

عنوان مقاله:

Investigation of optimum transition time (τ) of highly dispersion of Nickel into polymer matrix of o-aminophenol on graphite modified electrode; electro-oxidation of methanol approach

محل انتشار:

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خلاصه مقاله:

Poly ortho-aminophenol (POAP) was prepared by optimum successive repeated cyclic voltammetry in monomer solution on the surface of a graphite electrode. The electrochemical behavior of the POAP/C electrode has been investigated by cyclic voltammetry in incipient solution without monomer as the supporting electrolyte. Ni (II) ions were interpolating into the electrode by this procedure: immersion of the polymeric modified electrode having amine groups in 0.7 M Ni (II) ion solution. The change of the transition time (τ) of dispersion nickel by a conducting polymer can modify the characteristics of the deposition process and thus the features of the electro-oxidation behavior itself. Consecutive cyclic voltammograms (CV) of a Ni/POAP/C electrode in 0.1 M NaOH solution recorded at a potential sweep rate of 100 mVs⁻¹ given as a requirement Ni⁺² / Ni⁺³ redox couple in alkaline media, Ni sites are considered to be responsible for the electro-oxidation of organic molecules. In view of this work, the electrocatalytic oxidation of methanol on poly (O-Aminophenol) matrix with dispersed nickel particles in alkaline media was undertaken and the results of. Although POAP is non-conducting in alkaline medium but because of its porous nature it is a very good matrix for the dispersion of catalytic particles which are essentially responsible for the electrocatalytic oxidation of methanol in alkaline medium. Adhesion between the polymer and metal layers could be enhanced by chemical fictionalization of the surface polymer chains. In this work we investigated best of transition time (τ) for immerse modified electrode for reason dispersing nickel on a poly(O-Aminophenol) (POAP) modified graphite electrode revealed a strong influence on the process of the conducting strands in a poorly conducting polymeric matrix. Electrocatalytic oxidation of methanol on the surface of modified electrode was investigated with cyclic voltammetry and chronoamperometry methods, and the dependence of the oxidation current and shape of cyclic voltammograms on methanol concentration were discussed. By using the chronoamperometric method, the catalytic rate constants for methanol was estimated.

کلمات کلیدی:

modified electrode, o-aminophenol, methanol, cyclic voltammetry

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