

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Local and Long Range Structural Studies of Hybrid Perovskites

T. A. TYSON, Y. YAN, New Jersey Inst. Tech., W. GAO, University of South Florida, Y.-S. CHEN, University of Chicago, S. GHOSE, Brookhaven National Laboratory — In this work we study a class of hybrid perovskites with high photovoltaic conversion efficiency which exhibits an anomalous transition near ~ 330 K (T^*). Local structural measurements over a broad temperature range have been conducted and compared with single crystal diffraction measurements. The detailed motion of atoms is extracted and the response to chemical modification is explored. Extensive modeling of the temperature dependent structure is conducted. The connection of the structure to the novel transport properties will be discussed. This work is supported by DOE Grant DE-FG02-07ER46402.

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Date submitted: 11 Nov 2016

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