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KINETIC STUDY ON HETEROGENEOUS PHOTOCATALYTIC DEGRADATION OF REACTIVE ORANGE 16 INTO A SLURRY REACTOR

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Abstract

The photocatalytic degradation of a textile azo dye in a slurry photoreactor with recirculation of the suspension, by heterogeneous photocatalytic processes, was studied in this paper. A simple kinetic model for variation of the photodegradation rate in time was proposed for the investigated system. Characteristics of the reactor were described and its photocatalytic performances in degradation of the studied textile dye under solar illumination were ascertained. The photodegradation of the organic molecule was demonstrated to follow approximately a pseudo-first kinetic order, according to the Langmuir- Hinshelwood model. Study concerning the effect of light intensity revealed a rate dependence rather of square root of the intensity within the investigated range.

Keywords: heterogeneous photocatalysis, slurry reactor, RO16, TiO_2

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