NOTICE: When government or other drawings, specifications or other data are used for any purpose other than in connection with a definitely related government procurement operation, the U. S. Government thereby incur no responsibility, nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.
Extractive and photometric determination of titanium by means of N-benzoylphenylhydroxylamine

A photometric determination of titanium in the presence of zirconium is described. The method is based on the formation of a complex with N-benzoylphenylhydroxylamine (beigidron) and extraction of the complex with chloroform. The complex of titanium with N-benzoylphenylhydroxylamine obtained at pH = 1 has a molar ratio of the components of 1 : 2 (i.e., apparently TiO(C_{13}H_{10}O_{2}N)_{2} and, extracted with chloroform from a 2 N HCl solution, a ratio of 1 : 4 corresponding to the formula Ti(C_{13}H_{10}O_{2}N)_{4}. Absorption spectra of the reagent and of the titanium or zirconium complexes were investigated and the molar extinction coefficient of the titanium complex determined with λ = 5,200. Qualitative experiments showed that chloroform solutions of corresponding complexes of aluminum, tin, antimony, tantalum, and tungsten reveal no absorption of light in the visible spectrum, thus they do not disturb this colorimetric titanium determination. The maximum of absorption of the zirconium complex lies in the ultraviolet range. The colour of the extracted titanium complex in chloroform is stable for at least 5 hours. The following procedure is suggested: 100 ml of the solution to be analyzed (2 N corresponding to HCl or H_{2}SO_{4}), containing 0.12 - 1.0 mg titanium is mixed with 2 ml 5% alcoholic solution of N-benzoylphenylhydroxylamine in a separating funnel. Subsequently 10 ml chloroform are added, shaken for 0.5 minute, and the extraction repeated with 1 ml of fresh reagent and chloroform (5 ml) until the extract is colourless. The collected extracts are filtered into a calibrated flask (25 ml), filled to the mark with chloroform, and measured with a blue light filter in a colorimeter. The titanium content is determined by means of a calibration curve. There are 4 figures and 1 table.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. T. G. Shevchenko (Kiyev State University imeni T. G. Shevchenko)

SUBMITTED: December 12, 1961