

Kinetics Studies on the Photocatalytic Oxidation of Reactive Dyes

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This study focuses on the photocatalytic oxidation of two reactive dyes (Black 5 and Orange 16) under important operating conditions such as the initial dye concentration, pH, temperature, the intensity of UV lamp, and TiO₂ dosage. The kinetic data of reactive dyes in TiO₂ photocatalytic reactor follow a pseudo-first-order model. As expected, the oxidation efficiency increased with temperature, TiO₂ dosage, and light intensity while decreased with the initial dye concentrations and pH. It was also found that the removal efficiency of reactive dyes was over 99% under the optimal conditions determined in this work.