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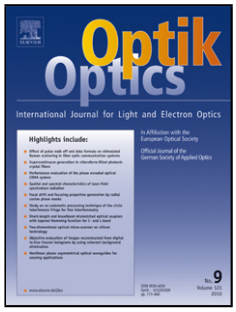

Title: Structural, optical and <!–<query id="Q1">Please check Ḋoc headf̈or correctness.</query>–>electrical properties of zinc oxide thin films deposited by sol-gel spin coating technique

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Structural, optical and electrical properties of zinc oxide thin films deposited by sol-gel spin coating technique

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Abstract

In this paper, we report the use of sol-gel spin coating technique to deposit zinc oxide (ZnO) thin films on glass substrate. In order to study the influence of the annealing temperature on the structural, optical and electrical properties of the produced films, we changed the annealing temperature from 300°C to 600°C with steps of 100°C, We have three characterization techniques which are X-ray diffraction to determine the films structure, UV-VIS spectroscopy for determination the optical proprieties of thin films and two-point probe method to establish the electrical conductivity. The XRD analysis shows that the films have hexagonal structure with a preferred growth orientation along the (002) plane indicating that the type is Wurtzite, the average size of crystallites varies from 23 to 47 nm, the transmittance of the films is between 80% and 90% in visible rang and the band gape exhibits a little increment. Moreover, the films have a low electrical conductivity.

Keywords: Thin films, zinc oxide, spin coating, annealing temperature, structural properties, optical properties.

1. Introduction