

Photocatalytic degradation of aqueous pollutants using silica-modified TiO₂

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Abstract: Photocatalytic degradation (PCD) of several aqueous pollutants was investigated using a porous silica-coated titanium dioxide (SiO₂-TiO₂) photocatalyst. Several cationic, neutral and anionic pollutants were tested. The results indicate that modifying the surface properties of TiO₂ using silica significantly enhances the PCD rate of the cationic pollutants. The rate enhancement decreased with an increase in substrate concentration, especially for the quaternary amines, and was attributed to the decrease in initial adsorption. However, no significant rate-increase resulted for acetate and phenol. Results suggest that the increased presence of cationic pollutants at the catalyst surface caused the rate enhancement. © 2003 Elsevier Ltd. All rights reserved.