

Colloidal synthesis of nanostructured pure ZnO and Cd doped ZnO thin films and their characterization

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Description

Thin films of intrinsic and Cd-doped ZnO with different cadmium concentrations were prepared by colloidal route technique associated with dip-coating onto glass substrates. Zinc acetate dehydrate, Cadmium acetate, methanol and ethanolamine were used as a starting materials, solvent and stabilizer, respectively. Nanostructured ZnO thin films with different concentrations of Cd doping (0, 2 and 10 wt%) are annealed at 500 °C for 2 h. The films were characterized by different methods to understand their structural, optical and electrical properties such as the film surface is with a ganglia-like structure as observed by Environmental Scanning Electron Microscopy (ESEM). The films were characterized by grazing incidence X-ray diffraction, its comprise of ZnO nanocrystallites with hexagonal crystal structure with a presence of CdO nanocrystallites with cubic crystal structure in 10% Cd-doped ZnO film (ZnO/CdO ...