



Contribution ID: 143

Type: Contributed poster

## Mega-Electronvolt Ultrafast Electron Diffraction at SLAC

*Monday, 25 June 2018 18:45 (15 minutes)*

Electron diffraction has been a staple technique for determining the structure of countless molecules for nearly a century [1]. However, it has only been in the last couple of decades that we have been able to use this technique to obtain time-resolved images of molecules undergoing light-induced chemical processes. Whilst numerous ultrafast electron diffraction (UED) experiments have been carried out [2-4], the experiments carried out at the ASTA Facility at SLAC are at the forefront of this technique [5].

In this poster we will discuss the results from several of the SLAC UED initiative experiments, including:

- The laser-induced rotational wavepacket of N<sub>2</sub> – the first UED experiment to simultaneously obtain sub-500 femtosecond time-resolution and sub-Ångstrom spatial resolution [6].
- The observation of the laser-induced vibrational wavepacket of I<sub>2</sub> [7].
- The recent investigation into the ring-opening process of Stilbene Oxide.

1. Davisson, C., & Germer, L. 1927. *Nature*, 119, 558–560, 1927
2. Yang, J., et al., *Struct. Dyn.*, 1, 044101, 2014.
3. Gao, M., et al., *Nature*, 496, 343–346, 2013.
4. Park, S. T., et al., *J. Chem. Phys.*, 124, 174707, 2006.
5. S. P. Weathersby, et al., *Rev. Sci. Instrum.*, 86, 073702, 2015
6. Yang, J., et al., *Nature Communications*, 7, 11232, 2016.
7. Yang, J., et al., *Physical Review Letters*, 117, 153002, 2016

**Primary authors:** Dr YANG, Jie (SLAC National Laboratory); Dr WOLF, Thomas (SLAC National Laboratory); Dr ROBINSON, Matthew (Universität Potsdam); Dr VECCHIONE, Theodore (SLAC National Laboratory); Dr NUNES, Pedro (University of Nebraska-Lincoln); Dr WANG, Xijie (SLAC National Laboratory); Dr CENTURION, Martin (University of Nebraska-Lincoln); Dr GÜHR, Markus (Universität Potsdam)

**Co-authors:** Dr LI, Renkai (SLAC National Laboratory); Dr HARTMANN, Nick (SLAC National Laboratory); Dr SHEN, Xiaozhe (SLAC National Laboratory); Dr COFFEE, Ryan (SLAC National Laboratory); Dr CORBETT, Jeff (SLAC National Laboratory); Dr FRY, Alan (SLAC National Laboratory); Dr GAFFNEY, Kelly (SLAC National Laboratory); Dr GORKHOVER, Tais (SLAC National Laboratory); Dr HAST, Karsten (SLAC National Laboratory); Dr JOBE, Keith (SLAC National Laboratory); Dr MAKASYUK, Igor (SLAC National Laboratory); Dr REID, Alexander (SLAC National Laboratory); Dr ROBINSON, Joseph (SLAC National Laboratory); Dr VETTER, Sharon (SLAC National Laboratory); Dr WANG, Fenglin (SLAC National Laboratory); Dr WEATHERSBY, Stephen (SLAC National Laboratory); Dr YONEDA, Charles (SLAC National Laboratory); Dr CRYAN, James (SLAC National Laboratory); Mr WILKIN, Kyle (SLAC National Laboratory); Dr ZEHNG, Qiang (SLAC National Laboratory)

**Presenter:** Dr ROBINSON, Matthew (Universität Potsdam)

**Session Classification:** Poster session