

## Abstract

This work presents the successful preparation of titanium dioxide (TiO<sub>2</sub>) by the sol-gel process in the presence of polyethylene glycol with a molecular weight of 200 g/mol (PEG200) and crystallized after treatment with hot water at 90°C. The photocatalytic decolorization of an azo dye model, methyl orange (MO) in aqueous medium was carried out in a reactor with two UV lamps, using titanium dioxide containing PEG200 as catalyst. We investigated the effect of operating conditions such as initial concentration of MO, the initial concentration of TiO<sub>2</sub>, the pH of the solution and the addition of NaCl on the degradation of the dye. It was found that the kinetic of degradation of MO depends on the initial dye concentration and initial concentration of TiO<sub>2</sub>. Moreover, the addition of NaCl did not favor the photodegradation of the dye.