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Fabrication and Characterisation of CuinS_2/ZnSe/Metal Structures for Solar Cell Applications

R. P. Wijesundera[1], N. P. Gunatunga[1], W. Siripala[1],K. D. Jayasuriya[1], S. R. D. Kalingamudali[1], K. T. L. De Silva[2], J. K. D. S. Jayanetti[2]
[1] *Dept. of Physics, University of Kelaniya, Kelaniya,* [2] *Dept. ofPhysics, University of Colombo, Colombo*

Thin film solar cellstructure of Ti/$CuInS_2$/ZnSe/Metal was fabricated using simple electrochemical and sulphurisation techniques. Copper Indium Disulphide ($CuInS_2$) thin films were prepared by sulphurisation of Cu-In alloy on Ti substrates. Films were characterised using X-ray diffraction (XRD), scanning electronmicroscopy (SEM), spectral response and I-V measurements. XRD measurements showed the characteristic peaks of $CuInS_2$ and SEM showed that the crystallites are of the size 1-3 mm. ZnSe thin films were deposited on Ti/$CuInS_2$ using electrodeposition technique. Ti/$CuInS_2$/ZnSe/Metal structures were characterised using C-V, I-V and spectral response measurements. Light and dark I-V measurements revealed the photovoltaic activity of the structure while the C-V measurements confirmed the formation of the heterojunction. Spectral response showed that the photocarriers are generated by the absorption of light in the $CuInS_2$layer.