

Deposition and characterization of ZnS thin films using chemical bath deposition method in the presence of sodium tartrate as complexing agent.

ABSTRACT

ZnS thin films were deposited on indium tin oxide glass substrate using the chemical bath deposition method. The deposited films were characterized by X-ray diffraction and atomic force microscopy. The influence of bath temperature on the structure and morphology of the thin films was investigated at three different bath temperatures of 60, 70 and 80 °C in the presence of sodium tartrate as a complexing agent. The XRD results indicated that the deposited ZnS thin films exhibited a polycrystalline cubic structure. The number of ZnS peaks increased from three to four peaks as the bath temperature was increased from 60 to 80 °C based on the XRD patterns. From the AFM measurements, the film thickness and surface roughness were found to be dependent on the bath temperature. The grain size increased as the bath temperature was increased from 60 to 80 °C.

Keyword: Complexing agent; Chemical bath deposition; Thin films; Zinc sulphide; Atomic force microscopy.