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Studies on Photocatalytic Degradation of Phenol in Waste Water in a Batch Reactor

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Abstract

Heterogeneous photocatalysis is a novel water purification method in the group of advanced oxidation technologies. A dimensionless mathematical model is developed for the photocatalytic degradation in a batch reactor. The model is validated with the experimental results from the photocatalytic oxidation of phenol in batch reactor using titanium dioxide as the photocatalyst. The effect of initial organic concentration, catalyst loading, apparent adsorption constant and reaction rate constant on conversion is predicted. While catalyst loading and pollutant initial concentration showed a strong influence on the conversion, the apparent adsorption and rate constants showed weak influence on the conversion.

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