Turkish Journal of Chemistry

Turkish Journal

of

Chemistry

Anodic Stripping Voltammetric Determination of Gold on a Polyvinylferrocene Coated Glassy Carbon Electrode

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Keywords
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Abstract: The anodic stripping voltammetric determination of gold was accomplished on a chemically modified glassy carbon electrode in a solution containing chloride ions. A modifying polymer, polyvinylferrocene, was coated by immersing the glassy carbon surface in its solution in methylene chloride followed by solvent evaporation. Tetrahalo complexes of gold, tetrachloroaurate(III) and tetrabromoaurate(III) ions, were found to be reduced to metallic gold by chemical reduction during immersion of the polymer coated electrode into the solution containing aurate(III) ions. This reaction was utilized as means of preconcentration without the need for cathodic electrolysis prior to the anodic stripping of metallic gold. The effects of the preconcentration period, film thickness and the presence of Cu(II) ions as possible interferants were investigated.

Key Words: Polyvinylferrocene, modified electrode, gold determination, anodic stripping voltammetry, tetrahalo complexes of gold

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Turk. J. Chem., **28**, (2004), 287-298.
Full text: pdf
Other articles published in the same issue: Turk. J. Chem.,vol.28,iss.3.