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