



The National University Consortium engages in collaborative research that strengthens the portfolios of Idaho National Laboratory and our member universities while furthering the nation's strategic nuclear energy objectives.

NUC GOALS

- Create a laboratory component that stimulates discovery at technology and time scales beyond the constraints of current DOE missions while establishing strong partnerships with the university research community.
- Grow technology leadership reputation while building long-term capabilities, tools and techniques to advance nuclear technology.
- Establish linkages with NUC universities that will stimulate innovation and technical excellence as well as a source of high quality future employees.



Massachusetts Institute of Technology

The Massachusetts Institute of Technology is an independent, privately endowed university organized into five schools (architecture and planning; engineering; humanities, arts, and social sciences; management; and science). MIT has more than 11,000 undergraduate and graduate students and 1,000 faculty members. Current research and education areas include digital learning; nanotechnology; sustainable energy, the environment, climate adaptation, and global water and food security; big data, cybersecurity, robotics, and artificial intelligence; human health, including cancer, HIV, autism, Alzheimer's, and dyslexia; biological engineering and CRISPR technology; poverty alleviation; advanced manufacturing; and innovation and entrepreneurship.

The Department of Nuclear Science and Engineering at MIT conducts research in fission, fusion, nuclear security, radiation sources, detection and measurement, modeling and simulation and materials in extreme environments. The Center for Advanced Nuclear Energy Systems aims to hasten the development of new and transformative technologies, materials, and methods that will make nuclear fission more affordable, more rapidly and securely deployable, and even safer. MIT also houses the MIT Nuclear Reactor Laboratory centered on a 6 MW MITR reactor with beam ports, automatic transfer facilities and in-core irradiation facilities.

NC STATE UNIVERSITY

North Carolina State University excels in science, technology, engineering, math, design, the humanities and social sciences, textiles and veterinary medicine.

Its 9,000 faculty and staff are world leaders in their fields, bridging the divides between academic disciplines and training approximately 34,000 high-caliber students to meet tomorrow's challenges. NCSU is leading efforts to curb nuclear proliferation, develop a smart electric grid, create self-powered health monitors, help farmers confront climate change and build a new American manufacturing sector.

Its award-winning Centennial Campus is home to more than 70 public and private partners—as well as the innovative Hunt Library, which Time magazine has dubbed “the library of the future.”

The Department of Nuclear Engineering at NCSU is home to the nation's first university-based nuclear reactor. The department's 17 faculty members conduct research on fission, nuclear security and radiation detection, plasma science and engineering, nuclear materials and nuclear computational science. The NCSU Nuclear Reactor Program, a partner of the Nuclear Science User Facilities (NSUF) Program, utilizes the 1 MW PULSTAR research reactor. Facilities at the reactor include a neutron powder diffraction facility, a neutron imaging facility, an intense position beam and an ultracold neutron source.



THE OHIO STATE UNIVERSITY

For 144 years, the Ohio State University has been one of the nation's largest and leading institutions of higher learning with more than 66,000 students and 3,400 faculty. Ohio State, one of the nation's top 20 public universities with \$934 million in research, conducts research in the areas of health sciences, energy and environment and food production and security. Ohio State has recently developed focus areas around topics such as: data analytics, materials and manufacturing for sustainability, and sustainable and resilient economy.

The Department of Mechanical and Aerospace Engineering at Ohio State houses a nuclear engineering graduate program that is strengthened by the presence of a 500 kW nuclear reactor. This program is designed to prepare students for successful careers in a variety of specialty areas associated with the application of radiation, radioactive materials and nuclear fission.

The Nuclear Reactor Laboratory is used for a wide range of nuclear-related research endeavors, including evaluation of material elemental constituents using neutron activation analysis (NAA) and neutron depth profiling (NDP); evaluation of radiation damage to electronic components and other materials, such as optical fibers and optical fiber-based sensors; evaluation of neutron and gamma-ray radiation sensitive detector performance; isotope production; and biomedical experiments.



THE UNIVERSITY of
NEW MEXICO



Founded in 1889, the University of New Mexico has nearly 35,000 students, represents a cross-section of cultures and backgrounds and features leading schools of medicine, law and fine arts. UNM's scientific research focus areas are bioinformatics, ecology and climatology; materials science; optical science; engineering, computation and data sciences; high energy density physics; quantum information science; and regional resource economics, water and environment. They are also developing programs in high performance computing, neuroscience and clean energy systems.

UNM's Department of Nuclear Engineering covers a wide range of nuclear applications, including: design and safety aspects of nuclear fission reactors; future energy solutions through development and implementation of nuclear fusion systems; safe disposal concepts for radioactive waste and methods for reduction of radiation releases from industrial facilities; and wide variety of radioisotope applications such as treatment and diagnosis of diseases, food preservation, manufacturing development, processing and quality control, and biological and mechanical process tracers.

Oregon State University was founded in 1868 and is one of only two universities in the United States to have sea grant, space grant and sun grant designations. With a record \$336 million in external research funding in 2016, OSU researchers are leaders and innovators in natural resources, technology, agriculture, public health and other areas.

OSU's School of Nuclear Science and Engineering was founded in 1959 and is known for its progressive research, large-scale test facilities and industry and government partnerships. With students and alumni from around the world, OSU helps drive the future of nuclear science through engineering, health physics and medical physics. Research areas include computational methods; research reactor operations and management; and nuclear reactor hydromechanics, systems design, and thermal-hydraulics.

The nuclear science and engineering school houses an on-site 1.1 MW TRIGA research reactor with irradiation facilities. The Advanced Nuclear Systems Engineering Laboratory is home to two major thermal-hydraulic test facilities—the High Temperature Test Facility and the Hydro-Mechanical Fuel Test Facility.

The Advanced Plant Experimental Facility is an integral systems test facility that accurately models the Westinghouse AP1000 pressurized water reactor. The Advanced Thermal Hydraulic Research Laboratory is dedicated to investigating fundamental properties in multi-phase fluid flow and heat transfer. It currently houses the Multi-Application Small Light Water Reactor.

For more information about Idaho National Laboratory's National University Consortium visit inl.gov/nuc or contact:

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