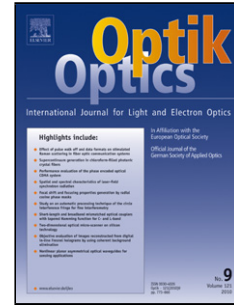


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The Effect of PbS Thickness on the Performance of CdS/PbS Solar Cell Prepared by CSP

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Abstract: In this project, CdS and PbS films were prepared by chemical spray pyrolysis method at temperature of 310°C. The XRD patterns revealed the hexagonal structure of CdS thin film and the cubic structure of PbS film. Electrical properties of the deposited film were studied. C-V measurements of ITO/CdS PbS/Al solar cells revealed that the junction was abrupt type. Transmittance measurements have been done to determine the variation of the energy gap and absorption coefficient with films thickness. Dark and illumination I-V characteristics were measured and analyzed. The best solar cell parameters were obtained at 1.1µm of PbS thickness with parameters: $J_{sc}=1.85\text{mA}/\text{cm}^{-2}$, $V_{oc}= 340\text{mV}$, $J_m=1.5\text{mA}/\text{cm}^{-2}$, $V_m= 275\text{mV}$, $FF=0.65$ and efficiency 0.82%.

Keywords: Cadmium Sulfide film, Lead Sulfide film, Heterojunction, Chemical Spray Pyrolysis, Semiconductor, Solar Cells.

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