

CdS THIN FILM: SYNTHESIS, CHARACTERIZATION AND APPLICATIONS

Suresh Kumar^{a*}, S. Rajpal^b, and S.R. kumar^b

^aDepartment of Physics, Chaibasa Engineering College, Kelende, Jhinkpani, Jharkhand-833215, India.

^b Department of Applied Sciences & Humanities, National Institute of Foundry&Forge Technology, Ranchi-834003, India.

* Corresponding author

ABSTRACT

Energy crisis can be normalized by renewable energy sources such as solar, wind, etc. Solar cell is non-conventional energy, it is also a device that catches sunlight and converted onto electricity. Metal chalcogenides (sulphide, selenides and tellurides) are studied in the form of thin film and group II- VI semiconducting material is more attracted towards thin film by researcher because of their applications in the field of photovoltaic cells, photoconductors, optical filters, solar cells, sensors, variety of optoelectronic devices, etc. Cadmium sulphide is one of the members of II-VI semiconducting material. CdS thin films preparation by chemical bath deposition method using non aqueous medium is currently considerable interest because it is relatively inexpensive, simple, large area deposition technique and capable for yielding good quality thin films. CdS film was deposited on molybdenum substrate using cadmium chloride and thiourea dissolved with ethyleneglycol. As deposited films are uniform, smooth, free from pin holes, pits, voids and stoichiometric in nature. Applications of CdS thin films in the area of solar cells, optoelectronic devices, LED, photoconductors, etc. XRD spectra gives information that CdS films exhibited peaks corresponds to (110), (220), (211) and the appearance of (002) diffraction peak indicates that the film have hexagonal structure. Compositional analysis peaks reveals the presence of Cd and S. In this article, we have described in detail chemical bath deposition for CdS thin film and their preparative parameters such as structural, morphological and compositional characteristics have been carried out by XRD, FESEM, EDS, etc.

Keywords: CdS, (002), chemical bath deposition, LED, XRD, etc.

