PREFACE

Thin film technology is regarded as one of the main technology driver of microelectronics followed by nanotechnology for development of nanoelectronics. In our present investigations an attempt is made to be familiar with the two modern technologies by selecting CdTe and CdS as material. We have tried to characterize the prepared samples by optoelectronic, optical techniques and using some most sophisticated instruments like AFM, SEM and XRD available in this region.

Chapter - I includes a general introduction of thin solid films, nanocrystalline thin films and nanomaterials, their important applications in various fields. The importance of II-VI semiconductor material particularly cadmium telluride (CdTe) and cadmium sulphide (CdS) has also been discussed in this chapter.

Chapter - II describes details of various methods of film preparation and their characterization with application of optoelectronic and optical techniques.

Chapter - III explains characterization of CdTe thin films by optoelectronic technique. In this chapter the data on photoconductivity of CdTe thin films obtained by our co-worker have been analysed for better for better understanding of the physical process involved in the photocurrent growth mechanism.
Chapter IV contains details of preparation of CdS thin films by chemical bath deposition (CBD) and characterization of the films by X-ray optics, optical absorption spectroscopy, photoluminescence and with some sophisticated microscopy like SEM and AFM.

Chapter V describes details of preparation and characterization of nanocrystalline CdS films embedded in PVA matrix. Determination of particle size and study of surface morphology by different sophisticated microscopy like SEM and AFM have also been described. The role of substrate on film formation has been discussed.

Chapter VI discusses general conclusion of present investigation and scope for future work.