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Metal (Ag) Nanoparticles on Thin Film Solar Cells OLIVIA RODGERS, Seton Hall University, OLIVIA RODGERS TEAM, JAMES FLAHERTY TEAM, PATRICK WADIE-IBRAHIM TEAM, M. ALPER SAHINER TEAM — The research and development of cheaper and more efficient photovoltaic cells to harness the sun's energy and convert it to electricity is a necessity in the nearing future. The addition of metal nanoparticles to photovoltaic cells creates the possibility of improving cell efficiency and reducing production costs. With the addition of metal nanoparticles incoming light will be scattered and trapped thus enhancing absorption causing less energy to be lost. This is due to more electron and hole pairs being created by absorbed photons producing a larger electrical current compared with a solar cell made with the absence of metal nanoparticles. In the process of creating these cells CdTe and CdS is deposited by method of Pulsed Laser Deposition (PLD) onto glass. Silver (Ag) nanoparticles will be added between the CdS layer and the CdTe layer by the use of PLD. In order to structurally and electrically characterize the silver nanoparticles added efficiency to the cells we will use x-ray diffraction ellipsometry (structural), and Labveiw assisted Keithley source meter photovoltaic measurement set (electrical). The the independent variation of the silver particle size and particle distance on the thin films to determine the optimal electrical energy output will be discussed.

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