;700196	1
22012184014	2210104B_41.d	QC	1/5/2021 1:31	MRA,QQQ2;700196	1
22012184015	2210104B_42.d	QC	1/5/2021 1:44	MRA,QQQ2;700196	1
22012184017	2210104B_43.d	Sample	1/5/2021 1:57	MRA,QQQ2;700196	1
1400	2210104B_44.d	QC	1/5/2021 2:10	MRA,QQQ2;CCV	1
LOQ 0.5 PPB_W	2210104B_45.d	Sample	1/5/2021 2:23	MRA,QQQ2	1
LOQ 1.0 PPB_W	2210104B_46.d	Sample	1/5/2021 2:36	MRA,QQQ2	1
LOQ 2.5 PPB_W	2210104B_47.d	Sample	1/5/2021 2:49	MRA,QQQ2	1
LOD 1 0.25 PPB_W	2210104B_48.d	Sample	1/5/2021 3:02	MRA,QQQ2	1
LOD 2 0.25 PPB_W	2210104B_49.d	Sample	1/5/2021 3:15	MRA,QQQ2	1
LOD 1 0.5 PPB_W	2210104B_50.d	Sample	1/5/2021 3:28	MRA,QQQ2	1
LOD 2 0.5 PPB_W	2210104B_51.d	Sample	1/5/2021 3:41	MRA,QQQ2	1
LOD 1 1.25 PPB_W	2210104B_52.d	Sample	1/5/2021 3:54	MRA,QQQ2	1
LOD 2 1.25 PPB_W	2210104B_53.d	Sample	1/5/2021 4:07	MRA,QQQ2	1
LOD 1_S	2210104B_54.d	Sample	1/5/2021 4:20	MRA,QQQ2	1

LOD 2_S	2210104B_55.d	Sample	1/5/2021 4:34	MRA,QQQ2	1
LOQ_S	2210104B_56.d	Sample	1/5/2021 4:47	MRA,QQQ2	1
1400	2210104B_57.d	QC	1/5/2021 5:00	MRA,QQQ2;CCV	1

PFAS Isotope Dilution QSM B15

Prep Sheets

PFAS DOD Water Extraction

ANALYST/ TECH	DWB	START DATE/TIME	12/23/2020 10:17	END DATE/TIME	12/23/2020 14:25	BATCH	700361

#	CLIENT	TYPE	CLIENT ID	LAB ID	INITIAL VOL (mL)	FINAL VOL (mL)	COMMENT	STANDARDS\ REAGENTS
1	QC	MB	MB 2127843	2127843	125	1.0		PFAC24 (LCS) Spike - 25ul
2	QC	LCS	LCS 2127844	2127844	125	1.0		016-3-6
3	QC	LCSD	LCSD 2127845	2127845	125	1.0		MPFAC (EIS) Spike - 50ul
4	4769	SAMP	SMP 5, EXP 12, IMP 1A ...	22012227905	125	1.0		016-4-8
5	4769	SAMP	SMP 6, EXP 12, IMP 3A ...	22012227906	125	1.0		Inst IS Spike - 10ul
6	4769	MS	SMP 6, EXP 12, IMP 3A ...	22012227907	125	1.0		016-4-7
7	4769	MSD	SMP 6, EXP 12, IMP 3A ...	22012227908	125	1.0		UHPLC Methanol
8	4769	SAMP	SMP 7, EXP 13, IMP 1A ...	22012227909	125	1.0		2129814
9	4769	SAMP	SMP 8, EXP 13, IMP 3A ...	22012227910	125	1.0		Basic Methanol
10	2962	SAMP	IDW WATER 2020 SS-45	22012174401	125	1.0		016-2-2
11	2962	SAMP	IDW WATER 2020 LF-15	22012174402	125	1.0		
12	2962	SAMP	IDW WATER 2019 SS-45	22012174403	125	1.0		
13	2962	SAMP	IDW WATER 2019 LF-15	22012174404	125	1.0		WAX Column
14	2962	SAMP	IDW WATER 2018	22012174405	125	1.0		2454/1244/G
15	2962	FB	FB PFAS	22012174406	125	1.0		ENVI-CARB
16								NA
17								
18								
19								Sample Load Start
20								10:17
21								Sample Load End
22								10:58
23								
24								
25								
26								
27								
28								
29								
30								

NOTES

Sample preparation includes determination of initial volume, loading and elution of analytes via wax column, ENVI-CARB cleanup, and evaporation of solvent to <1.0ml. Final volume is adjusted to 1.0ml with methanol.

