Determination of Arsenic in Water by ETA-AAS

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Contamination of soils and and waters with arsenic occurs as a result of a number of industrial activities such as treatment of industrial waste, fertilizers, pesticides, mining, smelting and combustion incineration processes.

On the other hands, the low levels of As in these matrices need the very sensitive methods such as graphite furnace atomic absorption spectrophotometry (GF-AAS). In analysis with GF-AAS of As, chemical matrix modifiers should be used to stabilize the analyte to higher temperatures and enable the removal of interfering compounds before analyte atomization.

In this study, different chemical matrix modifiers were studied for As determination in water samples. The studied matrix modifiers include the nitrate salts of palladium, nickel, iron, calcium and magnesium and their mixtures. The water samples were obtained from the environment of Elbistan thermoelectric power plant, plant of Maden copper mining, plant of ferrochrome and Hazar lake in Turkey. As matrix modifier, palladium nitrate was preferred because of best results with its using. The arsenic concentrations were found in range of 0.7-1.86 ng/ml.