

Planar Electrodes, Modified with Gold and Carbon Nanomaterials, as Sensitive Elements of H_2O_2 Voltammetric Sensors

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Sensitive element of hydrogen peroxide amperometric sensor based on planar carbon electrodes (PCE), modified with gold particles and composite film silica-carbon nanomaterials has been developed. The combination of gold particles and composite film SiO_2 -multi-wall carbon nanotubes (MWCNTs) as a PCE modifiers allows to detect H_2O_2 by its oxidation current in the concentration range of 10^{-5} - 10^{-3} M with the detection limit of $7.0 \cdot 10^{-6}$ M, which is one order lower than for PCE. A tenfold excess of ascorbic acid and other strong reductants interfere H_2O_2 determination. Using of PCE, modified with SiO_2 -CFO film, where CFO–nanoparticles of carbon fluorooxide allows to detect hydrogen peroxide by its reduction current, that significantly improves a selectivity. The highest sensitivity and linear range of calibration graph for H_2O_2 determination were obtained for PCE- SiO_2 -CFO.

Keywords: planar electrodes, silicon oxide, sol-gel, voltammetry, carbon nanoparticles, gold particles
