Characterization of CdS nanocrystalline thin films grown by CBD technique at very low solution concentrations

ABSTRACT

CdS films were deposited on glass substrate by chemical bath deposition (CBD) from a bath containing very low concentrations of CdCl2 and (NH2)2CS. The adhesion of the deposited films was very good for all solution concentrations. The films were thermally annealed in air at the temperature 240 Â°C for 1 hour. The maximum and minimum film thickness 75.6 nm, 33 nm was observed, respectively. XRD analyses show that the films were cubic along with few feeble peaks of hexagonal phase at lower solution concentrations. The crystallite size was increased from 17 to 51 nm with the increase of the solution concentration. The optical energy band gap (Eg), Urbach energy (Eoo) and absorption coefficient (a) was calculated from the transmission spectral data. The best transmission (> 94 %) was obtained in this experiment.

Keyword: Annealing; Chemical bath deposition; Cadmium sulfide; Optical properties