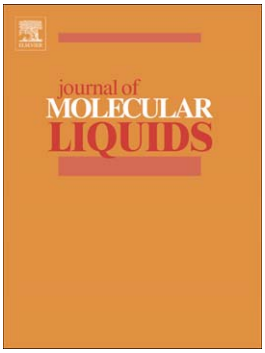

Degradation of methylene blue and Rhodamine B as water pollutants via green synthesized Co_3O_4/ZnO nanocomposite

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Degradation of Methylene blue and Rhodamine B as Water Pollutants via Green Synthesized Co_3O_4/ZnO Nanocomposite

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Abstract

Methylene blue (MB) and Rhodamine B (RB) are produced as water pollutants in textile, plastic and dye industries. Many studies have investigated to remove RB and MB in wastewater of industries. At present work, Co_3O_4/ZnO nanocomposite is applied for removal of MB and RB dyes from water. Eco friendly, Co_3O_4/ZnO is synthesized via microwave assisted method. Results showed that uniform morphology and size particle is obtained at 10 min and 900W as optimum time and power. Synthesized Co_3O_4/ZnO is characterized with X-ray diffraction (XRD) analysis, Transmission Electron Microscopy (TEM), Fourier transform infrared (FT-IR) spectroscopy, Scanning Electron Microscopy (SEM) and vibrating sample magnetometers (VSM). Prepared nanocomposite shows excellent photo degradation behavior toward MB and RB under UV light. Photo degradation efficiency is calculated 80 and 90% for MB and RB respectively.

Keywords: Pollutant; Nanocomposite; Microwave; Magnetic; Photocatalytic; Nanostructures.

1. Introduction

Water pollution is converted to one of the greatest environmental concern. It can be creating with entering toxic substance into water bodies such as lakes, rivers, oceans and so on, getting dissolved in them, lying suspended in the water or depositing on the bed, so decreases quality of water [1, 2]. Dyes