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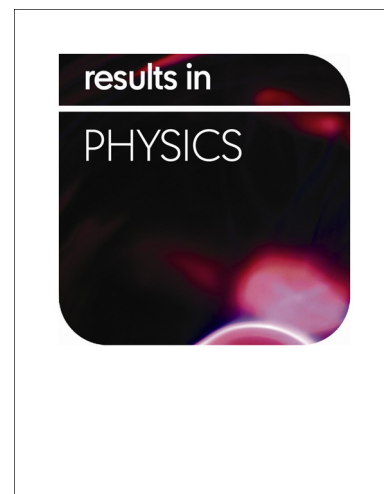
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The Effect of Annealing Temperature and Al Dopant on Characterization of ZnO Thin Films Prepared by Sol-gel Method

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Abstract

In this project, the sol-gel technique was used to prepare Zinc Oxide (ZnO) thin film and deposited on glass substrate by dip coating method. Zinc acetate dihydrate was used as a source of Zinc ions. The effect of annealing temperature (300, 400 and 500) °C, Aluminum dopant concentration (3wt% and 5 wt.%) on the properties of ZnO thin film were investigated and analyzed by using X-Ray diffraction for structural properties, SEM for morphological properties, UV-VIS for optical properties. X-Ray diffraction result has confirmed the formation of hexagonal wurtzite ZnO structure. And the film crystallinity increases with increase the annealing temperature while it decreases with increase Al dopant concentration. The SEM revealed to the formation of a uniform compact surface with ganglia-like hills. The energy band gap (3.28-3.22 eV) found to be decrease with increase the annealing temperature and increase with Al dopant concentrations.

Keywords: Thin Films, ZnO, AZO, sol-gel, dip coating

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