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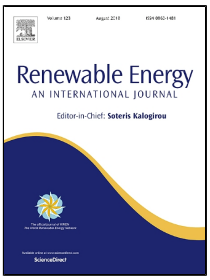

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In situ, one-step and co-electrodeposition of graphene supported dendritic and spherical nano-palladium-silver bimetallic catalyst on carbon cloth for electrooxidation of methanol in alkaline media

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Abstract

In this paper, we report the preparation of graphene supported nano-palladium-silver on carbon cloth (G-PdAg/CC) electrode for electrocatalytic oxidation of methanol in alkaline medium and its performance is compared with graphene supported nano-palladium and silver on CC (G-Pd/CC and G-Ag/CC respectively) electrodes. The G-PdAg composite is prepared for the first time via a completely electrochemical, fast, green and one-step procedure leading to the formation of both dendritic and spherical graphene supported PdAg bimetallic catalysts on a commercially applicable CC electrode. Field emission scanning electron microscopy (FESEM), Transmission electron microscopy (TEM), energy-dispersive X-ray spectroscopy (EDS), X-ray diffraction (XRD) and atomic absorption spectrometry (AAS) are used for physical and elemental characterization of the modified electrodes. Electrochemical characterizations are performed using cyclic voltammetry, chronoamperometry and electrochemical impedance spectroscopy (EIS). The results are indicative of outstanding properties in terms of catalytic activity, stability and resistance toward poisoning reaction intermediates for electrooxidation of methanol in

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