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Characterization and Kinetic Studies on Photocatalytic Degradation of Phenol in Aqueous Solution

Abstract

Recently, many researchers tend to study the performance of hybrid polyoxometalates (HPOM) as photocatalyst due to its greater performance in photocatalytic degradation. The process that based on the light enhanced generation of reactive OH radical that plays an important role in order to convert organic compound completely into water, CO_2 and inorganic compounds. In this research, the photocatalytic degradation of phenol was studied using HPOM as photocatalyst. The HPOM was synthesized and used to study its effect on photocatalytic degradation of phenol. The synthesized HPOM were characterized using SEM and FTIR. It was found that the surface morphology of the synthesized HPOM le displayed an irregular spherical-like shape, granular structure with different size and least distribution of non-agglomerated rod-like nanoparticles. The present of WO_6 octahedral and PO_4 octahedral indicated that Keggin type structure of synthesized hybrid polyoxometalates. The kinetics of photocatalytic degradation of phenol via hybrid polyoxometalates follows pseudo first order kinetic reaction.