



Photocatalytic degradation of methylene blue in aqueous suspensions using TiO₂ and ZnO

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ABSTRACT

The non-biodegradability of textile wastewater is mainly due to the presence of synthetic dyes. Resistance to bacterial degradation led to the development of new techniques where solar photocatalysis appears to be the best method for this type of application. methylene blue (MB) degradation was studied in TiO₂ and ZnO aqueous suspension using solar energy in a tubular reactor. This study was conducted to evaluate the performance of the prototype and explore the feasibility of this concept for solar photocatalytic oxidation. The main objective of this work was to compare the efficiency of two types of catalysts, which are titanium dioxide (TiO₂) and zinc oxide (ZnO). The use of TiO₂ as a catalyst enables a good degradation of MB which can achieve a disposal rate of 98% after 270 min with a TiO₂ concentration of 0.75 g/L. The same removal rate can be achieved by ZnO but for a much smaller concentration which was 0.025 g/L after 140 min.

Keywords: Photocatalysis; Methylene blue (MB); Solar energy; Titanium dioxide (TiO₂); Zinc oxide (ZnO)

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