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VI/1

Determination of glucose using polyaniline modified electrode

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Sensor electrode was formed by immobilization of glucose oxidase (GOx) on polyaniline (PANI), electrochemically synthesized on graphite electrode from aqueous hydrochloride acid electrolyte containing aniline monomer by galvanostatic method. Optimization of the current density used for the synthesis of PANI was performed. Immobilization of GOx was achieved by crosslinking via glutaraldehyde and the efficiency of the immobilization was determined spectrophotometrically. Using chronoamperometric curves of glucose oxidation on polyaniline apparent Michaelis constant was estimated to be 0.273 mM. The storage stability of the enzyme electrode was examined for twenty days, after which it retained 84% of its initial signal.

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Oxygen reduction on polycrystalline Au modified by nanosized Pd islands

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Oxygen reduction reaction was studied on polycrystalline gold, Au(poly), modified by nanosized palladium islands. Linear sweep voltammetry measurements were performed using rotating Au-disk electrode in oxygen saturated 0.05 M H₂SO₄ solution. Morphology of obtained Pd/Au(poly) electrodes was characterized by tapping-mode atomic force microscopy, after each deposition from Pd containing solution. Only homogeneous distribution of deposited Pd islands nonuniform in size is observed. Active surface area of the deposited Pd was estimated from cyclic voltammetry profiles. Obtained Pd/Au(poly) surfaces have shown a significant catalytic activity towards oxygen reduction reaction which increases with the increase of the active surface area.