

Abstract Submitted
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Multiple Ionization and Fragmentation of SF_6 using the LCLS Femtosecond X-Ray FEL¹ T. OSIPOV, L. FANG, M. HOENER, B. MURPHY, WMU, E. HOSLER, UC, Berkeley, C. BOSTEDT, J.D. BOZEK, SLAC, LCLS, E. KANTER, S.T. PRATT, ANL, S.R. LEONE, UC, Berkeley, N. BERRAH, WMU — Sulfur hexafluoride molecules were irradiated by the high intensity FEL beam produced by the LINAC Coherent Light Source (LCLS) of the SLAC National Accelerator Laboratory. The molecules were ionized with pulses of 280 fs duration at 800 and 1000 eV photon energy. The experiment was conducted at the High Field Physics end-station of the Atomic, Molecular and Optical physics hutch. We used electron time-of-flight spectrometers for the high resolution measurements of the product photo- and Auger-electrons energy at five exclusive angular directions and several different retardation settings. Separate ion time-of-flight measurements were taken to identify multiple types of recoiling fragments and their charge states for different FEL pulse durations and photon energies. The combined result of these two approaches provides unique information about the chain of multi-step ionization events and molecular fragmentation pathways of the SF_6 molecule.

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