

Abstract Submitted
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Ultrafast Extreme Ultraviolet Spectroscopy of Lead Iodide and Methylammonium Lead Iodide MAX VERKAMP, MING-FU LIN, ELIZABETH RYLAND, JOSH VURA-WEIS, University of Illinois at Urbana-Champaign — Methylammonium lead iodide (perovskite) is a leading candidate for use in next-generation solar cell devices. However, the photophysics of perovskite responsible for its strong photovoltaic qualities are not fully understood. Ultrafast extreme ultraviolet (XUV) spectroscopy was used to investigate relaxation dynamics in perovskite and its precursor, lead iodide, with carrier-specific signals arising from transitions from a common inner-shell level (I 4d) to the valence and conduction bands. Ultrashort (30 fs) pulses of XUV radiation in a broad spectrum (40-70 eV) were obtained using high-harmonic generation in a tabletop instrument. Transient absorption measurements with visible pump (3.1 eV) and XUV probe directly observed the relaxation of charge carriers after above band excitation for both perovskite and lead iodide in the femtosecond and picosecond time ranges.

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