

Thesis Title Determination of Elements in Water Samples by
Neutron Activation Analysis Using Cf-252 after
Preconcentration by Coprecipitation

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M.S. Chemistry

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Abstract

Preconcentration of manganese and arsenic ions in natural water sample by coprecipitation with iron(III)hydroxide or lead(II)sulfide has been employed and then the elements were analysed by neutron activation analysis (NAA) using Cf-252 as a neutron source. The optimized preconcentration procedure has been investigated. It was found that for coprecipitation on iron(III)hydroxide, the optimum conditions were those using 70 mg iron(III) adding to a 100 cm³ water sample and adjusting pH to 9.0 for manganese and pH 8.5 for arsenic using NH₄OH and HNO₃. The percent recoveries of manganese and arsenic were in the range of 88.2-92.4 and 73.4-83.7 respectively. The results obtained from reference water samples coprecipitated agreed with

those from atomic absorption spectroscopy (AAS). The minimum detection limits for manganese and arsenic ions were 2.5 ppm and 2.0 ppm respectively. Preconcentration of both elements on lead(II)sulfide did not give satisfactory results.