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Photoelectrochemical and opto-electronic properties tuning of ZnO films: Effect of Cu doping content

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Abstract

In this work, **copper (Cu) doped** Zinc oxide thin films **were prepared** by co-precipitation and spin-coating method. Cu doping content was varied up to 5 at. %. Morphological and structural **characteristics** of the synthesized films were analyzed by Atomic Force Microscopy (AFM), X-Ray Diffraction (XRD) and Raman Spectroscopy. XRD measurements **demonstrated** that films were polycrystalline with hexagonal phase. AFM **investigations** revealed uniform repartition of nanocrystallites. Optical band-gap has been tuned from 3.26 eV for undoped ZnO film to 3.19 eV for 5 at. % Cu doped one. Cu doping **revealed** significant effect on the optical **properties**, such as transmission and photoluminescence (PL). An optimum Cu doping of 1 at. % was reported to lead to the highest photoconduction sensitivity, photocurrent density and PL emission intensity.

Keywords: ZnO, Cu doping, Photoluminescence, Photosensitivity.

1. Introduction

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