

# Photocatalytic mineralization of azo dye Acid Orange 7 under solar light irradiation

## Abstract

The objective of this study was to investigate mineralization of hazardous water soluble azo dye Acid Orange 7 (AO7) under photocatalytic process. In this experiment, sunlight was used as the source for UV irradiation and titanium dioxide,  $\text{TiO}_2$  as catalyst. The effects of some process variables on decolorization such as amount of  $\text{TiO}_2$ , azo dye concentration and dosage of hydrogen peroxide ( $\text{H}_2\text{O}_2$ ) were examined.  $\text{TiO}_2$ -based photocatalytic degradation is an effective, economic and faster mode of removing azo dye AO7 from aqueous solution. The presence of sunlight enhanced the decolorization rate of AO7 and mineralized the intermediate products completely. The mineralization of AO7 was supported by the UV-Vis and ion chromatography analysis. The addition of proper amount of  $\text{H}_2\text{O}_2$  could optimize the decolorization rate of AO7. The photocatalytic degradation of AO7 followed first-order kinetic model.