

ULTRAFAST EXTREME ULTRAVIOLET ABSORPTION SPECTROSCOPY OF METHYLAMMONIUM LEAD IODIDE PEROVSKITE

MAX A VERKAMP, MING-FU LIN, ELIZABETH S RYLAND, JOSH VURA-WEIS, *Department of Chemistry, University of Illinois at Urbana-Champaign, Urbana, IL, USA.*

Methylammonium lead iodide (perovskite) is a leading candidate for use in next-generation solar cell devices. However, the photophysics responsible for its strong photovoltaic qualities are not fully understood. Ultrafast extreme ultraviolet (XUV) absorption was used to investigate electron and hole dynamics in perovskite by observing transitions from a common inner-shell level (I 4d) to the valence and conduction bands. Ultrashort (30 fs) pulses of XUV radiation with a broad spectrum (40-70 eV) were generated via high-harmonic generation using a tabletop instrument. Transient absorption measurements with visible pump and XUV probe directly observed the relaxation of charge carriers in perovskite after above-band excitation in the femtosecond and picosecond time ranges.