Preconcentration and Characterization of Trace Metals by the Use of Various Absorbents

1989 Fiscal Year Final Research Report Summary

Preconcentration and Characterization of Trace Metals by the Use of Various Absorbents

Research Project

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63470028

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Single-year Grants

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分析・地球化学

Research Institution

Kanazawa University

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Research Abstract

Bismuth (III) was quantitatively adsorbed on thionalide-loaded silica gel from nitric acid solution of lower than 1 M, and was eluted with hydrochloric acid containing 3% thiourea. Then, bismuth was determined by atomic absorption spectrometry with hydride generation in the sensitivity of 0.1 mug l ^<-1>. The mini-column filled with the thionalide-SG (0.1 g) was introduced in a flow injection system. After 15 ml of a sample solution was flowed in the column, 2 M hydrochloric acid containing 5% thiourea was passed through the column and then the absorbance of the Bi-complex was measured by the use of a flow cell.

Poly(chlorotrifluoroethylene) resin adsorbed some metal complexes, such as Cu, Cd, Fe(III), and Zn-8-quinolinolates at pH3-6. The complexes or metals

were eluted with methanol or 0.1 M hydrochloric acid. On the other hand, Cu(II)- 8-quinolinol sulfonate was adsorbed on the resin as an ion-associated complex with tetrabutylammonium cation. The adsorbability seems to increase with the increase of hydrophobic inter- action between the resin and complexes. By the use of these properties, preconcentration of copper from a sample solution added with 8-quinoli- nol sulfonate and tetrabutylammonium cation.
CS_2 was introduced in chitin by the simple method. The chitin-CS_2 quantitatively adsorbed ^<99m> Tc at pH<less than or equal>2.0 by the column method. It was assumed that technetium was reduced to low valence state with CS_2 and formed a complex with S-atom. The direct elution of ^<99m>Tc was seemed to be difficult, however, above 98% of the element could be eluted by heating the chitin-CS_2 retaining ^<99m>Tc in 1 M sulfuric acid containing 0.5 g of peroxodisulfate for 10 min.

Research Products (16 results)

All Other

All Publications (16 results)

[Publications] Chiyoshi Akita,Ken Matsumoto,Kikuo Terada: "Adsorption behavior of transition metal complexes on polychlorotrifluoroethylene resin" Anal.Sci.3. 473-474 (1987)

[Publications] Takaharu Honjo,Hideaki Kitayama,Kikuo Terada,T.Kiba: "Solid-liquid extraction and back extraction of metals with silica-immobilized 8-hydroxyquinoline" Fresenius'Z.Anal.Chem.330. 159-160 (1988)

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[Publications] Akihiko Haruta,Ken Matsumoto,Kikuo Terada: "Determination of trace amounts of bismuth in water by hydride generation atomic absorption spectrometry after preconcentration with thionalide-loaded silica gel" Anal.Sci.5. 319-322 (1989)

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[Publications] 寺田喜久雄(分担)(田中元治,中川元吉 編): "定量分析の化学-基礎と応用-(イオン交換法)" 朝倉書店, 238 (1987)

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[Publications] Hiroyuki Fukuda; Jun Tsunoda; Ken Matsumoto; Kikuo Terada: "Determination of trace amounts of antimony in water by hydride generation AAS after preconcentration with thionalide loaded silica gel" Bunseki Kagaku, 36, 683-687 (1987).

[Publications] Takaharu Honjo; Akiko Okazaki; Kikuo Terada; Toshiyasu Kiba: "Separation and determination of lead(II) with monothiothenoyltrifluoroacetone in benzene by means of back extraction" Fresenius' Z. Anal. Chem., 331, 647 (1988).

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[Publications] Eiich Shirakawa; Takaharu Honjo; Kikuo Terada: "Highly sensitive spectrofluorometry of europium(III) as its benzoyltrifluoroacetone complex with trioctylphosphine oxide by means of solvent extraction and vacuum sublimation" Fresenius' Z. Anal. Chem., 334, 37-40 (1989).

[Publications] Kikuo Terada dt al.: Teiryo Bunseki no Kagaku - Kiso to Ooyo -. Asakura Shoten, 238 (1987)

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