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Structural and Optical Characterization of Spray Deposited Cadmium Sulphide Thin Film(Article)

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Abstract

Cadmium sulphide (CdS) thin film was prepared on glass substrate by chemical spray pyrolysis technique using the precursor solutions of cadmium chloride (CdCl2) and thiourea [(NH2)2CS] at the substrate temperature of 573 K.X ray diffraction analysis revealed the polycrystalline nature and the preferential orientation growth of CdS compound having hexagonal structure along (002) plane. The size of the cadmium sulphide crystallite with nano dimension was determined using the Full Width Half Maximum value of the Bragg peak. The surface morphology had been observed on the surface of this film using scanning electron microscope. The optical absorption and transmittance spectra have been recorded for these films in the wavelength range 400–800 nm. The optical band gap energy is found to be 2.42 eV with direct allowed band-to-band transition for film deposited at 573 K. The functional group is identified using FTIR spectra.

Author keywords

Absorption | Band Gap | Crystallite Size | Thin Film | Transmittance

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