

Electrochemical Properties of a Conducting Film Derived from Iron(II) Tris(diaminopolypyridyl) Complex in the S(IV) Oxoanions Reduction

García, Camilo

Domínguez, Cristian

Aliaga, Alvaro

Matsuhiro, Betty

Mendoza, Leonora

Aguirre, María J.

Isaacs, Mauricio

A new conducting film derived from the complex $[\text{Fe}(\text{diaphen})_3]^{2+}$, (diaphen=5,6-diamino-1,10-phenanthroline) was electropolymerized by cyclic voltammetry onto a glassy carbon electrode. Poly- $[\text{Fe}^{\text{II}}(\text{diaphen})_3]$ was studied by cyclic voltammetry, SEM, UV-vis and micro-Raman spectroscopy. Poly- $[\text{Fe}^{\text{II}}(\text{diaphen})_3]$ shows electrocatalytic activity in HSO_3^- reduction in an ethanol/water solution. Electrocatalysis is centered at the 10 ring of phenanthroline. Rotating disk electrode studies showed a 0.117V/dec Tafel slope, suggesting an EC process where the electrochemical process is the determining step. The chemical step was studied by UV-vis spectroelectrochemistry. Amperometric behavior showed a linear range between 47.5 μM to 417 μM and the LOD was 19.5 μM . © 2011 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.