

## Electrochemical co-detection of Arsenic and Selenium on a Glassy Carbon Electrode Modified with Gold Nanoparticles

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In this paper, an electrochemical sensor based on anodic stripping voltammetric technique was prepared for the co-detection (simultaneous detection) of As(III) and Se(IV) in water. A glassy carbon electrode was modified with gold nanoparticle (AuNPs) via electrodeposition by cycling from -400 mV to 1100 mV and used as the substrate. The presence of AuNP on the electrode enhanced both the stripping current and peak resolution for both arsenic and selenium. The deposition potential, pH and choice of electrolytes were optimised. A detection limit of 0.15 ppb (As(III)) and 0.22 ppb (Se(IV)) was obtained with good reproducibility. The method was applied to real water sample and validated with inductively coupled plasma – optical emission spectroscopy.

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**Keywords:** arsenic; selenium; gold nanoparticle; electrochemical co-detection; anodic stripping voltammetry

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