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Siamak Kiani Shahvandi , Hamid Ahmar ,
Seyed Jamal Tabatabaei Rezaei

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Palladium nanoparticles immobilized on polymer-functionalized magnetic nanoparticles for the determination of hydrogen peroxide

Siamak Kiani Shahvandi^a, Hamid Ahmar^{*a}, Seyed Jamal Tabatabaei Rezaei^b

^a Department of Chemistry, Faculty of Science, University of Zabol, P.O. Box 98615-538, Zabol, Iran

^b Department of Chemistry, Faculty of Science, University of Zanjan, PO Box 45195-313, Zanjan, Iran

* Corresponding author Tel:+985431232186; fax:+985431232180; e-mail:h.ahmar@yahoo.com,
h.ahmar@uoz.ac.ir

Abstract

In this paper, the application of palladium nanoparticles supported on hyperbranched poly(ethylene glycol)-block-poly(citric acid)-functionalized Fe₃O₄ magnetic nanoparticles (Pd@PCA-b-PEG-Fe₃O₄) were evaluated as a new electrocatalyst in electrochemical sensing. The Pd@PCA-b-PEG-Fe₃O₄ was immobilized on the surface of a glassy carbon electrode (GCE) for the electrochemical reduction of hydrogen peroxide (H₂O₂). This electrode material was characterized by scanning electron microscopy (SEM), the transmission electron microscopy (TEM), cyclic voltammetry (CV), and differential pulse voltammetry (DPV). The Pd@PCA-b-PEG-Fe₃O₄ showed good electrocatalytic activity toward the reduction of H₂O₂ in the neutral phosphate buffer solution (pH 7.0). Moreover, the potential utility of the sensor was

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