Iraqi Laser Scientists Journal (ILSJ)/ www.ilsj-online.org
Vol .1, Issue 2; Pp;12-21, 2018

Original article

Effect of laser energy density on ZnO / α- Al2O3 of films grown by pulsed laser deposition

Adawiya J. Haider [1]*, Afnan K. Yousf [1], Ali K. Shakir [2], Mohammad J .Haider[3] ,Amer B. Dheyab[4]
Khaled M. Chahrour[5]
Applied physics science Department /Laser Branch, University of Technology, Baghdad-Iraq[1].
Nanotecnology and Advanced Materials Research Center University of Technology, Baghdad-Iraq[2]
Electrical Engineering Department, University of Technology, Baghdad-Iraq[3]
Ministry of Science and Technology, Baghdad, Iraq[4].
Nano-Optoelectronics research and technology laboratory, School Of Physics, Universiti Sains Malaysia, 11800 Penang, Malaysia[5]
*Corresponding author: 100081@uotechnology.edu.iq

Abstract

In this work, Pulsed Laser Deposition (PLD) was employed for preparation of the thin films of Zinc Oxide on Sapphire α- Al_2O_3 (0001). The effect of laser energy density on the structure and optical characterizations of the ZnO films have been studied by X-Ray diffraction (XRD), and Scanning Electron Microscopy (SEM). The results showed that crystalline and (002)-oriented ZnO films were obtained at laser fluence 0.8, 1.6, and 2.4 J/cm^2 and the optimized growth ZnO films were at substrate temperature of 400 ^oC.

Optical transmission for all films was around 85-90% within the visible region of the spectrum.

Key words: Pulsed-laser deposition, Zinc oxide thin films, Nanostructures, Nd: YAG Q-Switching (SHG).

To cite this article: Adawiya J. Haider , Afnan K. Yousf , Ali K. Shakir , Khaled M. Chahrour, Amer B. Dheyab ; Effect of laser energy density on ZnO / α- Al2O3 of films grown by pulsed laser deposition ; Iraqi Laser Scientists Journal. Vol .1, Issue 2; Pp;12-21, 2018.