

Fabrication and characterization of pure ZnO thin films deposited by Sol – gel method

S. Haya, O. Halimi, B. Boudine

Laboratoire de Cristallographie ,Département de Physique ,Faculté des sciences Exactes ,Université Constantine1 -Route Ain Elbey 25000, Constantine,Algéria
hayasoumia13@gmail.com

Abstract

ZnO thin films were prepared via Sol-gel method and were deposited on ordinary glass substrate using dip coating technique. These latter undergo optical annealing using UV irradiation, during 2 hours. The starting materials used were zinc acetate dihydrate 2-methoxyethanol which was used as solvent as well as mono-ethanolamine (MEA) as stabilizer.

Structural characterization by XRD showed the formation of ZnO wurtzite structure ,the films showed a preferred orientation along the (002) plane at $2\theta=34,72^\circ$ after 2h irradiation with UV. Moreover, the PL measurement exhibited the of optical absorption in the UV – visible domain.

The optical direct band gap values of ZnO nanoparticles were calculated to be about 3.37 eV by optical absorption measurements, these values belong to the blue shift absorbance. The photoluminescence measurement reveals that the samples prepared exhibit intense emission band in the visible and near UV. This observation led us to practical applications in area of optoelectronic.

Keywords :ZnO thin films; Sol-gel method; UV absorption; Photoluminescence.