

Preconcentration and separation of trace elements in environmental samples with various sorbents

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1992 Fiscal Year Final Research Report Summary

Preconcentration and separation of trace elements in environmental samples with various sorbents

Research Project

Project/Area Number

03453041

Research Category

Grant-in-Aid for General Scientific Research (B)

Allocation Type

Single-year Grants

Research Field

分析・地球化学

Research Institution

Kanazawa University

Principal Investigator

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Keywords

Preconcentration / DTC-chitin / gold(III) / palladium(II) / ruthenium(III) / iron(II) / cobalt(II) / poly(chlorotrifluoroethylene) resin

Research Abstract

- 1) The preconcentration methods of trace metals with various sorbents, such as activated carbon, porous polymer, chemically modified sorbents and natural polymers, were reviewed.
- 2) A ditiocarbamate-chitin was synthesized and investigated for its adsorption behavior for gold, palladium and ruthenium ions. Gold and palladium were quantitatively retained of DTC-chitin from aqueous solution of 6 M HCl-pH 9, while ruthenium was retained only 40% at pH range 3.0-4.5
- 3) A new method for the preconcentration and determination of a trace amount of lithium in ppb-ppm order in water as its thenoyltrifluoroacetone complex with 12-crown-4 (12C4) has been established by means of synergic extraction and back extraction combined with flame photometry
- 4) A new method of preconcentration and determination of a trace amount of lithium in ppb-ppm levels in water as its thenoyltrifluoroacetone complex with

tributylphosphate has been established by means of extraction and back extraction combined with flame photometry.

5) Adsorption behavior of metal-8-quinolinol sulfonate and - Bismuthiol II on poly(chlorotrifluoroethylene) resin was investigated and the preconcentration of trace metals as their 8-quinolinol and bismuthiol II complexes with the resin has been achieved.

6) Preconcentration method of iron(II) and cobalt(II) as their ferrozine and nitroso-R complexes, respectively, with poly- (chlorotrifluoroethylene) resin has been established. The method was applied to analysis of natural waters for both elements.

Research Products (13 results)

All Other

All Publications (13 results)

- [Publications] Kikuo TERADA: "Preconcentration of trace elements by sorption" Analytical Sciences. 7. 187-198 (1991) ▼
- [Publications] Kikuo TERADA: "Preconcentration of gold(III),palladium(II)and ruthenium(III)with dithiocarbamate-chitin" Analytical Sciences. 7. 71-74 (1992) ▼
- [Publications] Tatsuo ITO: "Separation and determination of lithium as its thenoyltrifluoroacetone complex with 12-crown-4 by means of synergic extraction and flame" Analytical Sciences. 7. 47-50 (1992) ▼
- [Publications] Norio OOKA: "Preconcentration and determination of a trace amount of lithium in water as its thenoyltrifluoroacetone complex with tributylphosphate by means of solvent extraction and flame photometry" Proc.Intern.Solvent Extraction Conf..457-461 (1992) ▼
- [Publications] Takashi YAMAGUCHI: "Preconcentration of trace metals as their complexes on poly(chlorotrifluoroethylene)resin" Analytical Sciences. 8. 851-855 (1992) ▼
- [Publications] Kikuo TERADA(Z.B.Alfassi,C.M.Wai eds.): "Preconcentration Techniques for Trace Elements,Chapter 7.Preconcentration by Sorption" CRC Press Inc.,Boca Raton,FL., 461 (1992) ▼
- [Publications] 寺田 喜久雄(分担執筆): "分析化学ハンドブック" 朝倉書店, 1051 (1992) ▼
- [Publications] Kikuo TERADA: "Preconcentration of trace elements by sorption" Analytical Sciences. 7. 187-198 (1991) ▼
- [Publications] Kikuo TERADA: "Preconcentration of gold(III),palladium(II) and ruthenium(III) with dithiocarbamate-chitin" Analytical Sciences. 7. 71-74 (1992) ▼
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