Short Communication

Hydrothermal Fabricated Ag Nanoparticles-decorated Reduced Graphene Oxide Composite for H₂O₂ Electrochemical Detection

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Composite made up of silver nanoparticles and reduced graphene oxide (AgNPs-rGO) has been successfully prepared through a simple one-pot hydrothermal method using sodium borohydride as reducing agent. The structure and morphology of AgNPs-rGO have been characterized by XRD, FTIR, Raman and TEM techniques. It was observed that this composite material shows good catalytic activity for the electrochemical detection of hydrogen peroxide (H₂O₂). In the H₂O₂ concentration range of 1.0×10⁻⁶–1.2×10⁻³ mol/L, the electrochemical current of AgNPs-rGO/CPE increases linearly with the concentration of H₂O₂ (R² = 0.9974). The results show that the prepared AgNPs-rGO has good stability and performance reproducibility for H₂O₂ detection based on electrochemical analysis.

Keywords: Reduced graphene oxide; Silver nanoparticles; Hydrogen peroxide; Electrochemical detection, Hydrothermal synthesis

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