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Solar photocatalytic degradation of azo dye reactive black 5 in aqueous suspension of TiO2

Abstract

Photocatalytic degradation of pollutants under solar light irradiation is an economically viable process and a very promising clean wastewater treatment technology. The aim of this study is to evaluate photocatalytic degradation of Reactive Black 5 (RB5) under natural sunlight irradiation with TiO2 as photocatalyst. The effects of initial concentration of RB5, dosage of TiO2, with/without solar irradiation, with/without air sparging and pH solution were examined. The decolorization rate improved with a higher dosage of TiO2, with sunlight irradiation and air sparging, and under acidic solution. The photocatalytic process not only decolorized the RB5 but also mineralized the intermediate products completely.

Keywords

Azo dye; Photocatalytic degradation; Reactive black 5; Solar irradiation; TiO2