Abstract Submitted
for the OSF16 Meeting of
The American Physical Society

Spectroscopic Measurement of Electronic and Thermal Interconversion in Energy-Relevant Materials. RICHARD D. SCHALLER, Center for Nanoscale Materials, Argonne National Lab, and Department of Chemistry, Northwestern University — In order to produce energy efficient devices, thorough understanding of fundamental desired and undesired processes of energy and heat interconversion and migration are needed. I will present studies using time-resolved optical methods such as absorption and emission as functions of sample temperature or photon energy that aim to arrive at insights regarding energy transfer, electron transfer, and electron-phonon and phonon-phonon scattering events. Materials examined include nanoscale 0D and 2D semiconductors as well as bulk phase perovskites.

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Date submitted: 15 Sep 2016 Electronic form version 1.4