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Original Research Article

Highly Efficient Degradation of MTBE by γ -Al₂O₃/NiO/TiO₂ Core-shell Nanocomposite under Visible Light Irradiation

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ABSTRACT

γ -Al₂O₃/ NiO/ TiO₂ as a novel photocatalyst that is active in visible light was synthesized by a simple sol-gel method. The prepared samples were characterized by XRD, DRS-UV/Vis, and TEM analysis. The photocatalytic effect of synthesized samples was examined on methyl tert-butyl ether (as a model hazardous contaminant) degradation. Experimental condition including pH, irradiation time, and photocatalyst mass were optimized. Overall, the UV/Vis spectrophotometry results indicated that the synthesized nanoparticles have an extraordinary photocatalytic activity for the degradation of methyl tert-butyl ether under visible light.

Keywords: photodegradation, nanocomposite, core-shell, titanium dioxide, methyl tert-butyl ether