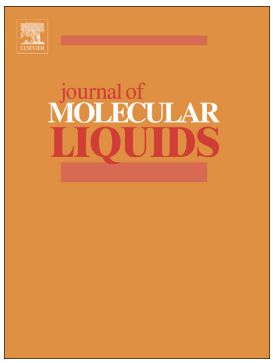

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Synthesis, characterization and photocatalytic activity of TiO_2/ZnO-supported phosphomolybdic acid nanocomposites

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Abstract

Three nanocomposites of phosphomolybdic acid supported on TiO_2 and ZnO nanoparticles were synthesized and characterized by means of FESEM, FTIR and XRD analysis. Photocatalytic activity of the synthesized nanocomposite was investigated for aniline as an organic pollutant model. Relatively, good degradation efficiency above 70% was achieved for all nanocomposites in presence of hydrogen peroxide as electron scavenger.

The kinetic study showed that photocatalytic degradation of aniline followed the Langmuir-Hinshelwood model. Results showed that hydroxyl radicals and holes play an important role in photocatalytic degradation of aniline using synthesized nanocomposites. These results suggested that synthesized nanocomposites could be promising photocatalysts in the removal of aniline from aqueous solutions.

Keywords: heteropolyanions, phosphomolybdic acid, polyoxometalate, photocatalytic activity, aniline, TiO_2, ZnO