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Electropolymerization of o-aminobenzoic acid and characterization of the obtained polymer films

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Résumé / Abstract

Poly(ortho-aminobenzoic acid), as a ring substituted derivative of aniline, has been synthesized electrochemically from acid medium on platinum electrode. The reaction parameters such as current density, hydrochloric acid concentration, monomer concentration, temperature, and reaction duration time were investigated. The kinetic study shows that the orders of polymerization reaction are 1.01, 1.33, and 0.41 with respect to hydrochloric acid concentration, monomer concentration, and current density, respectively. The apparent activation energy (E_a) is found to be $134.8 \text{ kJ mol}^{-1}$. The polymer films obtained have been characterized by cyclic voltammetry, X-ray diffraction, elemental analysis, thermogravimetric analysis, scanning electron microscopy, $^1\text{H-NMR}$, and IR spectroscopy. The mechanism of the electrochemical polymerization reaction has been discussed.

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