

Abstract Submitted
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Non-linear optical spectroscopy of organic-inorganic-lead-halide perovskites¹ SANDIP ARYAL, EVAN LAFALCE, SANGITA BANIYA, CHUANG ZHANG, YAXIN ZHAI, ZEEV VALY VARDENY, Univ of Utah — We present an investigation of the nonlinear optical properties of organic-inorganic-lead-halide perovskite films and single crystals by a variety of optical techniques including two-photon absorption (2P-PA), two-photon photoluminescence (2P-PLE) and two-photon photocurrent (2P-PC). We found that the 2P-PL and 2P-PC excitation spectra are similar indicating that the two-photon absorption process results in generation of electron-hole pairs. However, comparison to one-photon excitation suggests the role of states other than those of the direct band gap transition. Additionally, we extend previous studies using electro-absorption (EA) spectroscopy to characterize third-order Kerr susceptibility. For both EA and two-photon excitation and absorption we found that the observed response is strong, highlighting the potential of these materials for non-linear optical applications.

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