

## PHOTOCATALYTIC EFFICIENCY OF ZnCr-MIXED METAL OXIDES IN CORRELATION TO REACTION PARAMETERS

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Various organic pollutants are discharged into the water from chemical, textile and pharmaceutical industries every day. The photocatalytic wastewater treatment is an efficient, cheap and eco-friendly process for the removal of organic toxic dyes, such as methylene blue, which is one of the most common toxic dyes in wastewater. Photocatalysts ZnCr mixed oxides were synthesized and thermally treated at 500 and 900 °C. Their efficiency in photocatalytic degradation of methylene blue and the influence of the reaction parameters were studied. High photocatalytic activity of both samples was observed, where the complete decolorization (100%) and partial decolorization (45%) of the aqueous solution of methylene blue were achieved after 6 hours for ZnCr 900 and ZnCr 500, respectively. In order to determine the influence of the pH on the photocatalytic efficiency, the photodegradation reactions were conducted using better performing photocatalyst at different pH values, measuring the photodegradation efficiency at the same time intervals. The optimal pH resulting in the most efficient photodegradation for ZnCr 900 photocatalyst was observed at pH 12, which could be explained by the correlation with different textural and structural properties of photocatalysts. The results showed that the obtained ZnCr mixed oxides are highly efficient in the methylene blue photodegradation and have a great potential for the application in the photocatalytic wastewater treatment processes.

*Keywords: Photocatalytic water purification, Methylene blue, Mixed metal oxides*

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