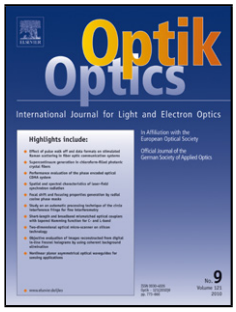

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Structural, Luminescence and Photocatalytic properties of pure and Octylamine capped ZnO nanoparticles

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Abstract

In this study, Octylamine (OA) capped zinc oxide (ZnO) nanoparticles were synthesized by the wet - chemical method. Zinc acetate dihydrate was used as precursor materials. The structural, morphological and optical properties were characterized by X-ray Diffraction (XRD), High resolution-Scanning electron microscope (HR-SEM), Energy dispersive X-ray (EDAX), UV-Vis diffused reflectance spectroscopy (DRS) techniques respectively. The presence of ZnO was confirmed by FT-IR and FT-RAMAN spectroscopy analyses. Further, the photocatalytic degradation of Eosin Yellow (EY) known as textile dye was investigated from pure and OA-capped ZnO nanoparticles in de-ionized water under sunlight irradiation.

Keywords: ZnO nanoparticles, Octylamine, Wet-chemical method, Eosin Yellow dye, Photocatalytic.

1. Introduction

In recent years, significant attention has emerged in the synthesis of nanoscale semiconducting materials; researchers have been investigating many kinds of semiconductor assisted photocatalysts due to their releasing the toxic and colored effluents from industrial waste water to limit their impact on the environment [1]. Recently, the low-dimensional semiconducting nanomaterials with hierarchical morphology, have obtained more importance