Stanford

Yusong Liu

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Bio

BIO

I am currently an associate staff scientist in SLAC LCLS SRD Chemical Science Department. My research interest falls in excited state dynamics of small organic molecules, and I am particularly interested in using novel experimental techniques probing the ongoing dynamics in real time and space. The excited state dynamics in these systems usually take place in attoseconds to picoseconds time scales. The strongly-coupled electronic and nuclear dynamics often result in ultrafast energy redistribution as well as structure transformation, and facilitate many phenomenons in physics, chemistry, and biology.

My research builds on my extensive experience with ultrafast optical laser science and technology and time resolved spectroscopies. I am currently focusing on developing experiments utilizing multiple time-resolved spectroscopy or diffraction techniques probing molecular dynamics. These included time-resolved valence-ionization spectroscopy, Soft X-ray core-ionization spectroscopy, and ultrafast electron and hard X-ray diffraction. Most of my experiments are built upon the LCLS FEL X-ray beamline, MeV-UED facility in SLAC national lab, and our own tabletop ultrafast laser lab in Stanford PULSE institute.

EDUCATION AND CERTIFICATIONS

- PhD, Stony Brook University , Physical Chemistry (2021)
- B.S., Ocean University of China , Optical Information (2013)

LINKS

- Google Scholar: https://scholar.google.com/citations?hl=en&tzom=420&user=0UAcHswAAAAJ

Publications

PUBLICATIONS

- **Rehybridization dynamics into the pericyclic minimum of an electrocyclic reaction imaged in real-time.** *Nature communications*
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- **Excited state dynamics of cis,cis-1,3-cyclooctadiene: UV pump VUV probe time-resolved photoelectron spectroscopy** *JOURNAL OF CHEMICAL PHYSICS*
  Liu, Y., Chakraborty, P., Matsika, S., Weinacht, T.
  2020; 153 (7): 074301

- **Excited state dynamics of cis,cis-1,3-cyclooctadiene: Non-adiabatic trajectory surface hopping** *JOURNAL OF CHEMICAL PHYSICS*
  Chakraborty, P., Liu, Y., Weinacht, T., Matsika, S.
  2020; 152 (17): 174302

- **Liquid-phase mega-electron-volt ultrafast electron diffraction** *STRUCTURAL DYNAMICS-US*
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- **Simultaneous observation of nuclear and electronic dynamics by ultrafast electron diffraction.** *Science (New York, N.Y.)*
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- **Excited state dynamics of CH2I2 and CH2BrI studied with UV pump VUV probe photoelectron spectroscopy** *JOURNAL OF CHEMICAL PHYSICS*
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- **Strong-field-versus weak-field-ionization pump-probe spectroscopy** *PHYSICAL REVIEW A*
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- **Real-time adjustable, 11 mu s FWHM, > 5 kHz, piezo electric pulsed atomic beam source** *REVIEW OF SCIENTIFIC INSTRUMENTS*
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- **Ultrafast internal conversion dynamics of highly excited pyrrole studied with VUV/UV pump probe spectroscopy** *JOURNAL OF CHEMICAL PHYSICS*
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