

**PHOTOCATALYTIC DEGRADATION OF CONGO RED DYE
BASED ON TITANIUM DIOXIDE USING SOLAR AND UV LAMP**

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ABSTRACT

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The textile industries produce large volume of wastewater and contain chemical associated with the dyeing process. Azo dyes is one of the chemical used in dyeing process which consist of azo structure that have biodegradation resistance, thus the biological treatment method is unsuitable to degrade it. Photocatalytic degradation by using TiO_2 as catalyst is proven efficient to degrade the dye. Different in type of UV radiation show different percentage of degradation. This experimental was designed to evaluate the effectiveness of degradation toward Congo red dye using TiO_2 as a catalyst in different treatment using solar and UV light. The reaction time was set up to 30 minutes with 5 minutes interval. The result shows that the presence of catalysts and high UV radiation will enhanced the percentage degradation of dye. The percent degradation under UV lamp with absence of TiO_2 was 31.72% and with presence of TiO_2 was 66.99%. When treated under direct sunlight with absence of TiO_2 was 8.09% and with presence of TiO_2 was 64.72%. On different pH value of the dye, the percentage degradation of the dye will decrease in both acidic and alkaline condition. The highest percentage degradation of congo red dye was at pH 7 where treating with UV lamp, the percentage degradation was 35.02% and treating under direct sunlight the percentage degradation was 30.38%. Based on the degradation of the dye measured, the colour intensity of the dye decrease as well as decreasing in absorbance of congo red dye.

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