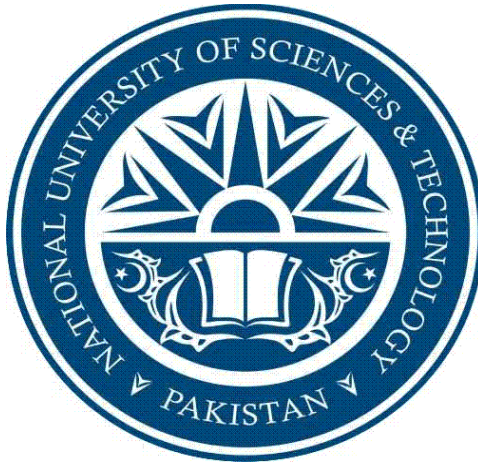


Preparation and Characterization of II-VI Group Thin Films



By

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In the name of ALLAH, the Beneficent, the Merciful.

*To my old man Nazir Ahmad
Who kept my chin always up in every journey of life.*

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All eulogizes for Allah Almighty, Who blessed the man with wisdom to explore mysteries and sources of his creation for the benefits of mankind.

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ABSTRACT

Cadmium Sulfide (CdS) polycrystalline thin films were grown on corning glass substrate by Close Spaced Sublimation (CSS) technique. Films were immersed in low concentrated (0.1g/100mL) AgNO₃-H₂O solution (ion-exchange process) at room temperature to get Ag-doped films. The structural and morphological investigations were performed by means of X-ray diffraction (XRD) technique, scanning electron microscopy (SEM), energy dispersive X-ray spectroscopy (EDX) and atomic force microscopy (AFM). Structural study showed that the deposited films exhibit a polycrystalline structure with <111> as preferred orientation. Optical and Electrical measurements were examined by UV-VIS/NIR spectrophotometer (Perkin Elmer Lambda 900) and Hall apparatus, respectively. The structural, optical and electrical properties of these films were analyzed as a function of the film thickness and Ag-concentration (mass %). The deposited films showed that the value of resistivity decreased with increasing thickness and Ag-concentration as well, manifesting the semi conducting behavior of the films. The structural study showed that with increase in film thickness grain size increased but optical transmission slightly decreased.

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