Synthesis of N-doped Graphene for Simultaneous Electrochemical Detection of Lead and Copper in Water

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In the study, glassy carbon electrode (GCE) modified by nitrogen doped graphene (N-GE) is employed to simultaneously determine copper & lead in an electrochemical approach that features favorable sensitivity and speed. In comparison to original GCE, GCE modified by N-GE exhibited remarkably boosted electrochemical activity as for square wave anodic stripping voltammetry. The detection range of copper exhibited in reduced graphene oxide (RGO) modified GCE was wide from 0.05 to 2.5 μM , with a detection limit of 11 nM, while that of lead was from 0.05 to 2.5 μM with a detection limit of 5 nM. Besides, the proposed sensor was significantly reproducible with a desirable performance in anti-interference.

Keywords: Graphene; Doping; Electroanalysis; Heavy metal ions; Lead; Copper

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