Striking Selectivity of DEBT for Preconcentration of Gold in Ore Sample from Lefke

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A simple and low cost method for selective preconcentration of gold in ore samples has been developed. The high selectivity is achieved with the use of N,N-diehtyl-N'-benzoylthiourea (DEBT) as chelating agent. The analyte ion after separation and preconcentration was determined by flame atomic absorption spectrometry.

In the present study, sorption behaviour of gold with DEBT impregnated resin under optimized conditions, stirring time, pH, desorption of metal and metal ion capacity of the resin has been studied in batch process. The gold ion capacity of the resin is calculated as 0.17 mmol g/resin. Then sorption-desorption and selective preconcentration studies were examined using metal chelates prepared in column process under optimized conditions; pH, flow rate, volume of sample solution, nature of eluent, flow rate and volume of eluent.

a: Piles (300,000 tones) from CMC Copper Ore

Under the optimized conditions, gold ions at the concentration of 0.015 μg/mL with a preconcentration factor of 6.7 could be determined by FAAS. In order to demonstrate the accuracy of the proposed method, it was applied to analysis of real sample supplied from CMC-Cu ore, Lefke. Satisfactory results were obtained with a RSD of 7.6%. The proposed method is highly selective without the need for any interference elimination process.