

Abstract Submitted
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Wavelength Dependence of the Strong-Field Ionization of Isomeric Molecules STEFAN ZIGO, J.R. Macdonald Laboratory, Department of Physics, Kansas State University, Manhattan, KS 66506 USA, ALBERTO GONZALEZ CASTRILLO, ROBERT LUCCHESI, Department of Chemistry, Texas A&M University, College Station, TX 77843, USA, ANH-THU LE, CARLOS TRALLERO-HERRERO, J.R. Macdonald Laboratory, Department of Physics, Kansas State University, Manhattan, KS 66506 USA — The ionization behavior of isomeric molecules has been studied with the aid of time-of-flight mass spectroscopy (TOFMS). We study the influence of structural changes on the singly ionized strong-field ionization yields in randomly oriented C_4H_6 , C_4H_8 , and C_4H_{10} isomers as a function of intensity. The experiments were performed with three different light sources with center wavelengths of 800, 1320, and 1940 nm with pulse duration of 30, 50, and 150 fs, respectively. The isomeric pairs range from small to large changes in structure creating differences in the molecular properties, such as, orbital shape and ionization potential. This allows for the investigation of the influence of these property changes on single ionization in a broader range of conditions. In addition, the experimental results serve as a benchmark for current molecular ionization theories. This proposal was supported by the Chemical Sciences, Geosciences, and Biosciences Division, Office of Basic Energy Sciences, Office of Science, U.S. Department of Energy (DOE).

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