Advanced Photon Source

A U.S. Department of Energy, Office of Science,
Office of Basic Energy Sciences national synchrotron x-ray research facility

WELCOME TO APS 101

APS USER ORIENTATION

U.S Department of Energy | THE UNIVERSITY OF CHICAGO | Office of Science Department of Energy | Office of Basic Energy Sciences Serving the Present, Shaping the Future

This course provides the following:

- information that will enable you to work safely at the APS
- an overall description of the APS Personnel Safety System (an engineered electronic interlock system designed to protect personnel against radiation exposure in the APS experiment hall)

1. APS SAFETY INFORMATION

At the APS, safety is EVERYONE'S responsibility. As such, it plays an integral role in the planning, review, and execution of all activities, including your work here. Accordingly, if you see any work being conducted that you believe may put you or others in immediate danger, you have the right and the obligation to stop the work and bring the situation to the immediate attention of your host beamline and a floor coordinator. If you are asked to stop work, you must do so.

The following information will acquaint you with specific safety precautions at the APS.

2. PROPER ATTIRE IN THE EXPERIMENT HALL

You must wear clothing that will provide protection from the hazards you will encounter. The type of clothing depends on the nature of the job and the physical, chemical, or biological hazards present.

If you work in a laboratory environment or other area where you may be subject to scrapes or abrasions:

1. you may not wear shorts, skirts, dresses, or sleeveless tops, and
2. your shoes must be closed-toed, slip-resistant, and reasonably flat-sided

In laboratories or areas where hazardous chemicals are being used, sandels, perforated or open toe, and canvas shoes or "athletic-type" footwear are prohibited.

3. RESTRICTED AREAS

At the APS, you may encounter restricted areas (e.g., laser enclosures, radiological controlled areas, construction sites, etc.) These areas may be entered only if you have the authorization by the person in charge of the area and you must adhere to all posted entry requirements.

4. PEDESTRIANS

Pedestrians in the experiment hall share the walkways with a variety of motorized/moving vehicles (e.g., forklifts, scissor lifts, and tricycles). Pedestrians must exercise caution and look in both directions before stepping into a walkway from the laboratory/office modules or beamline areas.

Watch your speed when operating an APS indoor vehicle.

5. HOISTING AND RIGGING

You may use the hoists located in the experiment stations at the APS only with authorization from your beamline host and by completing APS Chainfall Hoist Training (APS21111). Ask your beamline host for authorization and to help make the training arrangements for you.

If you need help lifting or moving heavy objects, the APS can provide the services of professional riggers. Ask you beamline host to help make these arrangements for you.

6. PROTECTION FROM FALLS

If you are working from a surface with an elevation of six feet or greater, fall protection is required. Your beamline host will provide further guidance.

7. WORKING IN EXPERIMENT ENCLOSURES AND WORKING ALONE

At the APS, you are not allowed to be in any experiment station with the doors closed.

When your activities involve significant hazards (e.g., working with reactive or unstable materials, toxic or corrosive liquids, gases or solid, or using machine tools), you are not permitted to work alone. If you will be working alone conducting non-hazardous activities, it is good practice to inform someone from your beamline host or the APS floor coordinator that you will be doing so.

8. USER MACHINE SHOPS

A small machine shop adequately equipped to meet immediate experimental needs is located in each LOM. To use the tools in the shop, you must have proper qualifications and obtain authorization from the LOM shop coordinator. To qualify, you must do all of the following:

- Be certified in advance by the APS to use the shop equipment
- Demonstrate proficiency in operating the machines you will need to use
- Have your LOM shop coordinator place your name on the authorized user list

9. APS RADIATION SAFETY

Configuration Control. Configuration controls are administrative policies and procedures that govern the placement of critical beamline components that serve to protect personnel from radiation exposure. These components are marked by signs and MUST NOT be moved or modified unless a configuration control work permit has been completed and posted. Contact your beamline host for guidance.
Any person who tampers with configuration-controlled components or makes an unauthorized and deliberate attempt to circumvent a radiation-safety-protection system may be denied access to the APS facility and could, potentially, be subject to criminal prosecution. In addition, the beamline will be taken off line until a formal review is completed. .

