Author's Accepted Manuscript

www.elsevier.com/locate/talanta

Gas-assisted dispersive liquid-phase microextraction using ionic liquid as extracting solvent for spectrophotometric speciation of copper

Morteza Akhond, Ghodratollah Absalan, Tayebe Pourshamsi, Amir M. Ramezani

PII: S0039-9140(16)30240-5
DOI: http://dx.doi.org/10.1016/j.talanta.2016.04.001
Reference: TAL16483

To appear in: *Talanta*

Received date: 1 February 2016
Revised date: 29 March 2016
Accepted date: 1 April 2016

Cite this article as: Morteza Akhond, Ghodratollah Absalan, Tayebe Pourshams and Amir M. Ramezani, Gas-assisted **dispersive liquid-phase microextractio using ionic liquid as extracting solvent for spectrophotometric speciation o copper**, *Talanta,* http://dx.doi.org/10.1016/j.talanta.2016.04.001

This is a PDF file of an unedited manuscript that has been accepted fo publication. As a service to our customers we are providing this early version o the manuscript. The manuscript will undergo copyediting, typesetting, an review of the resulting galley proof before it is published in its final citable form Please note that during the production process errors may be discovered whic could affect the content, and all legal disclaimers that apply to the journal pertain

ACCEPTED MANUSCRIPT

Gas-assisted dispersive liquid-phase microextraction using ionic liquid as extracting solvent for spectrophotometric speciation of copper

Morteza Akhond, Ghodratollah Absalan*, Tayebe Pourshamsi, Amir M. Ramezani

Professor Massoumi Laboratory, Department of Chemistry, College of Sciences, Shiraz University, Shiraz 71454, Iran

ABSTRACT

Gas-assisted dispersive liquid-phase microextraction (GA-DLPME) has been developed for preconcentration and spectrophotometric determination of copper ion in different water samples. The ionic liquid 1-hexyl-3-methylimidazolium hexafluorophosphate and argon gas, respectively, were used as the extracting solvent and disperser. The procedure was based on direct reduction of Cu(II) to Cu(I) by hydroxylamine hydrochloride, followed by extracting Cu(I) into ionic liquid phase by using neocuproine as the chelating agent. Several experimental variables that affected the GA-DLPME efficiency were investigated and optimized. Under the optimum experimental conditions (IL volume, 50 µL; pH, 6.0; acetate buffer, 1.5 mol L^{-1}; reducing agent concentration, 0.2 mol L^{-1}; NC concentration, 120 µg mL^{-1}; Ar gas bubbling time, 6 min; argon flow rate, 1 L min^{-1}; NaCl concentration, 6% w/w; and centrifugation time, 3 min), the calibration graph was linear over the concentration range of 0.30-2.00 µg mL^{-1} copper ion with a limit of detection of 0.07 µg mL^{-1}. Relative standard deviation for five replicate determinations of 1.0 µg mL^{-1} copper ion was found to be 3.9%. The developed method was successfully applied to determination of both Cu(I) and Cu(II) species in water samples.

Keywords: Gas-assisted dispersive liquid-phase microextraction · Copper speciation· 1-Hexyl-3-methylimidazolium hexafluorophosphate· Neocuproine· UV-Vis spectrophotometery

* Corresponding Author E-mail: gubsulun@yahoo.com; absalan@susc.ac.ir. Tel: +098-71-36137137

Accepted manuscript

Download English Version:

https://daneshyari.com/en/article/7678135

Download Persian Version:

https://daneshyari.com/article/7678135

Daneshyari.com