

Contribution submission to the conference Rostock 2019

Ultrafast Photoelectron Circular Dichroism Changes in 1-Iodo-2-methylbutane — ●V. MUSIC^{1,2}, F. ALLUM⁴, S. BARI³, T. M. BAUMANN¹, R. BOLL¹, S. DOERNER³, A. EHRESMANN², B. ERK³, P. GRYSHTOL¹, G. HARTMANN², A. KNIE², M. LARSSON⁷, J. LEE⁴, B. MANSCHWETUS³, L. MARDER², R. MASON⁴, M. MEYER¹, H. OTTO², D. ROLLES⁵, P. SCHMIDT², K. SCHUBERT³, L. SCHWOB³, R. WAGNER¹, V. ZHAUNERCHYK⁶, and M. ILCHEN^{1,2} — ¹European XFEL GmbH, Schenefeld, Germany — ²University of Kassel, Germany — ³DESY, Hamburg, Germany — ⁴University of Oxford, UK — ⁵Kansas State University, Manhattan, USA — ⁶University of Gothenburg, Sweden — ⁷AlbaNova University Center, Stockholm, Sweden.

Highly intense circularly polarized XUV free-electron laser pulses were used to observe the time-resolved photoelectron circular dichroism (TR-PECD) of a prototypical chiral molecule as 1-Iodo-2-methylbutane ($C_5H_{11}I$) during laser induced fragmentation. The presented experiment was performed at the BL1 CAMP endstation at FLASH1 in Hamburg. With a two-sided velocity map imaging spectrometer, electron-ion correlations were obtained and the time-resolved ejection of ionic and neutral atomic iodine was observed. These fragments serve as observer site to monitor the evolving chirality of the molecule. For probing the different fragmentation channels of the chiral molecule (R-enantiomer, S-enantiomer and the racemic mixture), two different photon energies, i.e. 63 eV (for neutral iodine) and 75 eV (for singly charged iodine), were used.

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