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CLOUD POINT EXTRACTION PROCEDURE FOR FLAME ATOMIC ABSORPTION SPECTROMETRIC DETERMINATION OF HEAVY METALS IN SURFACE SEDIMENTS OF CHAOHU LAKE, CHINA

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Abstract

A cloud point extraction (CPE) procedure for the simultaneous preconcentration of trace amounts of Cd(II), Pb(II), Cu(II), Co(II) and Ni(II) ions as a prior step to their determination by flame atomic absorption spectrometry (FAAS) has been developed. This developed method is based on the formation of hydrophobic complexes of these metals with the chelating agent 1-(2-thiazolylazo)-2-naphthol (TAN), which then are entrapped "in situ" into micellar media of non ionic surfactant octylphenoxypolyethoxyethanol (Triton X-114). Several important variables that affect the complexation and extraction efficiency were investigated and the analytical characteristics of the method were obtained. The interference effect of some anions and cations was also tested. Under the optimized conditions, the detection limits for three times the standard deviations of the blank were 1.12, 2.78, 0.77, 1.90 and 1.36 µg/L for Cd(II), Pb(II), Cu(II), Co(II) and Ni(II), respectively, were obtained. The proposed method has been successfully applied to the determination of metal ions in surface sediment samples with satisfactory results.

Key words: cloud point extraction, flame atomic absorption, heavy metals, sediment, spectrometry

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