



APS/IIT Summer XAFS School

Now accepting applications

July 9-13, 2017

**Illinois Institute of Technology
Department of Physics
31st and State St.
Chicago, IL 60616**



This XAFS summer school is a continuation of the week-long summer school offered previously at the Advanced Photon Source; the venue will again be at IIT in Chicago, but will run Sunday-Thursday. Course material will cover fundamental and practical aspects of X-ray Absorption Fine Structure Spectroscopy: basics, sample preparation, experiment, theory, data analysis.

One day of hands-on experiments will be carried out by participants at several APS beamlines, followed by a guided data analysis laboratory using Athena/iFEFFIT and other programs. Computers will be available for those participants attending without their own laptops. The target audience is graduate students, postdocs, and experienced scientists who are new to XAFS and want to use it in their own research. Space is available for up to 40 students.

Instructors include: Dr. Steve Heald (ANL), Dr. Matt Newville (UChicago), Prof. Bruce Bunker (U. Notre Dame), Prof. Carlo Segre (IIT), Prof. Grant Bunker (IIT), and a number (positive, integer) of other experienced XAFS researchers also will participate.

The cost of the course is \$500 USD, which covers most but not all meals via an IIT meal card. Students will be responsible for their own housing (available on and off IIT campus) and travel to/from their home institutions. IIT is readily accessible by car, cab, and CTA train from O'Hare and Midway airports. Free time will be available most evenings for participants to visit Chicago attractions such as Grant Park, the Loop, Millennium Park, Lake Michigan; music, architecture, art, theater; Chinatown, White Sox, Field Museum, Shedd Aquarium, Adler Planetarium, and Navy Pier, restaurants, and pubs.

Please email bunker@iit.edu with subject line "2017 XAFS School" for more info

Schedule Outline (subject to modification)

S1: Lecture: Introduction and overview of XAFS, history, applications

S2: Lecture: Theory: Basic theory and interpretation of EXAFS and XANES

S3: Lecture: Experimental: synchrotron radiation, beamlines, detectors

S4: Lecture: Experimental: choosing measurement modes, geometry, sample preparation methods

M1: Lecture: Data Analysis: Data reduction methods, Fourier methods

M2: Lecture: Data Analysis: Data models, fitting, information content, confidence intervals

M3-M4: Lab: sample preparation and characterization

T1-4: *all day* Lab: Measurements at Advanced Photon Source

W1: Lecture: Theory: Calculation of Theoretical XAFS spectra

W2: Lecture: Theory: Disordered systems and other complications

W3: Lab: Calculating theoretical spectra with FEFF 8 and other programs

W4: Lab: Reduction and Analysis of APS data

R1: Lecture: Related Techniques: e.g. IXS, Raman, DAFS, XMCD

R2: Lab: Reduction and Analysis of APS data (continued)

R3: Parallel session: Data Analysis Lab/Consult on special problems

R4: Lecture: Sketch of advanced/related topics, and conclusion

| Outline Schedule | Sun 7/9 | Mon 7/10 | Tue 7/11 | Wed 7/12 | Thurs 7/13 |
|------------------|--------------|------------|-----------|------------|------------|
| 8:00-9:00 AM | Registration | Breakfast | Breakfast | Breakfast | Breakfast |
| 9:00-10:15 AM | S1 | M1 | T1->ANL | W1 | R1 |
| 10:15-10:45 AM | coffee/tea | coffee/tea | - | coffee/tea | coffee/tea |
| 10:45 AM -12:00 | S2 | M2 | T2 | W2 | R2 |
| 12:00-1:30 PM | Lunch | Lunch | - | Lunch | Lunch |
| 1:30-2:45 PM | S3 | M3 | T3 | W3 | R3 |
| 2:45-3:15 PM | coffee/tea | coffee/tea | - | coffee/tea | coffee/tea |
| 3:15-4:30 PM | S4 | M4 | T4->IIT | W4 | R4 |
| 6:00 PM | Dinner | Dinner | Dinner | Dinner | Adjourn |
| Evenings | Open | Open | Open | Open | - |