

ABSTRACT

The present work concerns the preparation of photocatalytically active TiO₂ nanoparticles, their characterization and study of their photocatalytic properties. The colloidal solution was obtained by hydrolysis of aqueous solutions of TiOSO₄. The samples were lyophilized and the product was annealed at 500 °C, 650 °C, 800 °C and 950 °C. The microstructure, morphology and other characteristics of the products were analysed by several physical and chemical methods: X-ray, EPR, SEM, HRTEM and BET. The measurements of IR, UV/VIS and DTA spectra have also been carried out. Photocatalytic activities were investigated by measurement of kinetics of degradation of 4-chlorophenol or methylene blue aqueous solutions under UV light. Measurement of photocatalytic activity of the samples was compared with the standard Degussa P25. It was found that the efficiency of the samples was higher than the standard.

Keywords:

hydrolysis, titania nanoparticles, microstructure, photocatalytic activity, photocatalytic degradation

