# A REVIEW ON METAL PHOSPHATE BASED PHOTOCATALYST FOR DEGRADATION OF DYE WASTEWATER

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# A REVIEW ON METAL PHOSPHATE BASED PHOTOCATALYST FOR DEGRADATION OF DYE WASTEWATER

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## ABSTRACT

### A REVIEW ON METAL PHOSPHATE BASED PHOTOCATALYST FOR DEGRADATION DYE WASTEWATER

Many industrial processes today generate waste products such as dyes and most of them are dumped into the environment directly. Organic dyes used textile production are thought to be a significant source of environmental pollution because of their non biodegradability, high toxicity to aquatic animals, and carcinogenic effects on humans. Water contamination and health issues could result from the improper handling of colored wastewater. This wastewater has been treated via various types of physical, chemical, and biological methods. However, most of these processes have limitations, such as the potential to create secondary products, being expensive, taking a long time, and not being able to entirely remove dye color. Thus, a new advanced oxidation process (AOPs) has been developed to remove dyes and other organic pollutants from wastewater. Among the techniques involving AOPs, photocatalysis has come out as a powerful AOP consisting of photocatalytic degradation. Due to their high aspect ratio, which enables a larger active section or area for the photocatalytic reaction, photocatalysts containing semiconducting nanostructures have drawn a lot of attention. A large class of structurally adaptable acidic solids known as metal phosphates exhibit exceptional performance in a wide range of applications have been a promising alternative for the decontamination of wastewaters containing toxic organic pollutants, especially dyes. This critical review deals with the application of silver phosphate ($Ag_3PO_4$), bismuth phosphate ($BiPO_4$) and zinc phosphate $Zn_3(PO_4)_2$ with the recent progress. The photocatalytic degradation of each metal phosphate has been discussed along with mechanism, with respect to the synthesis optimization and surface modification that have been emphasized for further enhancing the photocatalytic activity. Finally, bismuth phosphate ($BiPO_4$) was chosen as the best metal phosphate an accepted as a promising UV-light photocatalyst due to the excellent stability and in some cases, it showed much higher activity than silver phosphates ($Ag_3PO_4$) and zinc phosphate $Zn_3(PO_4)_2$.

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