

عنوان مقاله:

PdNi electrocatalysts with enhanced catalytic activity for oxygen reduction in acid media

محل انتشار:

یازدهمین سمینار سالانه الکتروشیمی ایران (سال: 1394)

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خلاصه مقاله:

Carbon-supported Palladium-Nickel (PdNi) alloyed electrocatalysts with different Pd/Ni atomic ratios was used for oxygen reduction reaction (ORR), in acid media. This bimetallic catalyst was synthesized via the metallic reductive precipitations of the nitrate precursors with Ethylene Glycol (EG). The characterization of the electrocatalysts using X-ray diffraction (XRD) showed bimetallic nanoparticles having a narrow size ranged 5-3 nm with face-centered cubic (fcc) hexagonal structure. Cyclic voltammograms and polarization curves from rotating-disk electrode measurements showed significantly higher activity on PdNi than observed on Pd catalyst, with a mechanism involving four electrons transfer to water formation. The PdNi/C alloy electrocatalysts are inactive for the adsorption and oxidation of methanol. Therefore, bimetallic alloyed Pd-Ni catalysts can act as a promising methanol-tolerant ORR catalyst in a (direct methanol fuel cell (DMFC).

کلمات کلیدی:

Palladium-Nickel alloy, electrocatalysts, Oxygen reduction reaction, Acid Media, Direct methanol fuel cell

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