

Electrochemical Amination of Benzene in Aqueous-Acetic Solutions of Sulfuric Acid

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Abstract — Indirect cathodic amination of benzene with hydroxylamine in the presence of Ti(IV)/Ti(III) mediator system in aqueous media containing 4–11 mol/L H₂SO₄ and 13–5.5 mol/L AcOH has been studied. Aniline, diphenyl, and isomeric phenylenediamines are the electrolysis products at 25–60°C. The increase in temperature favors the formation of the monoamino compound. Aniline yield with respect to hydroxylamine at complete conversion of the latter has reached 78.7%, mass fraction of aniline being 97.1%.

Keywords: cathode, Ti(IV)/Ti(III) mediator system, hydroxylamine, benzene, cation-radical aromatic substitution, aniline

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