

Probing Molecules from Within using Ultra-Intense and Ultra-Fast X-Rays from the LCLS FEL

Nora Berrah,
Physics Department, Western Michigan University

The response of molecular systems to the ultra-intense, femtosecond x-ray radiation from the hard x-ray FEL, the Linac Coherent Light Source (LCLS), was investigated. Sequential multiphoton ionization, frustrated absorption [1] and double core hole production mechanisms [2,3] will be presented.

[1] M. Hoener et al., *Phys. Rev. Lett.* **104**, 253002 (2010)

[2] L. Fang et al., *Phys. Rev. Lett* **105**, 083005 (2010).

[3] N. Berrah L. Fang, B. Murphy, T. Osipov, K. Ueda, E. Kukk, R. Feifel, P. van der Meulen, P. Salén, H. T. Schmidt, R. D. Thomas, M. Larsson, R. Richter, K. C. Prince, J. D. Bozek, C. Bostedt, S. Wada, M. Piancastelli, M. Tashiro, M. Ehara, *PNAS*, (in press 2011)