



Enhanced electrochemical degradation of a basic dye with Ti/Ru_{0.3}Ti_{0.7}O₂ anode using flow-cell

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ABSTRACT

The present study focuses on the electrochemical oxidation process to degrade the synthetic dye methylene blue (MB) using a dimensionally stable anode(DSA), namely Ti/Ru_{0.3}Ti_{0.7}O₂. The investigated parameters to optimize the COD and color removal were current density, dye concentration, solution pH, supporting electrolyte and temperature. It was found that the highest MB removal rates were attained using both high NaCl concentrations and high current densities, which is explained by the generation of high reactive oxidants such as chlorine and hypochlorite leading to a more rapid electro-degradation. On the other hand, the temperature and pH had no significant influence on the MB removal. The electrical energy consumption (E_e) increased with increasing applied current. These results have great significance because they have proved the applicability of the electrochemical techniques in the treatment of some dangerous pollutants such as methylene blue since high efficiencies in the removal of this pollutant were obtained.

Keywords: Anodic oxidation; Treatment; DSA;Dye

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