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**Electrical Properties Analysis of Copper doped CdTe/CdS Deposited Thin Films on ITO Coated Glass Substrates** DARREN LESINSKI, JAMES FLAHERTY, M. ALPER SAHINER, Seton Hall University — CdTe proves to be a viable source for renewable energy in the form of photovoltaic conversion. While CdTe/CdS naturally provide interesting results adding dopants to the cell can yield higher conversion efficiencies. Copper, famous for its electrical properties, can be used as a dopant in the CdTe layer. In conjunction with its dopant characteristics Copper also improves cell performance by acting as a low resistant and high current back contact. All thin films were synthesized using pulsed laser deposition onto ITO coated glass substrates. The CdS layer across all cells has an approximate thickness of 1500 Angstroms. The following CdTe layer has an approximate thickness of 5500 Angstroms. This created the base cell that was then doped. Cu, typically deposited using sublimation or vapor deposition, was done by PLD as well. Two of the three base cells were treated with Cu using the same deposition parameters. The third cell also received a CdCl treatment on top of the Cu layer to understand the effect when the oxygen layer is deferred. Ellipsometer measurements were used to confirm layer thickness. XRD analysis was used to confirm the presence of Cu and the crystal structure of the thin films. A Hall Effect Measurement system was used to measure active charge carrier concentration introduced by dopant. Also, a Keithley sourcemeter was utilized to determine photovoltaic properties. Notable results discussed will be the effects of Copper dopant on the electrical properties of CdS/CdTe based solar cells.

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