



## Laboratory Partners

### U. S. Department of Energy/National Nuclear Security Administration Laboratories

#### Los Alamos National Laboratory

Los Alamos, New Mexico

The Los Alamos National Laboratory mission is to develop science and technology across multiple disciplines to ensure the reliability of the nation's nuclear deterrent, reduce global threats and find solutions to other security and energy challenges. Specific mission areas include:

- ◆ **Nuclear Deterrence Stockpile Stewardship:** Providing an important component for national security by ensuring a security hedge, reassuring allies and serving as a disincentive to adversaries.
- ◆ **Protecting against Nuclear Threats:** Exercising unique capabilities and expertise in nonproliferation, counterproliferation and counterterrorism to prevent the unwanted dissemination and/or use of nuclear technology.
- ◆ **Emerging Threats, Cybersecurity:** Providing solutions to threats emerging worldwide, including cyber-physical vulnerabilities, threats in space, new technology and other emerging threats.
- ◆ **Energy Security Solutions:** Developing energy security through experimental and high-performance computational modeling and simulation.

Science capability pillars include:

- ◆ **Information Science and Technology:** Leveraging advances in theory, algorithms and the exponential growth of high-performance computing to accelerate the integrative and predictive capability of the scientific method, in particular in the areas of data science at scale, computational co-design and complex networks.
- ◆ **Materials for the Future:** Pursuing the discovery science and engineering required to establish design principles, synthesis pathways and manufacturing processes that control functionality in materials relevant to our missions.
- ◆ **Nuclear and Particles Futures:** Integrating nuclear experiments, theory and simulation to understand and engineer complex nuclear phenomena.
- ◆ **Science of Signatures:** Discovering new signatures, revolutionizing the measurement of signatures and engineering and deploying advanced signature-related technologies from the lab to the field.

## Lawrence Livermore National Laboratory

Livermore, California

Lawrence Livermore National Laboratory has a mission of developing and applying world-class science, technology and engineering that enhances the nation's defense, reduces the global threat from terrorism and weapons of mass destruction and responds with vision, quality, integrity and technical excellence to scientific issues of national importance. Specific mission areas include:

- ◆ **Biosecurity:** Developing, deploying and delivering advanced biodefense capabilities.
- ◆ **Counterterrorism:** Preventing and mitigating potentially catastrophic incidents involving chemical, biological, radiological and nuclear or high-explosive materials.
- ◆ **Defense:** Supporting the U.S. Department of Defense as a preeminent innovative science and technology contributor.
- ◆ **Energy:** Advancing national security through the production, development and deployment of energy resources and technology while understanding and reducing their environmental impacts.
- ◆ **Intelligence:** Providing timely, informed analytic and operational support, and unique science and technology support to a wide range of sponsors.
- ◆ **Nonproliferation:** Addressing nonproliferation challenges through innovative technical solutions.
- ◆ **Science:** Delivering scientific discoveries that address pressing national security challenges.
- ◆ **Weapons:** Ensuring the safety, security and reliability of the nuclear deterrent.

## Sandia National Laboratory

Albuquerque, New Mexico

Sandia National Laboratory's main mission revolves around developing science and technology in nuclear weapons, defense systems and assessments, energy, climate and global security to address complex threats facing the nation. Specific mission areas include:

- ◆ **National and Global Security:** Providing effective, efficient solutions through engineering, advanced science and technology to defend and protect the nation.
- ◆ **Nuclear Weapons:** Ensuring the U.S. nuclear arsenal is secure and reliable to support the nation's deterrence policy.
- ◆ **Energy:** Creating a secure, reliable and resilient energy source for the future to have an enduring supply of energy from domestic sources.

