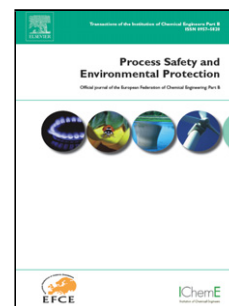


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Photocatalytic degradation of naproxen and methylene blue: Comparison between ZnO, TiO₂ and their mixture

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Highlights

- Photocatalytic efficiencies of ZnO, TiO₂ and 2ZnO-TiO₂ nanopowders were examined.
- The mixture is dominated by the Zn₂TiO₄ phase with fractions of the pristine powders.
- The photocatalytic degradation of a pharmaceutical (NPX) and a dye (MB) was examined.
- The PC activity of ZnO under UV irradiation was higher than the other nanopowders.
- The PC activity of 2ZnO-TiO₂ was found to depend on the type of the pollutant.

Abstract

Photocatalytic (PC) methods based on advanced oxidation processes have shown great potential for removal of water pollutants. Oxide semiconductors stand out as the most promising materials for UV-mediated photodegradation of persistent pollutants in wastewater. Although an immense number of studies have appeared so far concerning the PC activity mostly of TiO₂ but also of ZnO, the efficiency of these and other mixed oxides in degrading a wide range of organic pollutants has not yet been extensively explored. In this work we compare the efficiency of ZnO, TiO₂ and the 2ZnO-TiO₂ mixed crystal prepared by mechanochemical solid-state treatment, to decompose a pharmaceutical (Naproxene) and a

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