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Direct and Indirect Electrochemical Degradation of Acid Blue 111 Using IrO_X Anode

S.Lj. Stupar[1], *B.N. Grgur*[1], *A.E. Onjia*[2], *D.Ž. Mijin*[1,*]

[1] Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11020 Belgrade, Serbia
[2] Vinča Institute of Nuclear Sciences, University of Belgrade, P.O.Box 522, 11001 Belgrade, Serbia
[*]E-mail: BNGrgur@tmf.bg.ac.rs kavur@tmf.bg.ac.rs

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The anthraquinone dye, C.I. Acid Blue 111, was subjected to electrochemical oxidation using an IrOx electrode and sodium sulphate or sodium chloride as electrolytes. The effects of different operating parameters on the rate of dye decolorization, such as applied current, electrolyte concentration, and initial pH were studied. The dye concentration during the study was followed via ultraviolet-visible spectroscopy. The changes in the dye molecule during electrochemical oxidation were analyzed by Fourier Transformation-infrared spectroscopy. The level of mineralization after electrochemical oxidation was established by total organic carbon analysis.

Keywords: sodium chloride; sodium sulphate; UV/Vis spectroscopy; infrared spectroscopy; decolorization

FULL TEXT