

**Plenary Talk**

PV X Thu 9:00 e415

**Femtosecond x-ray induced dynamics of fullerenes using FELs and IR** — ●NORA BERRAH — University of Connecticut, Storrs, CT, USA

The new class of intense-femtosecond vuv and x-ray lasers has opened up new opportunities to study AMO physics with atomic spatial resolution and femtosecond temporal resolution. The understanding of physical and chemical changes at an atomic spatial scale and on the time scale of atomic motion is crucial not only for AMO physics but also for a broad range of other scientific fields. X-rays produced at FELs have energies and intensities sufficient to access core electrons to probe matter. The element-specificity of x-ray absorption has the ability to target specific atoms within matter. We used these attributes to

investigate the electronic and nuclear dynamics of fullerenes subjected to intense x-ray radiation from the linac coherent light source (LCLS) FEL.

We will report on the time-resolved photoionization and fragmentation dynamics of gas phase C60 using intense femtosecond LCLS x-ray pulses. In addition, we will discuss the photoionization dynamics of Ho3N@C80 carried out using both intense IR laser fields and x-rays from the LCLS.

Investigations of the ionization and fragmentation dynamics of nano-size fullerenes subjected to femtosecond strong x-ray lasers are important for understanding the mechanisms of matter under extreme conditions and radiation damage which will benefit the development of bio-imaging techniques.