

Scalable synthesis of CoAu/rGO nanocomposite for sensing of As³⁺ ions in acidic media

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One of the most toxic heavy metals present in water is arsenic (As), which is why it is necessary to regularly monitor its content in drinking water[1]. In this work, a CoAu/rGO nanocomposite was synthesized by a scalable method and investigated for the detection of As ions in acidic media using anodic strip voltammetry. First, the operational parameters (deposition potential, $E_d = -0.3$ V and deposition time, $t_d = 60$ s) were optimized in 1 mM NaAsO₂ in 1 M HCl, after which the limit of detection (LOD) was determined in a wide range of concentrations from 30 to 1000 μ M. In the mentioned range, shown in Figure 1, two areas of linearity were obtained (for low and high concentrations). Low LOD of As³⁺ of 3.06 μ M was determined for the low-concentration region (30-90 μ M).

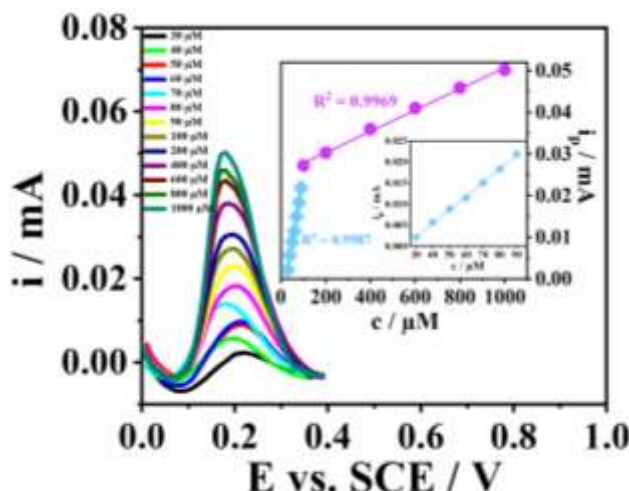


Figure 1. Voltammograms of CoAu/rGO electrode in 1 M HCl with increasing concentrations of As³⁺ with the corresponding standard addition plots in inset.

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References

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