

عنوان مقاله:

Electrocatalytic oxidation of methanol on carbon ceramic electrode modified by platinum nanoparticles dispersed into polyaniline film

محل انتشار:

ششمین کنگره بین المللی مهندسی شیمی (سال: 1388)

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خلاصه مقاله:

Carbon ceramic electrode, a new electrode substrate, was prepared by sol-gel procedure and used for the electropolymerization of aniline and dispersion of platinum nanoparticles into the resulting polyaniline (PANI) film. Aniline monomers were polymerized on carbon ceramic electrode by cyclic voltammetry between -0.2 and 1 V (vs. SCE). Then its surface was potentiostatically coated with Pt nanoparticles at -0.2 V (vs. SCE) in an aqueous solution of 0.1 M H₂SO₄ containing 2 mM H₂PtCl₆. The electrocatalytic oxidation of methanol at this modified electrode (CCE|PANI|Pt) has been investigated by cyclic voltammetry in a 0.4 M methanol + 0.3 M H₂SO₄ solution as supporting electrolyte. The presence of polyaniline film significantly enhances the catalytic oxidation of methanol on carbon ceramic electrode. The effects of various parameters on the electrooxidation of methanol such as, thickness of the polymer film, amount of platinum loadings, medium temperature, working potential limit in anodic direction, and potential scan rate were investigated.

کلمات کلیدی:

Carbon ceramic electrode, Methanol, Platinum, Nanoparticles, Polyaniline

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