PFAS DOD Solid Extraction

700444

ANALYST/ TECH	TJT	START DATE/TIME	12/24/2020 13:00	END DATE/TIME	12/24/2020 16:00	BATCH	**700444**

#	CLIENT	TYPE	CLIENT ID	LAB ID	INITIAL WGT (g)	FINAL VOL (mL)	COMMENT	STANDARDS\ REAGENTS
1	QC	MB	MB 2128031	2128031	5.00	1.0		PFAC24 (LCS) Spike - 25ul
2	QC	LCS	LCS 2128032	2128032	5.00	1.0		012-98-4
3	QC	LCSD	LCSD 2128033	2128033	5.00	1.0		MPFAC (EIS) Spike - 50ul
4	4769	SAMP	SMP 1, EXP 12C	22012227901	0.66	1.0	5000X serial dilution	016-1-2
5	4769	SAMP	SMP 2, EXP 12T	22012227902	0.51	1.0	500X serial dilution	Inst IS Spike - 10ul
6	4769	SAMP	SMP 3, EXP 13C	22012227903	0.73	1.0	5000X serial dilution	012-99-5
7	4769	SAMP	SMP 4, EXP 13T	22012227904	0.57	1.0		Methanol
8	QC	DUP	DUP 2131564	2131564	0.66	1.0	5000X serial dilution	2129773
9	QC	MS	SMP 1, EXP 12C(2127801...	2131565	0.66	1.0	5000X serial dilution	Basic Methanol
10	QC	DUP	DUP 2131566	2131566	0.51	1.0	500X serial dilution	016-5-9
11	QC	MS	SMP 2, EXP 12T(2127802...	2131567	0.51	1.0	500X serial dilution	
12	QC	DUP	DUP 2131568	2131568	0.73	1.0	5000X serial dilution	
13	QC	MS	SMP 3, EXP 13C(2127803...	2131569	0.73	1.0	5000X serial dilution	WAX/GCB Cartridge
14								2454/1244/G
15								
16								
17								
18								
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20								
21								
22								
23								
24								
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26								
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28								
29								
30								

EQUIPMENT\CONDITIONS

BALANCE ID **BAL23**		

NOTES

Sample preparation includes determination of weight, solvent extraction and centrifugation, cleanup using a WAX/GCB combination cartridge, and evaporation of solvent to <1.0ml. Final volume is adjusted to 1.0ml with methanol.

Pace Analytical®

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CHAIN OF CUSTODY RECORD

Client ID: 4769 - APTIM
SDG: 220122279
PM: AEC

Report To:
Client: Aptim
Address: 17 Princess Road, Lawrenceville, NJ 08648
Contact: Paul Koster van Groos
Phone: (609) 895-5367
Email: paul.kostervangroos@aptim.com

Bill To:
Client: As per PO
Address:
Contact:
Phone:
Email:

Analytical Requests & Method: PFAS by LCMSMS

Custody Seal: Used: ☐ Yes ☐ No; Intact: ☐ Yes ☐ No
Temperature: 5.2 E34

☐ Dissolved Analysis Requested
☐ Field Filtered
☐ Lab Filtered

P.O. Number: 206881
Project Name/Number: IDW
Sampled By: Paul Koster van Groos / Chuck Condee