The importance of adhering to ALL radiological safety precautions, including the wearing of dosimeters, cannot be overstated. Nonconformance may result in severe sanctions for the APS and its users under the Price-Anderson Amendments Act.

At Argonne our goal is that there be no radiation exposures above background levels unless they are planned for and every reasonable effort has be made to reduce the exposure to as low as reasonably achievable. Before you perform work where you may be exposed ionizing radiation, you will receive one of Argonne's radiation safety courses. You may also be asked to demonstrate your radiation safety awareness via a practical examination.

Dosimeters are specifically required for

- Personnel working with radioactive material samples, non-exempt sealed sources, and x-ray generators
- Anyone working in a controlled radiation area
- Women who have declared themselves to be pregnant and expect to work in an area of potential radiation

Additionally, dosimeters will be assigned to anyone who specifically requests one for his or her own comfort. Dosimetry results can be obtained by contacting your host, who can arrange for these results to be sent to you.

Personnel working with radioactive samples, x-ray generators etc. may require additional training.

10. EXPERIMENT SAFETY REVIEW

- Before you arrange your trip to the APS, you must complete an Experiment Safety Assessment Form (ESAF) according to the procedures outlined by the APS.
- Your host beamline and the APS must review all commissioning and experimental activities you plan to conduct at the APS.
- Reviews are necessary to identify an appropriate combination of engineering and procedural hazard controls to maintain a safe working environment.
- The Experiment Safety Assessment Form (ESAF) documents the review and approval process and must be approved by both the beamline and APS; the final Experiment Authorization Form (EA) and Experiment Hazard Control Plan (EHCP) must be posted at the beamline BEFORE any experiment can begin.
- All user activities must be performed in accordance with the safety requirements designated on the EA/EHCP.

Experimental Samples. Known hazards of any materials, including experimental samples, that you ship or bring to the APS must be described on the Experiment Safety Assessment Form (ESAF) that you must complete prior to any scheduled beam time. You will ensure that hazard information for your experimental samples is reasonably accessible.

Hazardous materials must be shipped to/from the APS in compliance with Argonne and US Department of Transportation regulations. Disposal of samples/materials at the APS must follow Argonne Hazardous Waste Requirements. Additional information is available on the APS website. All hazardous materials that are brought to the APS must be declared on your ESAF.

Hazardous Waste. If your work here will generate hazardous chemical or radioactive waste, you must work with Argonne and your host to ensure that these wastes are stored and disposed of properly. Argonne will provide for hazardous waste disposal; your host will make sure you know the proper procedures. NOTE: except in certain cases, waste chemicals may not be disposed of down laboratory, restroom, or storm drains. Please follow these guidelines:

- If you generate hazardous waste they must be put in a Satellite Accumulation Area (SAA), and SAA requirements must be followed. Please contact your host for the proper procedure.
- Clearly identify which chemicals are in the waste.
- When combining chemicals in a common waste container or in a reaction, avoid incompatible reactions.
- Do not dispose of any chemical wastes in the laboratory/building floor drains.
- Never dispose of chemical waste outdoors on the ground, pavement, or into sewers or trash dumpers
- If you are involved in a hazardous material release, move out of harm's way and dial "911".

11. THE APS PERSONNEL SAFETY SYSTEM

Maintaining a safe work environment for users is a top priority at the APS. An important component of the APS' safe work environment is the PSS, or Personnel Safety System. The PSS is a reliable, redundant, fail-safe system that prevents radiation exposure.

Because every beamline and experiment station is unique, the specific features and details of the beamline where you will work will be explained to you during your sector-specific orientation.

The following important points are common to all Personnel Safety Systems:

1. Search and Secure

A "Search and Secure" procedure--to ensure that no person remains in the station after the door is closed--must be conducted before beam will be allowed into the station. You must remember that only ONE person can conduct a search and secure at a time. You will be taught how to conduct a Search and Secure during your sector-specific orientation.

2. Emergency Beam Stop and Door Disable Buttons

APS policy dictates that NO ONE is allowed inside a station with the doors closed at any time. **In the unlikely event that you are ever left in a station with the doors closed, the first thing you should do is press the red Emergency Beam Stop button.** This action will prevent any beam from entering the station by aborting storage ring operations.

