

**Application of  $\text{TiO}_2/\text{SAC}$  for azo dye removal from aqueous solution in a fluidized bed photoreactor**

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Photocatalytic degradation of MO by  $\text{TiO}_2$  supported on spherical activated carbon ( $\text{TiO}_2/\text{SAC}$ ) was carried out under UV irradiation in a fluidized bed reactor.  $\text{TiO}_2/\text{SAC}$  was prepared through stabilization, carbonization, and activation process after ion-exchange method. Adsorption characteristic and photocatalytic activity of  $\text{TiO}_2/\text{SAC}$  were evaluated by the adsorption and photocatalytic degradation of methyl orange (MO), which is one of the azo dyes mostly constituting textile effluents. The effects of photocatalyst dosage and light source on the photocatalytic activity of  $\text{TiO}_2/\text{SAC}$  were studied and kinetics of the degradation of MO was also analyzed. The stability of photocatalyst was investigated through repeated use of  $\text{TiO}_2/\text{SAC}$ . The photocatalytic degradation of MO by  $\text{TiO}_2/\text{SAC}$  in the presence of UV light was slowly performed and degradation efficiency was about 98%. The repeated use test for five cycles indicated relatively good photocatalytic stability of  $\text{TiO}_2/\text{SAC}$ .