



Influence of Indium doping on Zinc oxide thin film prepared by Sol-gel Dip coating technique.

Shazia Umar & Mahendra Kumar

Department of Physics, University of Lucknow, Lucknow 226007

E-mail: Shaziaumar0786@gmail.com

E-mail: mklulko@gmail.com

Abstract

Dip coating is a very simple technique widely used for thin film deposition. We report the conducting and transparent In doped ZnO thin films with various levels of doping (0, 1.5 & 10 wt %) fabricated by sol-gel dip coating method. XRD, UV-VIS, SEM and PL are used to characterize these films. X-ray diffraction studies show that films are polycrystalline in nature and have hexagonal wurtzite structure. These films are found to show (002) preferential growth at low Indium concentrations. An increase in Indium concentration does change the crystalline quality of films but higher intensity of films are found for higher Indium concentrations. Moreover, UV-VIS spectroscopy shows the influence of Indium incorporation on the visible range absorbance of ZnO. The optical band gap depends upon Indium doping and is found to be 3.75 for pure ZnO and 3.89 for Fe doped ZnO thin film. The PL spectrum of the samples shows blue emission.

Keywords: No; ZnO; Indium, XRD; SEM; UV-Vis; PL.

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