To open a pneumatic station door that has a magnetic locking system and leave the station, push the DOOR OPEN button--automatic doors should slide open. If the door does not automatically open at that point, push the DOOR DISABLE button, which will dissipate any remaining air pressure. You will then be able to push the door open.

12. EXPERIMENT HALL SAFETY SUPPORT

- APS floor coordinators are members of the User ESH Support (UES) and work rotating shifts during user operations periods to provide safety support. They serve as facilitators between the beamline staff and APS/Argonne in obtaining APS or Argonne services. Offices for the floor coordinators are located on the experiment hall side of the central (or "C") pentagon of each LOM as shown below.
- Call 2-0101 from an on-site phone if you have questions.

LOM 434

Patti Pedergnana
4-0401

LOM 433

Clay White
4-0300

LOM 432

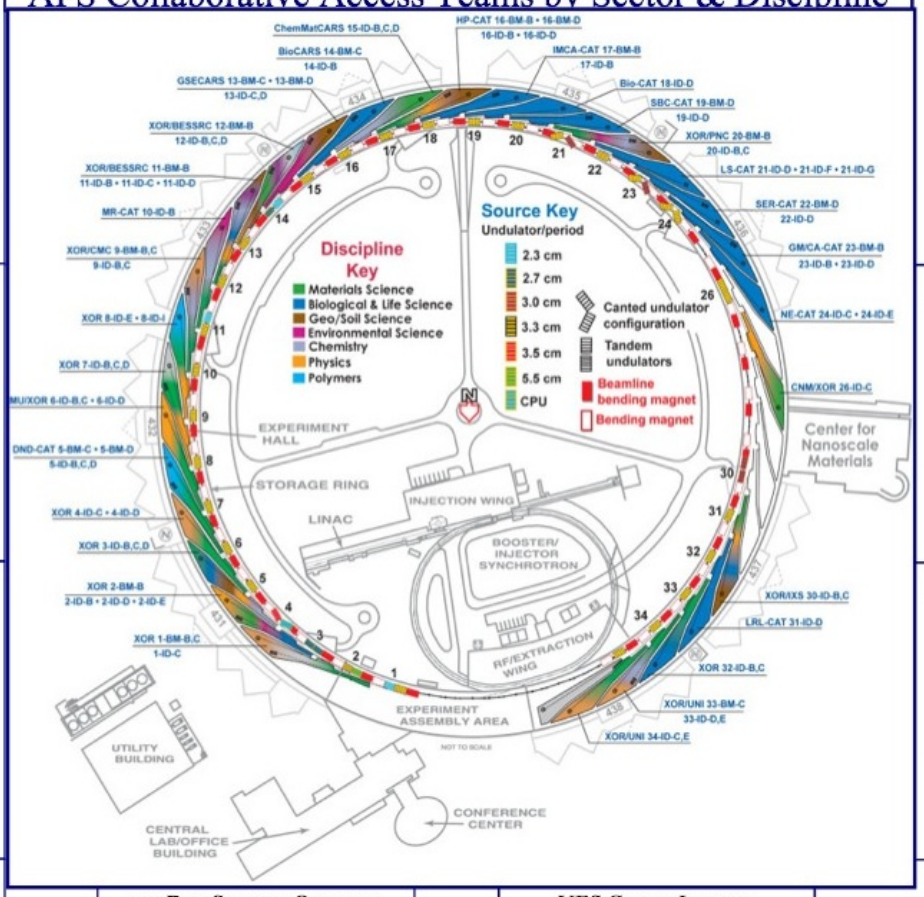
Bruno Fieramosca
4-0201

LOM 431

Floor Coordinator
On-Call

2-0101

APS Collaborative Access Teams by Sector & Discipline



LOM 435

Ray Monroe
4-0500

LOM 436

Wendy VanWingeren
4-0600

LOM 438

Dean Wyncott
4-0800

UES BIO-SAFETY OFFICER

Nena Moonier

UES GROUP LEADER

Bruce Glagola

13. APS ORIENTATION AND TRAINING REQUIREMENTS

Before conducting hands-on work at the APS, users must complete the orientation process. In addition, users who are not employees of Argonne National Laboratory must ensure that a signed User Agreement is in place between the APS and the user's home institution. The orientation process consists of the following steps:

