

عنوان مقاله:

Fabrication of an Amperometric Glucose Biosensor Based on a Prussian Blue/Carbon Nanotube/Ionic Liquid Modified Glassy Carbon Electrode

محل انتشار:

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خلاصه مقاله:

An amperometric glucose biosensor was developed based on synergistic contributions of prussian blue (PB) and a bucky gel (BG) consisting of carbon nanotubes (CNTs) and ionic liquid (IL). The PB nanoparticles were first deposited onto the surface of a BG modified glassy carbon (GC) electrode (BG/GC). Then, the Ni²⁺ ions were electrochemically inserted into the PB lattice to improve its stability at physiological pH. Afterwards, Glucose oxidase (GOx) was immobilized on the BG/GC electrode using a cross-linking method. Amperometric measurements of glucose were performed at -0.05 V vs. Ag/AgCl in 0.05 M phosphate buffer solution at pH 7.4. The glucose biosensor exhibited a sensitivity of 45.03 $\mu\text{A}/(\text{mM}\cdot\text{cm}^2)$ with a detection limit of 5×10^{-7} M. The amperometric response was linear in the range of 5×10^{-7} to 8.3×10^{-4} M.

کلمات کلیدی:

Glucose, Biosensore, Nanoparticle, Carbon Nanotube, Ionic Liquid

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