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Study Of Cu Doped Zns Thin Films Nanocrystalline by Chemical Bath Deposition Method

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Abstract : Recently New nanosized materials studies are in huge expansion worldwide. They play a fundamental role in various industrial applications thanks their unique and functional properties. Moreover, in recent years, a great effort has been made in design and control fabrication of nano-structured semiconductors such as zinc sulphide. In recent years, much attention has been accorded in doped and co-doped ZnS to improve the ZnS films quality. We present in this work preparation and characterization of ZnS and Cu doped ZnS thin films. Nanoparticles ZnS and Cu doped ZnS films are prepared by chemical bath deposition method (CBD), for various dopant concentrations. Thin films are deposed onto commercial microscope glass slides substrates. Thiourea is used as sulfide ion source, zinc acetate as zinc ion source and copper acetate as Cu ion source in alkaline bath at 90 °C. X-ray diffraction (XRD) analyses are carried out at room temperature on films and powders with a powder diffractometer, using CuK radiation. The average grain size obtained from the Debye–Scherrer's formula is around 10 nm. Films morphology is examined by scanning electron microscopy. IR spectra of representative sample are recorded with the FTIR between 400 and 4000 cm-1. The transmittance is more than 70 % is performed with the UV–VIS spectrometer in the wavelength range 200–800 nm. This value is enhanced by Cu doping.

Keywords : Cu doped ZnS, nanostructured, thin films, CBD, XRD, FTIR
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