

# Fe<sub>2</sub>O<sub>3</sub>/TiO<sub>2</sub> Nanocomposite for Photocatalytic Degradation of Antibiotics

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The resulting water pollution by the use of antibiotics in a wide range of human activities has been receiving special attention in recent years. Moreover, due to the stable naphthacene ring structure of antibiotic and inhibition of microorganisms, antibiotics are hardly removable by conventional water treatment processes. Meanwhile, photocatalytic technology has been described as one of the most promising way to disposal of antibiotics. In this paper, Fe<sub>2</sub>O<sub>3</sub>/TiO<sub>2</sub> nanocomposite were successfully synthesized by co-precipitation method using Fe(NO<sub>3</sub>)<sub>3</sub> · 9H<sub>2</sub>O and Ti(SO<sub>4</sub>)<sub>2</sub> as raw materials. Structural and textural features of the mixed oxide samples were characterized by X-ray diffractometer, field emission scanning electron microscopy and energy-dispersive X-ray. The effects of initial concentration of oxytetracycline (OTC), different competitive ions and organics on the photocatalytic degradation rate of OTC by the Fe<sub>2</sub>O<sub>3</sub>/TiO<sub>2</sub> nanocomposite were analyzed under UV and visible light irradiation. The results indicate that the optimized initial concentration of OTC was 50 mg/L to achieve the best photocatalytic efficiency. Cu<sup>2+</sup>, NH<sub>4</sub><sup>+</sup>, C<sub>3</sub>H<sub>8</sub>O and EDTA in the aqueous suspension were found to suppress the degradation rate of OTC, whereas the effect of NO<sub>3</sub><sup>-</sup> and H<sub>2</sub>C<sub>2</sub>O<sub>4</sub> can be ignored.

