

## **Preliminary results on the preparation of CdS thin films using electro-deposition technique for applications in CdS/CdTe solar cells**

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Cadmium Sulphide (CdS) thin films were electrodeposited onto Indium Tin Oxide (ITO) coated glass substrates from an aqueous solution containing 0.3M CdCl<sub>2</sub> and 0.03M Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>. Properties of CdS thin films prepared at different deposition voltages, time periods and temperatures and different annealing temperatures were investigated using current-voltage (I-V) characteristic plots. Best quality CdS layers were found to form under deposition conditions of -1.13V for a period of 45 minutes in a solution at a temperature of 46° C with 1.4pH. The best film was formed after annealing at 400° C for a period of 20 min. The same procedure was followed by taking Thiourea [SC(NH<sub>2</sub>)<sub>2</sub>] as the Sulphur (S) source. The properties of CdS thin films prepared by changing electrode configuration and cleaning procedure using above two electrolytes were compared using current-voltage characteristic plots. A significant improvement of current was found of samples prepared using later electrolyte compared that with the former electrolyte. Further, analysis of XRD spectra showed hexagonal crystal structure of CdS films, confirming the quality of films prepared by the later method.

Key words: Cadmium Sulphide, Cadmium Telluride, electro-deposition, electrolyte, XRD

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