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Three university teams win nuclear research funding awards

IDAHO FALLS — Three new university teams will soon be conducting nuclear energy experiments through the National Scientific User Facility based at Idaho National Laboratory.

These new research awards will enable academia to collaborate with national labs and industry to develop more robust reactor fuels and materials for advanced nuclear technologies. Three new proposals were chosen to conduct experiments through INL's Advanced Test Reactor National Scientific User Facility (ATR NSUF). Two projects were awarded solely through the ATR NSUF awards process, but the third project was jointly awarded by the U.S. Department of Energy Office of Nuclear Energy's ATR NSUF and its Nuclear Energy University Programs (NEUP).

The user facility grants free access for university-led research teams to use the ATR and other resources at INL and affiliated partner institutions. NEUP funds nuclear energy research and development, equipment upgrades, and student support at U.S. colleges and universities. Both ATR NSUF and NEUP play key roles in helping DOE accomplish its mission of leading the nation's investment in the development and exploration of advanced nuclear science and technology.

The three new projects were chosen from 14 proposals submitted during the fall fiscal year 2012 (FY-12) solicitation process. Pennsylvania State University, the University of Illinois and University of Michigan will work with scientists at INL and partner facilities, where their experiments will be conducted and analyzed.

- The Penn State team, led by Bernhard Tittmann, will use the research reactor at the Massachusetts Institute of Technology to study transducers that can take in-pile ultrasonic measurements of nuclear fuels and materials. Examination and analysis of the irradiated materials will take place at INL's Materials & Fuels Complex.
- The University of Illinois team, led by Jim Stubbins, will evaluate the tensile performance of irradiated iron-chromium alloys. The work will be performed by the Materials Research Collaborative Access Team (MRCAT) at Argonne National Laboratory's Advanced Photon Source, working with user facility partners from the Illinois Institute of Technology.
- The University of Michigan team, led by Gary Was, received a joint award from ATR NSUF and NEUP to examine whether post-irradiation annealing can mitigate the stress corrosion cracking that irradiation can trigger in reactor core materials. The work will be performed at the Microscopy and Characterization Suite (MaCS) laboratory within the Center for Advanced Energy Studies (CAES) at INL.

Since the user facility's inception, 42 experiments have been awarded. This is the first year NEUP and the ATR NSUF have collaborated on a joint solicitation. The joint process benefits the university research community by coordinating the proposal process and helping universities maintain a level of continuity for student researchers.

Todd Allen, scientific director for the user facility, says the arrangement to share research capabilities is valuable to both INL and academia. "This is an exciting set of awards for the NSUF for multiple reasons," Allen said. "First, we established a pathway to partner with the NEUP program, providing researchers another route to participate with the NSUF. Second, we touch all aspects of NSUF capabilities, ranging from new reactor experiments to post-irradiation examination. Finally, we engage both INL and partner capabilities in executing the research programs."

In 2007, the U.S. Department of Energy named the Advanced Test Reactor a National Scientific User Facility for basic and applied nuclear research. Since then, several additional facilities at INL as well as eight other national labs and universities have joined the ATR as user facilities to provide access to unique irradiation, post-irradiation examination, and beamline capabilities. Under this designation, the ATR NSUF partners with academia and industry to pursue the best ideas for nuclear research.

INL is one of the DOE's 10 multiprogram national laboratories. The laboratory performs work in each of DOE's strategic goal areas: energy, national security, science and environment. INL is the nation's leading center for nuclear energy research and development. Day-to-day management and operation of the laboratory are the responsibility of Battelle Energy Alliance.

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