A KINETIC MODEL FOR THE CRYSTAL VIOLET MINERALIZATION IN WATER BY THE ELECTRO- FENTON PROCESS

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Abstract

The mineralization of acidic aqueous solutions with 0.166 to 1.333 mM Crystal Violet (CV) in 50 mM Na_2SO_4 as background electrolyte has been studied by the electro- Fenton method, where the oxidizing hydroxyl radicals were produced from the Fenton reaction between added ferrous ions and hydrogen peroxide generated at a oxygen- diffusion cathode. The influence of a new operating factor on the mineralization degree has been investigated: anode material (platinum versus boron doped diamond). Other five factors (pH, Fe (II) dose, current intensity, temperature, and initial concentration of CV) have been kept constant at the optimal values found in a previous work. The kinetic curves have been correlated through a new kinetic model including two pseudo- first order rate constants.

Key words: crystal violet, mineralization degree, BDD anode, experimental study, reaction mechanism, kinetic equation

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