

Abstract Submitted  
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**Photovoltaic effect in Ferroelectric Materials** RAJESH K. KATIYAR, NEERAJ PANWAR, G. MORELL, RAM S. KATIYAR<sup>1</sup>, Department of Physics, Institute of Functional Nanomaterials University of Puerto Rico-00931, USA, DEPARTMENT OF PHYSICS, INSTITUTE OF FUNCTIONAL NANOMATERIALS UNIVERSITY OF PUERTO RICO-00931, USA TEAM — Photovoltaic effect in ferroelectric materials is of much interest due to the anomalously large open circuit photovoltages when illuminated. It is concluded that this unprecedented high value of photovoltaic effect is due to the presence of non-centrosymmetry in the ferroelectric materials which gives rise to electron excitation, relaxation, and scattering processes. The photovoltaic efficiencies are, however, limited due to small current densities and the large band gap values of the ferroelectric materials. We have synthesized thin films of BiFeO<sub>3</sub> (a low band gap material  $\sim 2.67\text{eV}$ ) and ferroelectric material SrBi<sub>2</sub>Ta<sub>2</sub>O<sub>9</sub>(SBT) on silicon substrates with ITO as the bottom electrode. The band gap of the SBT has been decreased by incorporating metallic particles Ag, Pt. in the ferroelectric matrix. The results will be presented.

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