PdCo_x/rGO Nanocomposite Electrocatalysts Synthesized by Electrodeposition for Ethanol Electrooxidation in Alkaline Medium

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In this article, a series of PdCo_x metal catalysts deposited on graphene (rGO) as supporting materials were synthesized by electrodeposition. The composition and structure of the as-synthesized PdCo_x/rGO nanocomposite electrocatalysts were characterized by field emission scanning electron microscope, energy dispersive spectroscopy and Fourier transform infrared spectroscopy. Their electrochemical performances for ethanol electrooxidation were examined in alkaline medium. The results indicate that the compositions of the as-synthesized electrocatalysts are close to the metal ion concentration ratios in the precursors. The metal particle sizes of PdCo_x/rGO binary electrocatalysts are smaller than the particle sizes of Pd/rGO and Co/rGO monometallic electrocatalysts. The PdCo_{3.0}/rGO electrocatalyst possesses the highest electrocatalytic activity and best stability for ethanol electrooxidation in alkaline environment.

Keywords: Electrocatalyst, Electrodeposition, Ethanol Electrooxidation, Graphene, Palladium

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