- **Register as an APS user**, which can be done remotely through the following link: http://beam.aps.anl.gov/pls/apsweb/ufr_main_pkg.usr_start_page

- **Receive permission to come to the APS.**

- **Complete all required training.**

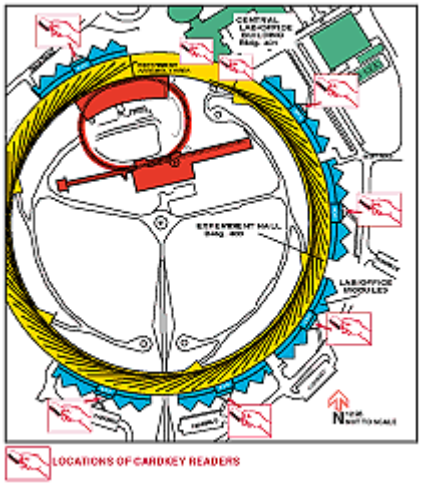
  APS Users must complete five core courses, sector orientation, and any additional courses required as a result of their specific experiments as described on the ESAF. You may take your five core courses before you arrive by clicking on the following link and follow the instructions: http://www.aps.anl.gov/News/APS_Today/Announcements/remote_training.html

  If you have completed General Employee Radiation Training (GERT) at another DOE facility with the past two years, you may skip that course and bring your GERT card to the APS User Office when you arrive. Alternatively, if you want to take all of your training here, access the Web site above, print out the study guides for each course, and call the APS User Office to make an appointment to take the tests. Any additional training specified on your ESAF (e.g., specific training for lasers , radioactive samples, biohazards, etc). must be taken in the APS User Office. Call 630-252-9090 to schedule that training.

13. APS ORIENTATION AND TRAINING REQUIREMENTS (Contd.)

- **Sign forms indicating your agreement to comply with APS/Argonne requirements.**

When you have completed the preceding steps, a User Office staff member will briefly review your orientation packet with you and provide forms for you to sign. After you have signed the necessary forms, the User Office will provide you with a an APS user badge. This photo ID/Cardkey® badge provides 24-hour access to the Argonne site and, when activated, to the APS experiment hall and laboratory/office modules (LOMs), as shown in the diagram to the right. You may also use your APS user badge at the main entrance to the central laboratory office building for after-hours and weekend access to the APS library and APS stockroom. The badge can also be used to obtain discounted lodging rates at the AGH.

