Scientific opportunities at ASU Compact X-ray Free Electron Laser:
Attosecond electron dynamics to chemical physics
Arizona State University
The Biodesign Institute, 1001 S. McAllister Ave, Tempe, AZ 85287
Lower level, room AL1-14
Feb 5-6, 2018

Monday
7:30 Breakfast
8:00 Welcome (ASU VP for Research Elizabeth Cantwell)
8:05 Introduction to CXFEL: Design and current status (Bill Graves)
8:30 Experimental modalities with CXFEL (Arvinder Sandhu)

Session 1: Ultrafast x-rays to study atomic and molecular dynamics (Chair: Lou DiMauro)

8:45 Philip Bucksbaum (Stanford University)
*Plotting electron and nuclear motion in molecules using ultrashort x-rays*

9:15 Linda Young (Argonne National Lab)
*Manipulating inner-shell electron dynamics*

9:45 Oliver Gessner (Lawrence Berkeley Labs)
*Ultrafast X-ray studies of chemical and interfacial dynamics*

10:15 Summary and discussions led by the session chair

10:30 Coffee Break

Session 2: Attosecond x-ray spectroscopy and imaging (Chair: Bill McCurdy)

10:45 Thomas Pfeifer (Max Planck Institute, Heidelberg)
*Fundamental quantum dynamics in the time domain: Nonlinear spectroscopy and dynamical imaging of atoms and small molecules at FELs*

11:15 Zenghu Chang (University of Central Florida)
*Attosecond transient absorption near the water window*

11:45 Andreas Becker (JILA, University of Colorado)
*Theoretical aspects of temporal resolution of atomic photoionization*

12:15 Summary and discussions led by the session chair

12:30 Working lunch, Biodesign lower level atrium, 1001 S. McAllister Ave., Tempe, AZ 85287

1:15-2:45 CXFEL FACILITY TOUR

Session 3: X-ray probing of charge and energy dynamics in chemistry (Chair: Oliver Gessner)

2:45 Philippe Wernet (Helmholtz-Zentrum Berlin)
*Transition Metals in Chemistry and Biology - Bonding and Dynamics with X-ray Spectroscopy at Current and Future X-ray Lasers*

3:15 Albert Stolow (University of Ottawa and National Research Council Canada)
*Ultrafast X-ray Spectroscopy of Conical Intersections*

3:45 Daniel Rolles (Kansas State University)
*Studying ultrafast electronic and nuclear dynamics in molecules by time-resolved electron and ion spectroscopy*

4:15 Summary and discussions led by the session chair

4:30 Coffee Break
Session 4: Nonlinear spectroscopies and condensed phase dynamics (Chair: Sergio Carbajo)

4:45  Keith Nelson (Massachusetts Institute of Technology)
      *Time-resolved measurements with soft and hard x-ray pulses for pumping and probing*

5:15  Anthony Starace (University of Nebraska Lincoln)
      *New Features in One- and Two-Photon X-ray Atomic Ionization Processes*

5:45  Uwe Thumm (Kansas State University)
      *Time-resolved photoemission*

6:15  Summary and discussions led by the session chair

6:45  *Reception and Dinner at University Club, 425 E. University Dr., Tempe, AZ 85281*

Tuesday

8:00  Breakfast

Session 5: Femtosecond x-ray and electron diffraction (Chair: John Spence)

8:30  Matthias Fuchs (University of Nebraska Lincoln)
      *Nonlinear Hard X-ray Optics*

9:00  Yimei Zhu (Brookhaven National Laboratory)
      *Revealing electron-phonon coupling and interplay in strongly correlated materials with ultrafast electrons*

9:30  Martin Centurion (University of Nebraska Lincoln)
      *Ultrafast Electron Diffraction from Molecules in the Gas Phase*

10:00 Summary and discussions led by the session chair

10:15  *Coffee Break*

Session 6: Excited state dynamics and strong field science (Chair: Scott Sayres)

10:30 Thomas Weinacht (Stony brook University)
      *UV pump VUV probe measurements of excited state molecular dynamics*

11:00 Kenneth Schafer (Louisiana State University)
      *Time-resolved high harmonic spectroscopy: A coherent probe of charge migration*

11:30 Louis DiMauro (Ohio State University)
      *Strong-field probing of atomic and molecular dynamics*

12:00 Summary and discussions led by the session chair

12:15  *Concluding Remarks/Discussions*

12:30  *Bagged Lunch and departure*