SYNTHESIS AND APPLICATION OF A NOVEL FUNCTIONALIZED SILICA GEL FOR ON-LINE SOLID PHASE EXTRACTION OF Cu(II) FOR DETERMINATION IN WATERS BY FLAME ATOMIC ABSORPTION SPECTROMETRY

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Determination of trace metals in environmental, biological and metallurgical sample is very important. Due to matrix effects and low level of analytes, a preconcentration step is generally needed prior to measurement step by FAAS, GFAAS, ICP-OES and ICP-MS (1-6).

Various techniques including sorption, solvent extraction, co-precipitation and flotation have been used for enrichment trace metal ions (4-6). On-line solid phase extraction based on the sorption of metal ions is a very useful method providing a high preconcentration factor and sampling frequency, short analysis time, low consumption of sample and solvents and etc. (1-3).

In this study, a novel solid phase extractor, N-[3-(3-aminopropyl amino)propyl]-salicylaldimine bonded silica gel was synthesized, characterized and tested for on-line preconcentration of Cu(II). The proposed method was optimized by investigating several factors such as pH, sample and eluent flow rate, eluent type and concentration, loop volume and matrix ions.

The optimized on-line solid phase extraction procedure was validated using certified water samples and applied for the determination trace level of Cu(II) in environmental waters collected from Sakarya, Turkey.

KEYWORDS: On-line preconcentration, Trace analysis, Copper, Chelating resin, Modified silica gel.

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