Internuclear-distance and angle dependence of strong-field ionization rates of UV-dissociated halomethanes. F. ZIAEE, K. BORNE, KANKA RAJU P., Kansas State University, R. FORBES, Stanford University, B. KADERIYA, Y. MALAKAR, T. SEVERT, I. BEN-ITZHAK, A. RUDENKO, D. ROLLES, Kansas State University — The dependence of the strong-field ionization rates of iodine-containing halomethanes on the iodine-carbon internuclear-distance and the orientation of molecular bonds with respect to the polarization direction of an infrared laser field is investigated utilizing a UV pump-NIR probe technique. Excitation at 258 nm initiates a resonant single-photon absorption cleaving the carbon-iodine bond. A subsequent NIR laser pulse ionizes the dissociating molecule at different delays. Measuring single and double ionization rates as a function of pump-probe delay allows the determination of their internuclear-distance dependence. Furthermore, by determining the delay-dependence of the fragment ion angular distributions, the gradual transition of the ionization from the molecular to the atomic limit is probed. Supported by the U.S. Department of Energy under grant no. DE-FG02-86ER13491.

Farzaneh ziaee
Kansas State University

Date submitted: 06 Feb 2019