

Abstract Submitted  
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**Metal-Metal Oxide Nanocomposite for Solar Cell Applications**<sup>1</sup> H. GEMAR, K. GHOSH, Department of Physics, Astronomy and Materials Science, Missouri State University, Springfield, MO 65897 — Currently, there is a large need for alternative energies and one good option is solar cells. A High efficiency solar cell generally consists of a number of thin layers: active layer consisting of a material having high absorption in the solar spectrum, transparent conducting layer, *p*- and *n*-type materials used to fabricate the junction, and electrodes for good Ohmic contacts. The presence of metal nanoparticles in metal oxide films improves significantly the solar absorbance of metal oxide films. The absorption depends on the bandgap of metal oxides which can be tuned by incorporation of metal nanoparticles. Tuning of the bandgap and absorption are the very important parameters to fabricate the solar cell devices. Thin films of M-MO (M = transition metals Co and Ni) nanocomposite have been grown on quartz substrate using pulse laser deposition technique. Structural properties have been characterized using X-ray diffraction and scanning electron microscopy. Electrical properties with and without light and absorption spectra have been measured using I-V characterization and UV-VIS spectroscopy techniques. Detailed results will be discussed in the presentation.

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