Ultrathin NiOOH Nanosheets Directly Assembled on Reduced Graphene Oxide Surface as Electrocatalyst for Oxidation of Glucose and Reduced Glutathione

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The aqueous NiOOH with ultrathin nanosheets structure were prepared using a hydrothermal strategy and characterized by atomic force microscopy (AFM), X-ray diffraction (XRD) and scanning electron microscopy (SEM). It was modified on electrochemically reduced graphene oxide electrode through a self-assembly method to form NiOOH/RGO nanocomposites electrode. SEM, energy-dispersive X-ray analysis and electrochemical impedance spectroscopy were employed to characterize the resultant NiOOH/RGO nanocomposites electrode. To study the electrocatalytic properties of the NiOOH/RGO nanocomposites, glucose and reduced glutathione (GSH) were selected as model small molecules. An favorable electrocatalytic activities of the NiOOH/RGO electrode was obtained toward oxidation of glucose and GSH. The present NiOOH/RGO nanocomposites based amperometric sensor showed a rapid and highly sensitive response to glucose and GSH, which might find promising applications in medical applications, biological fuel cells and diseases diagnosis.

Keywords: Nickel oxide hydroxide nanosheets; Reduced graphene oxide; Electrocatalyst; Glucose; Reduced glutathione

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