Non-linear optical and electrical properties of ZnO doped Ni Thin Films obtained using spray ultrasonic technique

Submitted by Emmanuel Lemoine on Mon, 06/02/2014 - 18:28

Titre
Non-linear optical and electrical properties of ZnO doped Ni Thin Films obtained using spray ultrasonic technique

Type de publication
Article de revue

Auteur

Editeur
Elsevier

Type
Article scientifique dans une revue à comité de lecture

Année
2011

Langue
Anglais

Date
04/2010

Numéro
6

Pagination
968-972

Volume
33

Titre de la revue
Optical Materials

ISSN
0925-3467

Mots-clés
2nd [7], 2nd-harmonic generation [8], 3rd-harmonic generation [9], deposition [10], Electrical conductivity [11], génération [12], Nickel doping [13], Photoluminescence [14], room-temperature [15], Second harmonic [16], sol-gel method [17], Spray ultrasonic [18], Zinc oxide films [19]

Résumé en anglais
In the present study zinc oxide doped Nickel thin films (ZnO: Ni) were deposited on glass substrates using a chemical spray ultrasonic technique. The effect of Ni concentration on the structural, electrical, optical, and non-linear optical (NLO) properties of the ZnO: Ni thin films was investigated. The films were analyzed using X-ray diffraction (XRD), profilometry and optical transmittance. A polycrystalline structure with a preferential growth along the ZnO (002) plane was found, the optical transmittance was found to be higher than 80% and the band gap (E(g)) varied from 3.19 to 3.27 eV. The value of the electrical conductivity was found. Moreover, the effective non-linear quadratic and cubic electronic susceptibilities of thin film samples were determined by the SHG and THG techniques, working at 1064 nm. (C) 2011 Elsevier B.V. All rights reserved.

URL de la notice

DOI
10.1016/j.optmat.2011.01.018 [21]
Publié sur Okina (http://okina.univ-angers.fr)