

Anodic Stripping Determination of Selenium in Seawater Using an Electrode Modified with Gold Nanodendrites/Perforated Reduced Graphene Oxide

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Anodic stripping voltammetric determination of selenium was successfully and effectively performed using an electrode modified with gold nanodendrites/perforated reduced graphene oxide (AuNDs/P-rGO), which was synthesized via a facile electrochemical deposition route. The compositions of the AuNDs/P-rGO were characterized by Scanning electron microscopy. The experimental parameters of the Se(IV) accumulation, Se(IV) potential, the gold deposition time and the interference by other ions were discussed in detail. The linear range of selenium at the AuNDs/P-rGO modified electrode was from 3 nM to 300 nM, with a detection limit of 0.9 nM under optimized conditions. The proposed electrode showed satisfactory results in both real seawater samples and standard artificial seawater samples with different salinities.

Keywords: Electrochemical deposition; square wave voltammetry; Se(IV); seawater; spiked seawater sample

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