Accepted Manuscript

Title: Effect of laser energy on the properties of nanostructured lead iodide film prepared via pulsed laser deposition technique

Authors: Rana K. Abdulnabi, Mayyadah H. Mohsin, Raid A. Ismail, Ali M. Mousa, Muslim F. Jawad

 PII:
 S0030-4026(18)31372-X

 DOI:
 https://doi.org/10.1016/j.ijleo.2018.09.069

 Reference:
 IJLEO 61508

To appear in:

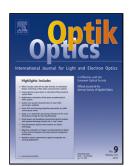
 Received date:
 5-6-2018

 Revised date:
 15-9-2018

 Accepted date:
 16-9-2018

Please cite this article as: Abdulnabi RK, Mohsin MH, Ismail RA, Mousa AM, Jawad MF, Effect of laser energy on the properties of nanostructured lead iodide film prepared via pulsed laser deposition technique, *Optik* (2018), https://doi.org/10.1016/j.ijleo.2018.09.069

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



ACCEPTED MANUSCRIPT

Effect of laser energy on the properties of nanostructured lead iodide film prepared via pulsed laser deposition technique

Rana K. Abdulnabi¹, Mayyadah H. Mohsin², Raid A.Ismail², Ali M. Mousa², Muslim F. Jawad²

¹ Middle Technical University, Institute of Technology, Baghdad, Iraq

² Department of Applied Science, University of Technology, Baghdad, Iraq

Abstract

The effect of laser energy density on the optical, structural and electrical properties of lead iodide PbI₂ film prepared by laser deposition technique was studied. X-ray diffraction XRD results revealed that the PbI₂ films deposited at laser energy density smaller than 3.5J/cm² are polycrystalline in nature with preferred orientation along (001) plane, while the film deposited at 3.5J/cm² was amorphous. The thickness and deposition rate of the film was found to be increased with laser energy density. The optical energy gap of PbI_2 film was in the range of (2.5-2.65) eV. SEM investigations showed that the deposited films are dense and have a homogeneous structure and the average grain size increases from 25 to 55nm as laser energy density increases from 2 to 3.5 J/cm². The film surface composed of aggregated grains and particulates. Energy dispersive x-ray illustrated the film deposited at 2J/cm² was stoichiometric and the films deposited at laser energy density >2 J/cm² were off-stoichiometric. The electrical properties revealed that the deposited films were p-type and the electrical resistivity decreases from 9.2×10^4 to 1.49×10^4 Ω .cm when laser energy density increases from 2 to 3J/cm². The hole mobility of the film was found to increase with laser energy

Download English Version:

https://daneshyari.com/en/article/10226619

Download Persian Version:

https://daneshyari.com/article/10226619

Daneshyari.com