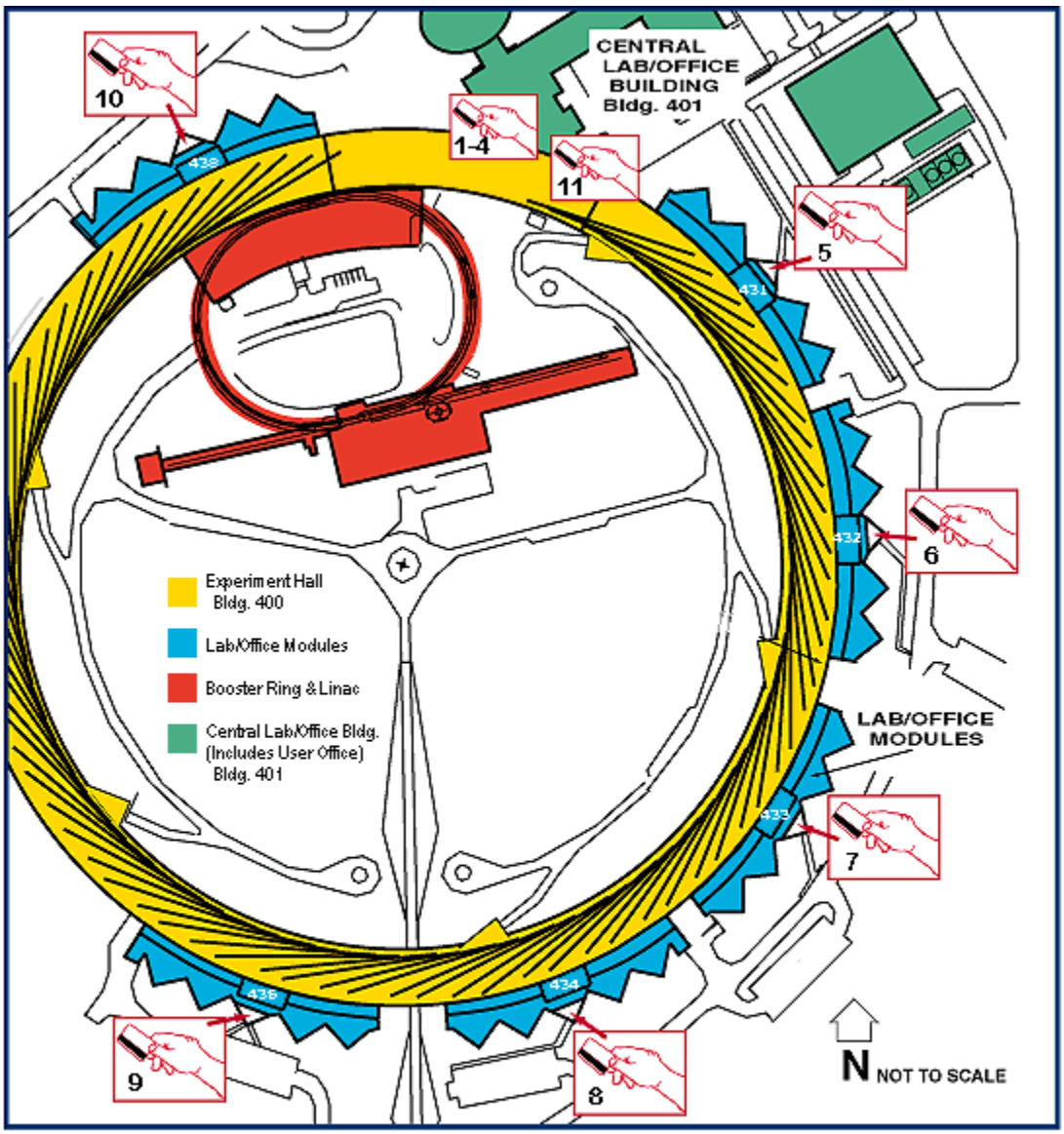


Click here or on the image above to see a plan view of the APS facility showing the general locations of Cardkey Readers for user access.

Please note: Your APS user badge is for YOUR USE ONLY. You may not use it to bring a visitor onto the Argonne site if that person does not have a badge or gate pass. You may not loan it to someone else to use. Using your badge in an unauthorized fashion may result in suspension of your access privileges. Your badge is government property. When you are no longer associated with the APS, your badge must be returned to the APS User Office.

- Complete sector-specific orientation (APS 2xx, where xx indicates the sector) with your beamline host. Sector-specific orientation must be completed for every sector in which you work.

LOCATIONS OF USER CARDKEY READERS



1. 401 Main Entrance (wheelchair access)
2. TEST STATION: User Office, 401, Room 1154
3. 401 Control Room Sliding Door
4. 401 Truck Airlock Entrance
5. LOM 431
6. LOM 432
7. LOM 433
8. LOM 434
9. LOM 435
10. LOM 438
11. 400 Experiment Assembly Area

14. APS USER OBLIGATIONS

The following are considered obligations of all APS users:

- Register with the APS as far in advance of your initial visit as possible (even when you are simply planning an experiment).
- Ensure that a User Agreement is in place between the APS and your home institution.
- Ensure that you complete all required training before conducting hands-on work at the APS.
- Complete Experiment Safety Assessment Form identifying all materials, equipment, hazards, and required controls.
- Complete End of Experiment Forms.
- Acknowledge the use of the APS and your host beamline when publishing results of research conducted at the APS.

  The following statement should be used:

  Use of the Advanced Photon Source was supported by the U. S. Department of Energy, Office of Science, Office of Basic Energy Sciences, under Contract No. DE-AC02-06CH11357.

- Report all publications resulting from work at the APS to your beamline host and the APS as soon as the publication appears.

- Notify the APS User Office promptly if you relocate to a different home institution or if the Howard Hughes Medical Institute becomes a co-sponsor of your research after you receive your APS user badge.Return your badge promptly to the APS User Office if you discontinue your association with the APS.