

عنوان مقاله:

An electrochemical method for the detection of hydrogen peroxide using glassy carbon electrode modified with Cu/Fe layered double hydroxide@Fe₃O₄ nanoparticles

محل انتشار:

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خلاصه مقاله:

Hydrogen peroxide (H₂O₂) is widely used in food, medicine, cosmetics, industry, and water treatment applications [1-2]. It can be toxic at higher concentration because of the oxidizing and corrosive nature. In this work, a novel electrochemical sensor based on Cu/Fe layered double hydroxide@Fe₃O₄ nanoparticles has been successfully fabricated and used to H₂O₂ detection. The prepared LDH nanocomposite was characterized by scanning electron microscopy (SEM), X-ray diffraction (XRD), cyclic voltammetry (CV), and differential pulse voltammetry (DPV). Then, the LDH nanocomposite was immobilized on glassy carbon electrode and its electrocatalytic activity for H₂O₂ reduction was studied. Factors which affect the electrocatalytic activity (modifier amount, pH of solution, and analysis time) have been investigated. Under the optimized conditions, the H₂O₂ reduction current was linear to its concentration within the range of 10 – 400 μM, and the detection limit was found to be 3 μM (S/N = 3). Finally, the prepared sensor has been successfully applied to determine the H₂O₂ content in human urine samples

کلمات کلیدی:

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