

Solvent Extraction, Spectrophotometric Determination of Antimony(III) from Real Samples and Synthetic Mixtures Using O-Methylphenyl Thiourea as a Sensitive Reagent

Authors : Shashikant R. Kuchekar, Shivaji D. Pulate, Vishwas B. Gaikwad

Abstract : A simple and selective method is developed for solvent extraction spectrophotometric determination of antimony(III) using O-Methylphenyl Thiourea (OMPT) as a sensitive chromogenic chelating agent. The basis of proposed method is formation of antimony(III)-OMPT complex was extracted with 0.0025 M OMPT in chloroform from aqueous solution of antimony(III) in 1.0 M perchloric acid. The absorbance of this complex was measured at 297 nm against reagent blank. Beer's law was obeyed up to 15 μ g mL⁻¹ of antimony(III). The Molar absorptivity and Sandell's sensitivity of the antimony(III)-OMPT complex in chloroform are 16.6730 \times 10³ L mol⁻¹ cm⁻¹ and 0.00730282 μ g cm⁻² respectively. The stoichiometry of antimony(III)-OMPT complex was established from slope ratio method, mole ratio method and Job's continuous variation method was 1:2. The complex was stable for more than 48 h. The interfering effect of various foreign ions was studied and suitable masking agents are used wherever necessary to enhance selectivity of the method. The proposed method is successfully applied for determination of antimony(III) from real samples alloy and synthetic mixtures. Repetition of the method was checked by finding relative standard deviation (RSD) for 10 determinations which was 0.42%.

Keywords : solvent extraction, antimony, spectrophotometry, real sample analysis

Conference Title : ICCPE 2017 : International Conference on Chemical and Process Engineering

Conference Location : Bali, Indonesia

Conference Dates : October 23-24, 2017