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A Study on the Influence of Annealing Conditions on the Properties of ZnON Thin Films

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Abstract : This work investigates the change in structural, optical, and electrical properties of Zinc Oxynitride (ZnON) thin film when annealed in different atmospheres. ZnON film is prepared by reactively sputtering the Zinc target using argon, oxygen, and nitrogen. The deposited film is annealed for one hour at 3250C in the Vaccum condition and Nitrogen and oxygen atmospheres. XRD and Raman spectroscopy is used to study the structural properties of samples. The current conduction mechanism is examined by extracting voltage versus current characteristics on a logarithmic scale, and the optical response is quantified by analyzing persistent photoconductivity (PPC) behavior. This study proposes the optimum annealing atmosphere for ZnON thin film for a better transistor and photosensor application.

Keywords : Zinc oxynitride, thin film, annealing, DC sputtering
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