عنوان مقاله:

Metal Oxide/Pt Based Nanocomposites as Electrocatalysts for Oxygen Reduction Reaction

محل انتشار:

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خلاصه مقاله:

Fuel cell is a promising choice for clean energy because of its eco-friendly system, high energy conversion efficiency and high power density. Recently, much of the research work is focused on the system of combining metal oxides to increase the durability and surface area and to reduce the cost. In this study, among the various fabrication methods, we used the precipitation method to synthesis composites Pt/C/SnO2/NiOusing NaBH4 as a reducing agent. XRD and SEM characterizations were carried out to determine the particle size and distribution of the catalysts. Cyclic voltammetry were recorded to evaluate Oxygen Reduction Reaction (ORR). SEM images revealed that Pt/C and metal oxide nanoparticles were uniformly dispersed in the composite catalyst architecture with smaller particle size for composite/Pt/C catalyst compared to Pt/C catalysts. XRD patterns of samples showed peaks characteristic of metal Pt and of rutile and cubic phases for SnO2 and NiO, respectively. The onset potentials for ORR on Pt/C and Pt/C/SnO2/NiO catalysts are 0.28 and 0.21 V, respectively, confirming that later has higher activities than Pt/C. The onset potential for oxygen reduction is shifted to more positive potential for binary metal oxides modified compared to .Pt/C

کلمات کلیدی:

Fuel Cell, Metal Oxide, Precipitation Method, Oxygen Reduction Reaction