

ABSTRACT

Iron-functionalized TiO₂ were obtained by hydrolysis of aqueous solutions of titanyl sulfate with addition of ferric nitrate with ammonium hydroxide and the reaction filtered and washed with hydrogen peroxide. The colloid solutions thus prepared were lyophilized and the products were subsequently annealed at three different temperatures of 650 °C, 800 °C and 950 °C. The prepared doped materials were characterized by powder X-ray diffractometry, electron microscopy, infrared spectroscopy, Mössbauer spectroscopy, UV/VIS spectroscopy, thermogravimetric analysis and differential thermal analysis, and measurement of the specific surface area. Photocatalytic activity was determined by measuring of the decomposition of kinetics of 4-chlorophenol in an aqueous solution in the ultraviolet and visible area. For comparison of activity in the UV area and in the visible area were used a previously prepared highly photoactive specimen and standard TiO₂ from Kronos, respectively.

Keywords:

Doped titanium dioxide, nanostructure, X-ray diffraction, electron microscopy, Mössbauer spectroscopy, suppression of photoactivity

