

Abstract Submitted
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Femtosecond-resolved multiphoton ionization of C₆₀ using X-ray pump X-ray probe with the LCLS FEL¹ NORA BERRAH², Univ of Connecticut - Storrs, LCLS LJ15 COLLABORATION³ — We studied the time-resolved ionization of C₆₀ using X-ray pump X-ray probe with 640 eV photons to examine the role of chemical effects, such as chemical bonds and charge transfer, on the fragmentation following multiple ionization of the molecule. The advanced simulations revealed that despite substantial ionization induced by the ultrashort (20 fs) X-ray pump pulse, the fragmentation of C₆₀ is considerably delayed. This work uncovered the persistence of the molecular structure of C₆₀, which hinders fragmentation over a timescale of hundreds of femtoseconds. Furthermore, we demonstrate that a substantial fraction of the ejected fragments are neutral carbon atoms.

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²LCLS J15: Berrah, Sanchez-Gonzalez, Jurek, Obaid, Xiong, Squibb, Osipov, Lutman, Fang, Barillot, Bozek, Cryan, Wolf, Rolles, Coffee, Schnorr, Augustin, Fukuzawa, Motomura, Niebuhr, Frasiniski, Feifel, Schulz, Toyota, Son, Ueda, Pfeifer, Marangos and Santra.

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