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Synthesis and Characterization of Varying Concentrations of Ag-doped ZnO Thin Films JUSTIN HACHLICA, PATRICK WADIE-IBRAHIM, M. ALPER SAHINER, Seton Hall Univ — Silver doped ZnO is a promising compound for photovoltaic solar cell use. Doping this compound with varying amounts of silver will theoretically make this type of thin film more efficient by reducing the overall resistance and increasing the voltage and current output. The extent of this promise is being tested experimentally, by analysis of both the electrical and the surface roughness properties of the cells. Ag-doped Zinc Oxide is deposited by method of Pulsed Laser Deposition (PLD) onto Indium Tin Oxide (ITO) coated Glass. Annealing effects were also observed by varying the temperature at which the annealing occurred after synthesis of the sample. Thickness is confirmed by use of Ellipsometry. X-Ray Diffraction (XRD) measurements confirmed a ZnO crystal structure on the thin films. The active dopant carrier concentrations were determined using a Hall Effect Measuring System. Finally, the photovoltaic properties of the film are recorded by using a Keithley Source Meter. The structural characterization and electrical results of the effect of Ag doping on ZnO will then be discussed.

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