

Photodecolorization of Rhodamine B in Aqueous Solution Over Nickel loaded TiO₂/RGO

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Rhodamine B (RhB) is used as model organic dye, as it is the most important xanthene dye. Dye pollutants from the textile industry are an important factor in environmental pollution and RhB degradation mechanism has been studied quite well. In this study, new photocatalyst nickel loaded titanium dioxide with 5% graphene oxide was investigated, applied for the removal of Rhodamine B in aqueous solution. The materials were synthesized through microwave assisted method. The incorporation of nickel in the TiO₂ matrix inhibits the growth of anatase crystallites and suppressed phase transformation. Ni species was also founded to act as electron traps, therefore prevent charge recombination and enhance photocatalytic activity. Properties of catalysts were characterized using N₂ adsorption technique, Energy-Dispersive X-ray Spectroscopy, Raman spectroscopy, Ultraviolet - Visible Spectroscopy, and Field Emission Scanning Electronic Microscopy. Photoreduction of RhB reaction was conducted under visible-irradiation. The results showed that prepared materials have higher adsorbility as well as photocatalytic activity. Hence, nickel plays an important role in improvements properties and activity of TiO₂/RGO-based materials.