

DAMOP18-2018-000064

Abstract for an Invited Paper
for the DAMOP18 Meeting of
the American Physical Society

Time-Resolved Photoionization and Fragmentation Dynamics of Fullerenes Studied with the Linac Coherent Light Source Free Electron Laser (FEL)¹

NORA BERRAH, University of Connecticut

Time-resolved photo-induced responses of fullerenes subject to femtosecond free electron laser (FEL) x-ray ionization provide critical understanding of the fundamental mechanisms that drive the conversion of photons into chemical and kinetic energy on ultrafast timescales. We have measured and predicted the critical change in the behavior of fullerenes ionization using photons at the energy of 640 eV with 20 fs pulse duration. The experiment used the LCLS fresh slice x-ray pump and x-ray probe technique. The time-resolved experiment is interpreted with Molecular Dynamics Modeling to expose, from a fundamental point of view, the physical and chemical processes and their time evolution as well as provide information on the radiation damage relevant to bio-molecules.

¹This work was funded by the Department of Energy, Office of Science, Basic Energy Sciences (BES), Division of Chemical Sciences, Geosciences, and Biosciences under Grants No. DE-SC0012376