

Extraction Behavior of Trace Amounts of Precious Metals with Crown Ethers

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1999 Fiscal Year Final Research Report Summary

Extraction Behavior of Trace Amounts of Precious Metals with Crown Ethers

Research Project

Project/Area Number

10640586

Research Category

Grant-in-Aid for Scientific Research (C)

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Single-year Grants

Section

一般

Research Field

分離・精製・検出法

Research Institution

Kanazawa University

Principal Investigator

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Crown ether / Precious metal ion / Solvent extraction / Separation analysis

Research Abstract

The effect of various factors (solvent, reagent concentration, crown ether, hydrochloric acid, stripping reagent, shaking time etc.) on the extraction and back-extraction of palladium (II) in hydrochloric acid (1~10 mol/L) and thiocyanate media with dicyclohexyl-18-crown-6 (DC18C6) in organic solvent has been investigated in detail.

On the basis of the results, the recommended procedure is proposed as follows : an aliquot(10 mL) of a sample solution containing palladium(10 μ g/mL) and potassium thiocyanate (0.05 mol/L) in 1 mol/L hydrochloric acid was placed into a 30 mL glass-stoppered centrifuge tube. A 10 mL of chloroform solution containing 0.05 mol/L DC18C6 was added to the centrifuge tube, and the mixtures were shaken on a shaking machine for 5 min. The two phases

were separated by centrifugation at 2000 rpm for 5 min, and then taken by pipetting into another tube. The organic phase (10 mL) containing the extracted palladium was shaken with 10 mL of 0.1 M ammonia buffer (0.1 mol/L NH₄Cl: 0.1 mol/L NH₃ = 1:1) solution for 5 min. The amount of palladium stripped from the organic phase was determined by flame AAS. Palladium in hydrochloric acid and thiocyanate media has been extracted quantitatively in chloroform with DC18C6 as an ion-association species of [K · DC18C6 · Pd(SCN)₂ · 2CHCl₃]. The content of palladium in chloroplatinic acid of guaranteed reagent grade after its separation by DC18C6 extraction was found to be 31.66 μg/g.

Research Products (4 results)

All Other

All Publications (4 results)

[Publications] K. Z. Hossain and T. Honjo: "Extraction Behavior of Platinum(II) in Chloroform with Crown Ether from Acidic Media"Proceedings of ISEC'99 (Society for Chemical Industry, London). (in press). (1999) ▼

[Publications] K. Z. Hossain and T. Honjo: "Separation of Trace Amounts of Palladium(II) with Crown Ether from Hydrochloric Acid and Potassium Thiocyanate Media" Fresenius' Journal of Analytical Chemistry. (in press). (2000) ▼

[Publications] K. Z. Hossain and T. Honjo: "Extraction Behavior of Platinum (II) in Chloroform with Crown Ether from Acidic Media"Proceedings of ISEC'99, (ISEC'99-Solvent Extraction for the 21st Century), Society for Chemical Industry, London. (in press). (1999) ▼

[Publications] K. Z. Hossain and T. Honjo: "Separation of Trace Amounts of Palladium (II) with Crown Ether from Hydrochloric Acid and Potassium Thiocyanate Media" Fresenius J Anal Chem. (in press). (2000) ▼

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