

Advanced Test Reactor National Scientific User Facility

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What are User Facilities?

Regional, national or international facilities with unique experimental capabilities. Access is typically cost free through a competitive proposal process.

There are more than 60 major user facilities in the U.S.

- Advanced scientific computing research
- High flux synchrotron and neutron sources
- Electron beam characterization
- Nano-scale science
- Biological and environmental research
- High energy and nuclear physics
- Fusion energy science

.....But there were no user facilities to address the unique challenges of nuclear energy!



Advanced Photon Source



Spallation Neutron Source

Meeting Nuclear Research Needs

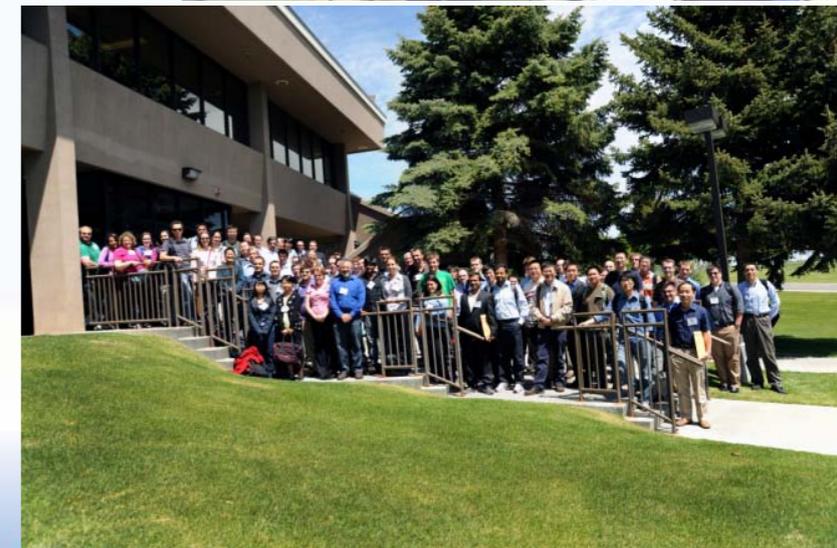
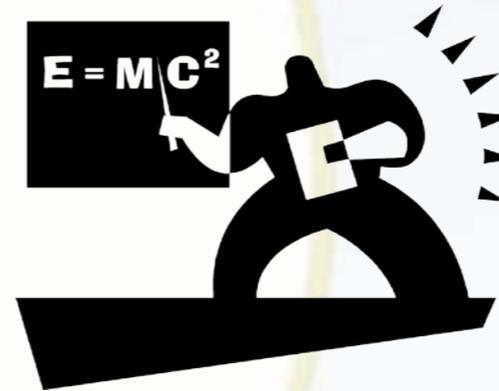
To perform the research required to support nuclear energy development requires specialized (expensive) and increasingly rare capabilities

- High flux reactors
- Hot cells
- Support infrastructure (shipping casks, test fabrication, etc.)

But also intellectual capital

- Universities
- Nuclear industry
- Innovative small businesses
- National laboratories

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The ATR National Scientific User Facility merges the national nuclear research infrastructure with intellectual capital to pair the best ideas with needed capability

Provides the nuclear energy research community access to the capability required to conduct cutting edge research and development



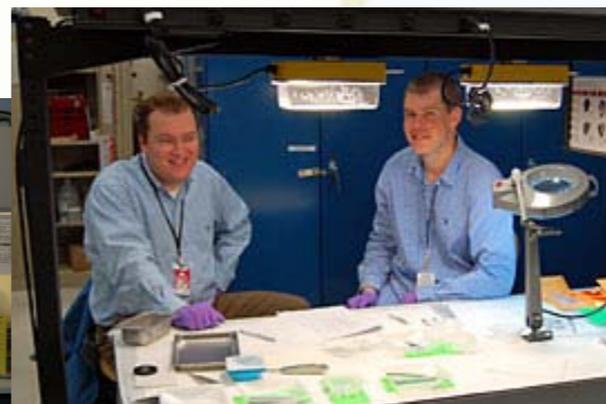
Test reactors and critical facilities (ATR, ATRC, HFIR, MITR, PULSTAR)



Examination facilities (INL MFC, NCSU, ORNL, UC Berkeley, Michigan, UNLV, Wisconsin)



Other National User Facilities (APS, SHaRE, NIST)



An active and engaged user community

- ***Illinois Institute of Technology – MRCAT beamline at Advanced Photon Source***
- ***Massachusetts Institute of Technology – Reactor***
- ***University of Michigan – Ion Beam Laboratory and Irradiated Materials Laboratory***
- ***North Carolina State University – PULSTAR reactor and PIE facilities***
- ***University of Nevada at Las Vegas – Radiochemistry Laboratory***
- ***University of Wisconsin – Characterization Laboratory for Irradiated Materials***
- ***UC Berkeley – PIE instruments***
- ***ORNL – High Flux Isotope Reactor, hot cells and PIE facilities***

