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RPPR Final Report
as of 19-Feb-2019

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Proposal Number: 70483ELREP

Agreement Number: W911NF-17-1-0475

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Final Report for Period Beginning 11-Sep-2017 and Ending 10-Sep-2018

Title: Research Infrastructure for the Study of Novel Atomically Layered 2D materials

Begin Performance Period: 11-Sep-2017

End Performance Period: 10-Sep-2018

Report Term: 0-Other

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STEM Degrees: 3

STEM Participants: 1

Major Goals: A request was made to upgrade infrastructure for the study of “beyond graphene” 2D materials, and the request was granted by the DoD.

The acquired equipment/instrumentation is expected to advance, at Georgia State University (GSU), the fabrication and study of electrical and electro-optic devices realized using atomically thin 2D materials including graphene, boron nitride, and transition metal dichalcogenides such as molybdenum disulfide, molybdenum diselenide, tungsten disulfide, tungsten diselenide, and heterostructures of these 2D systems – material systems with desirable physical properties in the so-called new materials world “beyond graphene.” With provided funds, the group acquired a closed cycled low temperature superconducting magnet system, an atomic force microscope, and a microwave /terahertz source spanning the 170-260GHz band.

Accomplishments: Acquired a closed cycle, liquid helium free, low temperature system with a superconducting magnet

Acquired a modern atomic force microscope

Acquired a 170-260 GHz microwave.terahertz source

Training Opportunities: The PI's group, which consists of 1 postdoc and 6 graduate students, has been fully trained on the new equipment and they really enjoy using it.

Results Dissemination: We informed researchers in the local area about this new capability in the laboratory. Already, there are several researchers from our chemistry department who have shown interest in using the AFM.

Honors and Awards: Nothing to Report

Protocol Activity Status:

Technology Transfer: Nothing to Report

PARTICIPANTS:

Participant Type: PD/PI

Participant: Ramesh Mani

Person Months Worked: 1.00

Project Contribution:

Funding Support:

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as of 19-Feb-2019

International Collaboration:
International Travel:
National Academy Member: N
Other Collaborators:

Research Infrastructure for the Study of Novel Atomically Layered 2D materials

Final Report: 9/2017 – 9/2018
Proposal No. 70483-EL-REP
Agreement Number: W911NF-17-1-0475,

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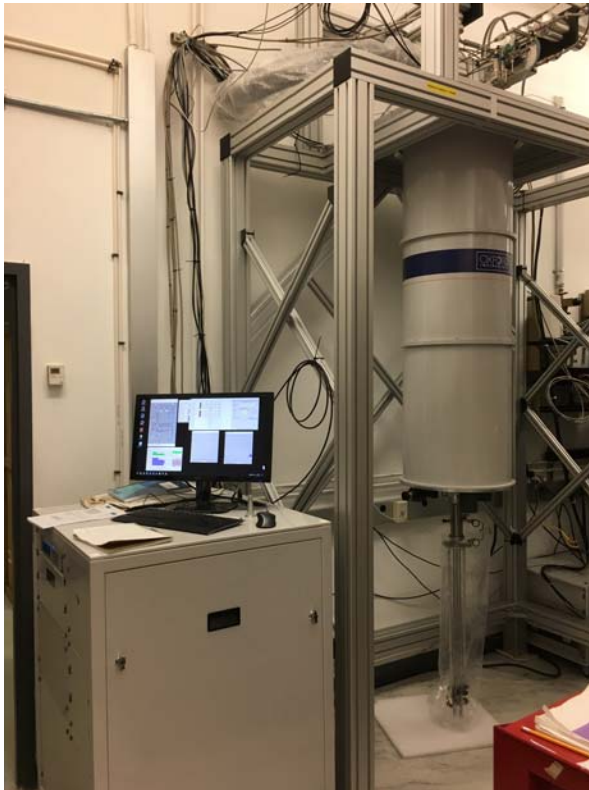


Fig. 1) Closed cycle low temperature dry cryostat with built in superconducting magnet.

On the left, we exhibit the acquired closed cycle low temperature cryostat including a superconducting magnet in Fig. 1.

Fig. 2 illustrates the Park Atomic Force microscope.

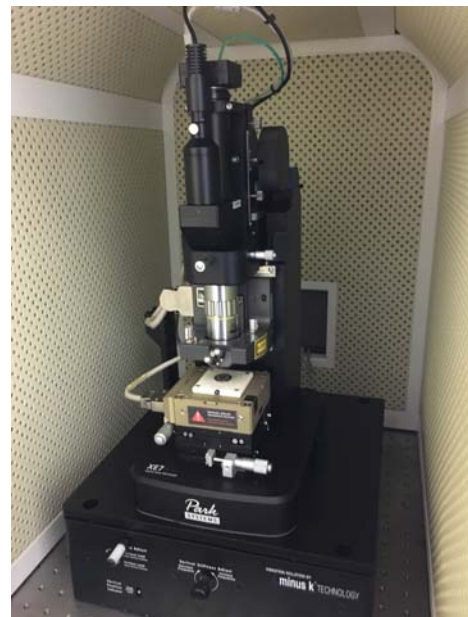


Fig. 2) A Park Atomic Force microscope



The 170-260 GHz microwave source (in gold) is shown within its enclosure on the left.

We greatly appreciate the support and funding provided by the Army Research Office towards the acquisition of this equipment.