

Conference Abstract

Sintering properties of sputtered ZnO Thin Films

S. Kirusanthy and U. Sutharsini*

Department of Physics, Faculty of Science, University of Jaffna, Jaffna 40000, Sri Lanka
ubsutharsini@univ.jfn.ac.lk*

Abstract

Zinc oxide (ZnO) thin films have performed as an attractive material for numerous applications in piezoelectricity, solar cells, biomedical and sensing. In this work, sintering properties of sputter coated Zinc oxide thin films were studied by using X ray diffraction (XRD) and UV visible spectrometer. ZnO thin films were sputter coated on glass and indium doped tin oxide (ITO) glass. Samples were then sintered by using a box furnace at 500°C, 600°C and 700°C for 2 hours.

XRD pattern of thin film well matched with standard values of JCPDS 79-0208 for ZnO and crystallinity of ZnO increased with increasing sintering temperature in both thin films. When the temperature is increased, no ternary phases were developed within the temperature range 500-700°C. Absorption spectra were obtained by using UV visible spectrometer. Optical band gap was calculated by using Tauc plot method. Variation of optical bandgap with sintering temperature is shown in the Figure. Optical bandwidth significantly varies with temperature.

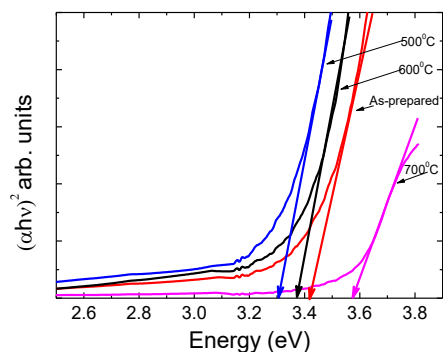


Figure: Tauc plot for ZnO thin films

Keywords: Tauc plot, Thin film, UV visible spectrometer, Optical band gap, Sputtering

Acknowledgement: Authors acknowledge the Capacity Building and Establishment of a Research Consortium (CBERC, LKA-3182-HRNCET) grant for XRD instrument.