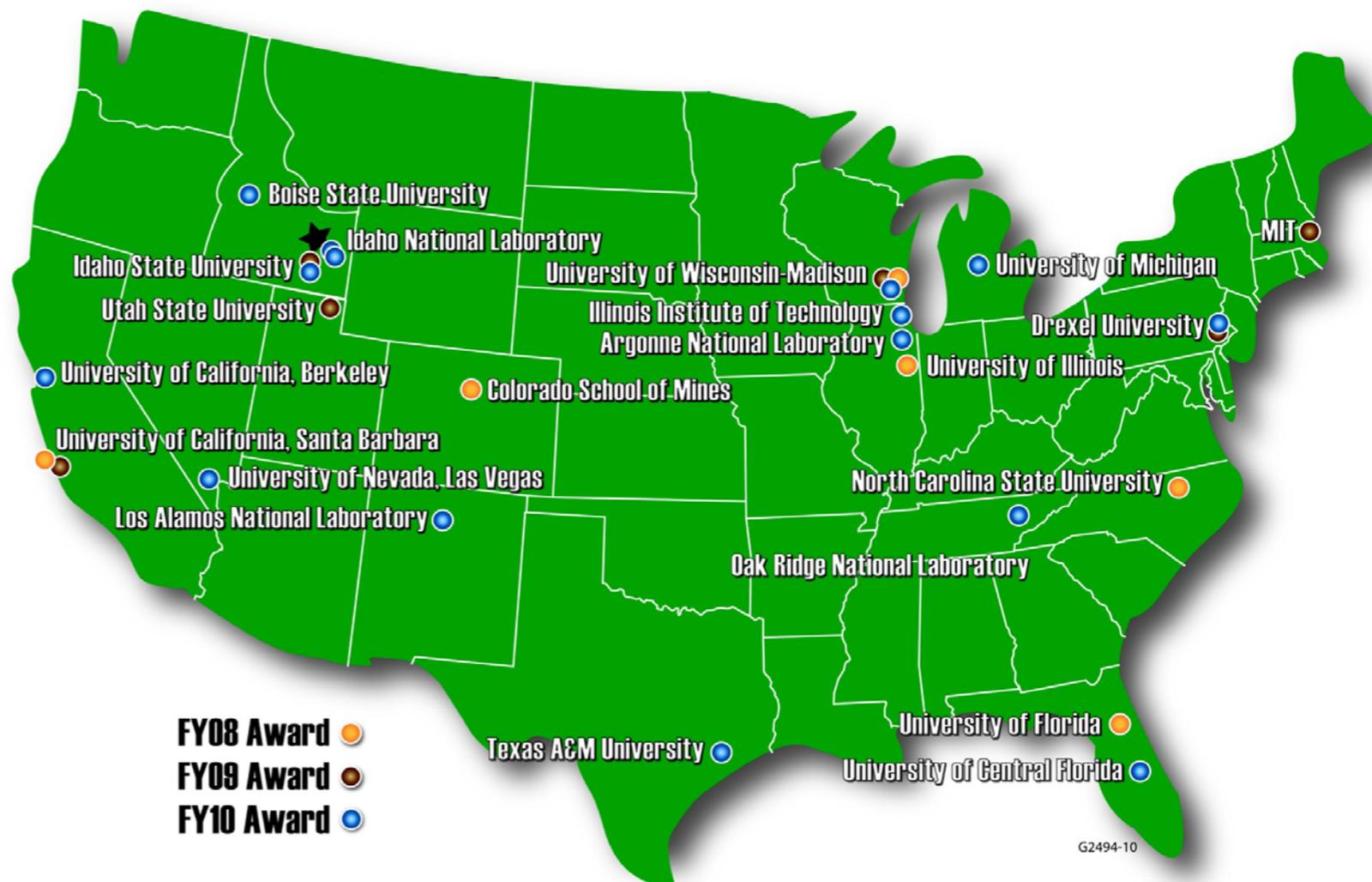
ATR NSUF Offers Research Opportunities

Access to one-of-a-kind capabilities through a competitive proposal process. Must be led by a U.S. university or college

- **Cost free access to capabilities required to conduct a complete irradiation experiment and examinations**
- **Rapid turnaround (low cost, short-term) experiments are awarded throughout the year. Rapid turnaround experiments are an ideal venue for partner facilities**

Current ATR NSUF Research Projects

- **Irradiation & PIE**
 - Projects irradiated in ATR and MIT, and on beamlines
- **ATR Critical Facility**
 - ⑩ Instrumentation testing
 - ⑩ Integral cross section measurement
- **Post-irradiation Exam Only**
 - ⑩ INL facilities
 - ⑩ Partner facilities
 - ⑩ Other User Facilities
- **Rapid Turnaround**
- **Selection process for all proposals**
 - ⑩ Technical merit determined by peer review
 - ⑩ Relevance to DOE and programs
 - ⑩ Technical feasibility



38 research projects awarded since 2008

ATR NSUF Users Week

- **User's Week held June of every year**
 - Introduction to ATR NSUF workshop
 - Variety of courses – change each year
 - Variety of workshops – change each year
 - Facility tours
- **Presentations are available on ATR NSUF web site**
- **Attendees include: students, faculty, industry, small business, national lab, regulators**

