



APS/IIT *Virtual* Summer XAFS School

August 1-4, 2021

Illinois Institute of Technology

Department of Physics

collaboration with

Advanced Photon Source

Argonne National Laboratory



This XAFS summer school will be a VIRTUAL (remote-only) *no-cost* version of our traditional XAFS summer school that has been offered at IIT in Chicago in collaboration with the Advanced Photon Source. It will consist of a combination of pre-recorded video lectures, which will be viewable before the course, with some real-time video Q&A, and streaming demo sessions, with remote access to measurements on several beamlines at the APS. To facilitate participation by a worldwide XAFS community the real-time (synchronous) portions of the school mostly will be scheduled in late morning Chicago time (CDT). Much of the pre-recorded material can be viewed asynchronously ahead of time at the participants' convenience.

As in our traditional XAFS summer school, the material will cover fundamental and practical aspects of X-ray Absorption Fine Structure Spectroscopy: basics, sample preparation, experiment, theory, data analysis. The recommended prerecorded videos on fundamental aspects will be posted, and should be viewed in advance of the school.

There will be one day of measurements (Monday Aug 2) at several APS beamlines, followed by data analysis demonstration and Q&A using the Athena/iFEFFIT/Larch family of programs. Several experts will be available to informally discuss with participants by videoconference the various issues and experimental and analytical problems they may face on their own systems of interest.

The target audience is graduate students, postdocs, and experienced scientists who are new to XAFS, and want to use it in their own research.

Instructors are expected to include: Steve Heald (ANL), Matt Newville (UChicago), Bruce Bunker (U. Notre Dame), Shelly Kelly (Honeywell) (tentative), Bhoopesh Mishra (IIT), Carlo Segre (IIT), Grant Bunker (IIT), and other experienced XAFS researchers.

Outline of Content

(subject to change)

asynchronously presented content is marked (A)

synchronously presented content is marked (S)

- A: Introduction and overview of XAFS, history, applications
- A: Basic theory and interpretation of EXAFS and XANES
- A: synchrotron radiation, beamlines, detectors
- A: design, choosing measurement modes,
- A: sample geometry, sample preparation methods
- A: preparation and characterization of samples
- S: *Aug 3: measurements at Advanced Photon Source*
- A: Data reduction methods, Fourier methods
- A: Data models, nonlinear fitting, confidence intervals
- S: *Workshop education and analysis of XAFS data*
- A: Disordered systems, Linear combinations, PCA
- S: *reduction and analysis of XAFS data continued*
- A: Calculation of Theoretical Spectra, approaches
- S: *Data Analysis continued/Consult on special problems*

Participation in the experiments and interactive workshops is limited.



If you wish to apply, please email bunker@iit.edu
with subject line “2021 APS/IIT XAFS Summer School”