

## Documents

Bashammakh, A.S.

### **Extractive spectrophotometric determination of bismuth(III) in water using some ion pairing reagents**

(2011) *E-Journal of Chemistry*, 8 (3), pp. 1462-1471.

Centre of Excellence in Environmental Studies, King Abdulaziz University, P. O. Box 80203, Jeddah 21589, Saudi Arabia

#### **Abstract**

Two novel and low cost liquid-liquid extraction methods for the separation of bismuth(III) at trace level from aqueous medium have been developed. The two methods were based upon the formation of yellow colored ternary complex ion associates of tetraiodobismuth(III) complex anion,  $\text{BiI}_4^-$  with the ion-pairing reagent 2,3,5-tetraphenyltetrazoliumchloride ( $\text{Tz}^+\cdot\text{Cl}^-$ ) and 1, 10 phenanthroline (Phen) in sulfuric acid medium. The effect of various parameters e.g. pH, organic solvent, shaking time, etc. on the preconcentration of bismuth(III) from the aqueous media by the reagent was investigated. The developed colored complex ion associates  $[\text{Tz}^+\cdot\text{BiI}_4^-]$  and  $[\text{Phen}^+\cdot\text{BiI}_4^-]$  were extracted quantitatively into acetone-chloroform (1:1v/v) and methylisobutylketone (MIBK), respectively. The compositions of the formed complex ion associates  $[\text{Tz}^+\cdot\text{BiI}_4^-]$  and  $[\text{Phen}^+\cdot\text{BiI}_4^-]$  were determined by the Job's method at 500 and 490 nm, respectively. The plots of bismuth(III) concentration (0-17  $\mu\text{g mL}^{-1}$ ) versus absorbance of the associates at 500 and 490 nm were linear with good correlation coefficient ( $R^2=0.998$ ). The developed method of the ion associate  $[\text{Tz}^+\cdot\text{BiI}_4^-]$  two methods was applied successfully for the analysis of bismuth in water.

#### **Author Keywords**

Bismuth determination; Ion associate; Ion pairing; Phenanthroline; Wastewater

**Document Type:** Article

**Source:** Scopus

#### **About Scopus**

[What is Scopus](#)  
[Content coverage](#)  
[What do users think](#)  
[Latest](#)  
[Tutorials](#)

#### **Contact and Support**

[Contact and support](#)  
[Live Chat](#)

#### **About Elsevier**

[About Elsevier](#)  
[About SciVerse](#)  
[About SciVal](#)  
[Terms and Conditions](#)  
[Privacy Policy](#)