Matrix[1]	Date	Time (2400)	Comp	Grab	Sample Description	No. of Containers	PFAS by LCMSMS	Preservative / Notes	GCAL ID
S	05/27/20	01:00		X	Smp 1, Exp 12C	1	x	~0.65 g IDW w/expected PFBS/PFHxs/PFOS/PFHpA/PFOA/PFNA ~1 mg/g	1
S	05/27/20	02:00		X	Smp 2, Exp 12T	1	x	~0.5 g IDW w/expected PFBS/PFHxs/PFOS/PFHpA/PFOA/PFNA <0.1 mg/g	2
S	06/04/20	11:00		X	Smp 3, Exp 13C	1	x	~0.7 g IDW w/30 mg/g Ca(OH)2 and expected PFBS/PFHxs/PFOS/PFHpA/PFOA/PFNA ~1mg/g	3
S	06/04/20	12:00		X	Smp 4, Exp 13T	1	x	~0.55 g IDW w/30 mg/g Ca(OH)2 and expected PFBS/PFHxs/PFOS/PFHpA/PFOA/PFNA <0.05 mg/g	4
—	—	—			—Line Skipped—	---		—	
L	05/27/20	01:00		X	Smp 5, Exp 12, Imp 1a Rep A,B	2 x 125 mL	x	2 for sample: expected PFAS < 200 ng/L	5
L	05/27/20	03:00		X	Smp 6, Exp 12, Imp 3a Rep A-F	6 x 125 mL	x	2 for sample, 2 for MS, 2 for MSD: expected PFAS < 200 ng/L	6,7,8
L	06/04/20	11:00		X	Smp 7, Exp 13, Imp 1a Rep A,B	2 x 125 mL	x	2 for sample: expected PFAS < 200 ng/L	9
L	06/04/20	13:00		X	Smp 8, Exp 13, Imp 3a Rep A,B	2 x 125 mL	x	2 for sample: expected PFAS < 200 ng/L	10

Airbill Number:

Turn Around Time(Business Days): ☐ RUSH* ___ Days ☑ Standard (per contract/quote)

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
Paul Koster van Groos	7/1/20	UPS	
UPS	11/23/20 1200	[signature]	11/23/20 1200

Notes:
PFAS list per PO SOW

[1] Matrix: W = Water, S=Solid, L=Liquid, T=Tissue

* - Requires prior approval. Rush charges may apply.

We cannot accept verbal changes. Please email written changes to your PAGC Project Manager.

SAMPLE RECEIVING CHECKLIST

220122279

SAMPLE DELIVERY GROUP 220122279	
Client 4769 - APTIM **PM** AEC	**Transport Method** UPS
Profile Number 289760	**Received By** McCune, Dodie N.
Line Item(s) 1 - S-537 Table 1 list; 2 - W-537 Table 1 list	**Receive Date(s)** 12/22/20

CHECKLIST	YES	NO
Samples received with proper thermal preservation?	☑	☐
Radioactivity is <1600 cpm? If no, record cpm value in notes section.	☑	☐
COC relinquished and complete (including sampleIDs, collect times, and sampler)?	☑	☐
All containers received in good condition and within hold time?	☑	☐
All sample labels and containers received match the chain of custody?	☑	☐
Preservative added to any containers?	☐	☑
If received, was headspace for VOC water containers < 6mm?	☑	☐
Samples collected in containers provided by Pace Gulf Coast?	☐	☑

COOLERS

Airbill	Thermometer ID: E34	Temp °C
		5.2

DISCREPANCIES

None

LAB PRESERVATIONS

None

NOTES

17 Princess Rd
Lawrenceville, New Jersey 08648
Tel: 609/895-5357
Fax: 609/895-1858

Limited Chemistry Deliverables

Prepared for
IR&D

Lab ID
RD2784

Project Number: 501150

Samples Received
2-Jun-20

Reported
4-Jun-20

Paul Hedman **Date**
Laboratory Director

1.0 Chain of Custody

2.0 Sample Results

APTIM
Analytical and Treatability Laboratories

17 Princess Road
Lawrenceville, New Jersey 08648
Tel; 609/895-5370
Fax: 609/895-1858

Sample Information			
Lab ID	**RD2784**	**Date Sampled**	06/02/2020
		Date Received	06/02/2020
Matrix	*Aqueous*	**Date Analyzed**	06/03/2020

