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Preparation and characterization of nanostructured ZIO thin films VIPIN KUMAR JAIN, Thin film & Membrane Science Laboratory, University of Rajasthan, Jaipur -302004, India, PRAVEEN KUMAR, Surface Physics and Nanostructures Group, National Physical Laboratory, New Delhi -110012, India, Y.K. VIJAY, Thin film & Membrane Science Laboratory, University of Rajasthan, Jaipur -302004, India, VIPIN KUMAR JAIN TEAM, PRAVEEN KUMAR COLLABORATION — ZnO–In2O3 system has attracted much attention because of chemical and thermal stability in addition to properties comparable to those of ITO. In the present work Zinc indium oxide (ZIO) thin films were deposited on glass substrate with varying concentration (ZnO: In2O3 - 100:0, 90:10, 70:30 and 50:50 wt %) at room temperature by flash evaporation technique. These deposited ZIO films were annealed in vacuum to study the thermal stability and to see the effects on the structural, chemical and electrical properties. Each film has been characterized ex-situ by XRD, XPS, XRF, AFM, SEM, optical band gap and Hall measurements. Results show the properties of the ZIO films strongly depend on the In2O3 concentration and also influenced by the post annealing of these films. XPS core level spectra of Zn(2p), O(1s) and In(3d) have been deconvoluted into their Gaussian components, while valence band spectra shows the change in electronic structures of the films.

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