

عنوان مقاله:

Photocatalytic Degradation of Anionic Azo Dyes Acid Orange ۷ and Acid Red ۸۸ in Aqueous Solutions Using TiO₂-containing Hydrogel

محل انتشار:

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خلاصه مقاله:

The photocatalytic degradation of two anionic azo dyes Acid Red ۸۸ (AR ۸۸) and Acid Orange ۷ (AO ۷) was investigated in aqueous solution using a TiO₂-containing hydrogel and UV light. The pH-sensitive hydrogel poly (styrene-alt-maleic anhydride) (PSMA), was synthesized and crosslinked in the presence of melamine and TiO₂ nanoparticles which results in entrapment of TiO₂ into the melamine-grafted PSMA (M-g-PSMA) hydrogel. Potential application of this nanocomposite for removal of azo dyes from wastewater was studied and the effective parameters on degradation process including time, initial pH value of the solutions, temperature and amount of added nanocomposite were optimized. The optimized values for effective parameters are as follows: time: ۳۰ min, initial pH of the solutions: ۵.۳ for AO ۷ and ۵.۳ for AR ۸۸, temperature: ۲۴ °C and amount of added nanocomposite: ۲۵۰ mg. Results showed that in optimum experimental conditions the removal percentages are about ۹۴% for AR ۸۸ and ۷۱% for AO ۷ indicating good removal performance toward the method whilst pH-sensitivity of the nanocomposite facilitates retrieval of nanocatalyst at the end of the reaction.

کلمات کلیدی:

Photocatalytic degradation, Hydrogel, TiO₂, Azo dye, Acid Red ۸۸, Acid Orange ۷

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