Limited Chemistry

Lab ID		*PFHpA*	*Q*	*PFOA*	*Q*	*PFNA*	*Q*	*PFBS*	*Q*	*PFHxS*	*Q*	*PFOS*	*Q*	*Units*	*PQL*	*Dilution Factor*	*Method Code*
std	20ppb	20.91		19.36		19.92		20.17		20.17		20.17		mg/L	0.05	1.0	ATL073
RD2784- 1	Impinger 1A	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2784- 2	Impinger 1B	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2784- 3	Impinger 2A	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2784- 4	Impinger 2B	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2784- 5	Impinger 3A	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2784- 6	Impinger 3B	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2784- 7	Impinger 4A	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2784- 8	Impinger 4B	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2784- 9	Con 1st Wash	11.26		33.23		21.58		20.65				23.55		mg/L	0.05	1.0	ATL073
RD2784- 10	Con 2nd Wash	1.12		3.59		2.63		1.44				2.75		mg/L	0.05	1.0	ATL073
RD2784- 11	Con 3rd Wash	0.16		0.31		0.25		0.13				0.15		mg/L	0.05	1.0	ATL073
RD2784- 12	Exp 1st Wash	0.05	U	0.05	U	0.05	U	3.14		1.40		2.61		mg/L	0.05	1.0	ATL073
RD2784- 13	Exp 2nd Wash	0.05	U	0.05	U	0.05	U	0.56		0.21		0.23		mg/L	0.05	1.0	ATL073
RD2784- 14	Exp 3rd Wash	0.05	U	0.05	U	0.05	U	0.15		0.05		0.07		mg/L	0.05	1.0	ATL073
RD2784- 15	Con Boat	0.04		0.12		0.07		0.14		0.05	U	0.08		mg/L	0.05	1.0	ATL073
RD2784- 16	Test Boat	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.02		mg/L	0.05	1.0	ATL073
RD2784- 17	Tube Wash	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073

Combination of co-eluted PFOA/PFHxS peaks.

Concentrations are below PQL

Impinger volumes were 20 mL

1st and 2nd wash volumes were 45 mL, 3rd wash and boat volumes were 50 mL

Tube wash volume was 200 mL

APTIM

17 Princess Rd
Lawrenceville, New Jersey 08648
Tel: 609/895-5357
Fax: 609/895-1858

Limited Chemistry Deliverables

Prepared for
IR&D

Lab ID
RD2787

Project Number: 501150

Samples Received
9-Jun-20

Reported
12-Jun-20

Paul Hedman	**Date**
Laboratory Director	

1.0 Chain of Custody

2.0 Sample Results

APTIM
Analytical and Treatability Laboratories

17 Princess Road
Lawrenceville, New Jersey 08648
Tel; 609/895-5370
Fax: 609/895-1858

Sample Information			
Lab ID	**RD2787**	**Date Sampled**	06/09/2020
		Date Received	09/09/2020
Matrix	*Aqueous*	**Date Analyzed**	06/10/2020

Limited Chemistry

Lab ID		*PFHpA*	*Q*	*PFOA*	*Q*	*PFNA*	*Q*	*PFBS*	*Q*	*PFHxS*	*Q*	*PFOS*	*Q*	*Units*	*PQL*	*Dilution Factor*	*Method Code*
std	20ppb	20.91		19.36		19.92		20.17		20.17		20.17		mg/L	0.05	1.0	ATL073
RD2787- 1	Impinger 1A	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2787- 2	Impinger 1B	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2787- 3	Impinger 2A	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2787- 4	Impinger 2B	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2787- 5	Impinger 3A	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2787- 6	Impinger 3B	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2787- 7	Impinger 4A	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2787- 8	Impinger 4B	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2787- 9	Con 1st Wash	21.29		31.03		2.23		91.79				0.91		mg/L	0.05	1.0	ATL073
RD2787- 10	Con 2nd Wash	2.45		19.94		19.69		2.85				24.74		mg/L	0.05	1.0	ATL073
RD2787- 11	Con 3rd Wash	0.31		3.49		4.93		0.09				5.37		mg/L	0.05	1.0	ATL073
RD2787- 12	Exp 1st Wash	0.05	U	0.05	U	0.05	U	2.17		0.46		0.14		mg/L	0.05	1.0	ATL073
RD2787- 13	Exp 2nd Wash	0.05	U	0.05	U	0.05	U	0.05	U	0.06		0.15		mg/L	0.05	1.0	ATL073
RD2787- 14	Exp 3rd Wash	0.05	U	0.05	U	0.05	U	0.05	U	0.01		0.08		mg/L	0.05	1.0	ATL073
RD2787- 15	Con Boat	0.27		0.54		0.25		0.38		0.05	U	0.14		mg/L	0.05	1.0	ATL073
RD2787- 16	Test Boat	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073
RD2787- 17	Tube Wash	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	mg/L	0.05	1.0	ATL073

Combination of co-eluted PFOA/PFHxS peaks.

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