

Title: $\text{TiO}_2/\text{H}_3\text{PMo}_{12}\text{O}_{40}$ decorated SBA as Photocatalyst for Dye Removal from Wastewater

Masoumeh Taherimehr^{a,*}

^a*Department of Chemistry, Faculty of Science, Babol Noshirvani University of Technology, Babol, Iran*

^{*}*E-mail: m.taherimehr@nit.ac.ir*

Abstract:

The presence of dyes in wastewater is a major environmental concern due to their harmful effects on aquatic life and human health. Therefore, the development of efficient and sustainable methods for the removal of dyes from wastewater is of great importance. Photocatalysis has emerged as a promising technology for the removal of dyes from wastewater due to its high efficiency and low cost. In this study, we report the synthesis and characterization of a new photocatalyst for the removal of dyes from wastewater. The catalyst is composed of $\text{H}_3\text{PMo}_{12}\text{O}_{40}$ immobilized on amine functionalized SBA and decorated with TiO_2 nanoparticles. The catalyst was characterized using various techniques such as FTIR, XRD, SEM, and TEM. The photocatalytic activity of the catalyst was evaluated using methylene blue (MB) as a model dye. The results showed that the catalyst exhibited excellent photocatalytic activity for the removal of MB, with a degradation efficiency of 94% under UV light irradiation for 120 min. The catalyst was found to be stable and reusable for several cycles of MB degradation.

Keywords: photocatalyst, titanium oxide, water treatment, heteropolyacid

References

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