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Synthesis of TiO₂ and ZnO Nano Composites With Graphene Oxide. Photo Catalytic Reduction and Removal of Chromium (VI) In Aqueous Solution

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ABSTRACT

In this work TiO₂ and ZnO nano-particle composites with Graphene oxide (GO/TiO₂, GO/ZnO) photocatalyst have been prepared by sol-gel method and characterised by Scanning Electron Microscope (SEM), X-ray Diffraction, UV-visible spectroscopy and UV-Visible Diffuse Reflectance Spectra (DRS). These nanocomposites were used in photocatalytic reduction, under UV visible light, of Chromium (VI) which is highly environment polluting and causes human health problems. The GO/ZnO composite showed increased photocatalytic performance in reduction of Cr (VI) with a maximum removal rate of 65 % under UV light irradiation as compared with GO/TiO₂, which has 35 % removal rate. This may be due to the increased light absorption intensity and range as well as the reduction of electron-hole pair recombination in ZnO and TiO₂ with the introduction of GO.

Keywords: Graphene oxide, ZnO, TiO₂, Photocatalytic, Cr (VI).
