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Fabrication and Structural - Optical Characterization of BTO : MAPbX Nanocomposites for Solar Cell Applications DANIEL MORALES, Texas Lutheran University, CHAMINDA HETTIARACHCHI, University of South Florida — Organo lead halide perovskites, specifically methylammonium lead iodide chloride, (CH 3 NH 3 PbI 3-x Cl x) has potential of becoming the leading solar cell technology with its rapidly rising efficiencies and simple, low-cost fabrication methods. Ferroelectrics can be exploited to reduce bimolecular recombination because spontaneous electric polarization associated local internal electric fields can be used to reduce charge carrier recombination. Barium Titanate (BaTiO3 -BTO) is a well-known ferroelectric material. In this work, we explore structural and optical properties of CH 3 NH 3 PbI 3-x Cl x perovskite and ferroelectric BTO nanocomposite thin films fabricated via the process of Aerosol Assisted Chemical Vapor Deposition (AACVD). Structural and optical measurements show as BTO concentration increases in the composite thin films, the crystallinity and optical absorption of composite thin films decrease. The grain size of perovskite in the composite decreases as well. Structural and optical characterization of CH 3 NH 3 PbI 3-x Cl x : BTO nanocomposites fabricated at different BTO nanoparticle concentrations will be presented.

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