Immobilization of TiO_2 into polyethersulfone matrix as hybrid film photocatalyst for effective degradation of methyl orange dye

ABSTRACT

A series of polyethersulfone-TiO_2 (PES/TiO_2) film photocatalysts were prepared by a phase inversion technique and subsequently used in the photodegradation of methyl orange dye (MO). The photoactivity of the films increased with increasing TiO_2 content up to 13 wt% (PT-13). The photodegradation of MO followed pseudo first-order kinetics and complete removal of MO was almost achieved in acidic conditions. The PT-13 film was found to retain its high degradation efficiency even after 5 cycles indicating the stability of the film photocatalyst.

Keyword: Titanium dioxide; Polyethersulfone; Immobilization; Photocatalysis; Methyl orange