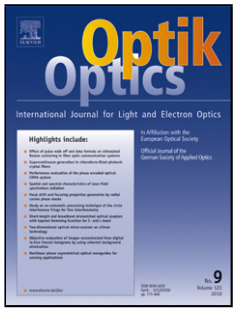

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Heterogeneous photo-Fenton process for degradation of azo dye: methyl orange using a local cheap material as a photocatalyst under solar light irradiation

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Abstract. The study describes a new advanced oxidation process: heterogeneous photo-fenton using a local cheap natural clay as a photocatalyst under a renewable sources of irradiation which is the sun. The selected contaminant Methyl Orange (MO) is an azoïque dye very used in dyeing and printing textiles (textile industries) and often rejected into the aquatic environment. Local clay is characterized by XRD, XR fluorescence, SEM and UV-visible spectrometry in order to determine the gap energy of the clay. The photodegradation process was studied monitoring the change in concentration of organic dye stuff employing UV spectroscopic analysis technique as a function of irradiation time. The degradation was investigated using various parameters such as initials pH, catalyst concentration, concentration of organic dye stuffs.

The results indicate that the photodegradation rate of MO clearly increased in the presence of clay when compared with the direct photolysis for a concentration of substrate of 10^{-4} mol/L, the optimal conditions for a better degradation were obtained for ([clay] = 1 g/L and pH= 3 in the presence of [oxalic acid]=10^{-2} M).

Keywords. Advanced oxidation processes, Heterogeneous photo-fenton, Photodegradation, Methyl Orange, Photocatalyst.