

Effect of thickness on the properties of NiO thin films prepared by sol-gel dip-coating method

A. Noua, R. Guemini, H. Farh

Laboratory of Active Components and Materials, University Larbi Ben M'hidi Oum El Bouaghi, 04000, Algeria.
no.samad@gmail.com

Abstract

In this study, pure Nickel oxide thin films were prepared by sol-gel dip-coating method with different thicknesses, onto glass substrate and the structural, optical and morphological properties were

investigated. The structural properties of NiO films were characterized by X-ray diffraction (XRD), Polycrystalline structures of the prepared films were detected and the grain size increased when the thickness increased indicating an enhancement in the crystallinity.

The optical properties of the films were studied by spectrophotometer, and the optical transmittance of the films within the visible and near infrared region was found to be more than 75%. Surface morphology of the films was observed by atomic force microscopy and it was found that the films have uniform and dense NiO grain with an increasing in roughness mean square (RMS) when the thickness increased.

Keywords: NiO thin films; XRD; AFM; sol-gel; Transparent conducting oxides (TCOs).