Efficient degradation of methylene blue by magnetically separable Fe₃O₄/chitosan/TiO₂ nanocomposites

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ABSTRACT

In this work, a facile and low-cost method for fabrication of the Fe₃O₄/chitosan/TiO₂ nanocomposites with good adsorptive, photocatalytic, regenerated, and magnetic properties was demonstrated. The synthesized nanocomposites had potential applications for adsorption and degradation of organic pollutants in wastewater. Under the optimal condition, degradation rate of methyl blue by the Fe₃O₄/chitosan/TiO₂ nanocomposites was 93%. The renewable photocatalytic activity of the nanocomposites was also investigated. After multi-run experiments, the reused Fe₃O₄/chitosan/TiO₂ nanocomposites still kept high photocatalytic performance. Thus, Fe₃O₄/chitosan/TiO₂ nanocomposites could serve as convenient, effective, and recyclable photocatalysts.

Keywords: Fe₃O₄/chitosan/TiO₂ nanocomposites; Magnetic property; Photocatalysis; Regeneration

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