Sandia invests in the following research foundations:

- ◆ **Bioscience:** Providing biological solutions to critical challenges in energy and homeland security through research in bioenergy and biodefense.
- ◆ **Computing and Information Science:** Engaging in research and development in computing and information sciences in three areas: advanced computing systems; mathematics, algorithms and simulation; and information science and technology.
- ◆ **Engineering Science:** Integrating theory development, experimental discovery and diagnostics, modeling and computational approaches to refine the understanding of complex behavior in engineered systems.
- ◆ **Earth Science:** Performing earth and atmospheric sciences research and development to support Sandia's national security missions.
- ◆ **Materials Science:** Developing and integrating the theoretical insights, computational simulation tools and experiments that provide understanding of how mission-critical materials perform.
- ◆ **Nanodevices and Microsystems:** Increasing understanding of physical phenomena across the quantum to microscale continuum, creating novel nanoscale and microscale devices, achieving new methods of integration and realizing novel microsystems-based complex systems.
- ◆ **Radiation Effects and High-Energy Density Science:** Advancing science and engineering in radiation effects sciences, high-energy density science and pulsed-power science and technology to address critical national security issues.

Visit the [National Laboratories Office website](#) for more information on laboratory opportunities and user [facilities available](#) to TAMU System faculty. [Contact us](#) for assistance or questions.

# U. S. Department of Energy/National Nuclear Security Administration Sites and Plants

## Kansas City National Security Campus

Kansas City, Missouri

The mission at Kansas National Security Campus is to manufacture non-nuclear mechanical, electronic and engineered products for U.S. national defense systems. Additionally, the campus provides technical services for analyzing chemistry, testing the environment, nondestructive testing, simulations and analysis, mechanical analysis and more. Specific mission areas include:

- ◆ **Nuclear Security:** Manufacturing non-nuclear components for the nuclear stockpile, developing solutions for national security issues and safeguarding the nation's nuclear weapons.
- ◆ **Global Security:** Addressing global and national security issues and providing advanced manufacturing, emergency response planning, reverse engineering and secure communication design.

## Nevada National Security Site

Las Vegas, Nevada

The Nevada National Security Site is a preferred location for experiments supporting nuclear weapons stockpile stewardship programs, national defense programs and national security research, development and training programs, as well as vital programs of other federal agencies. Specific mission areas include:

- ◆ **Stockpile Science:** Ensuring the nation's nuclear weapons stockpile remains safe and secure through a range of science and technologies.
- ◆ **High-Hazard Testing:** Utilizing the high-explosive testing facility to provide data to support several national security programs.
- ◆ **Threat Detection:** Producing and employing high-tech, specialized detection equipment in counterterrorism efforts.
- ◆ **Waste Disposal:** Conducting permanent disposal of low-level radioactive waste generated by environmental cleanup sites corresponding with nuclear weapons research, development and testing.
- ◆ **Remote Sensing/Aerial Measurement:** Creating technologies for emergency response operations, remote sensing, counterterrorism and radiological incident response.
- ◆ **First Responder Training:** Conducting training courses and exercises to provide first responders with the tools needed to protect their communities.
- ◆ **Custom Fabrication:** Providing machine fabrication, dimensional inspection, welding, assembly and performance of acceptance testing for components aligned with the Nuclear Weapons Complex.
- ◆ **Research and Development:** Advancing new solutions to national and global security needs, and the primary source for discovery and innovation for the national security missions.

## Pantex Plant

Amarillo, Texas

The Pantex Plant is the primary facility for the final assembly, maintenance and dismantlement of nuclear weapons. Its responsibilities include life-extension, surveillance, assembly and high explosives operations. Specific mission areas include:

- ◆ **National Security:** Providing nuclear deterrent, ensuring a strong stockpile, reducing the total nuclear weapons in the stockpile and supporting the stockpile as the High Explosives Center for Excellence.
- ◆ **Technology Development and Transfer:** Producing valuable innovations and technologies, including additive manufacturing, CoLISSOS (the world's only X-ray inspection system), microfossil radiography and wind farms.

Visit the [National Laboratories Office website](#) for more information on laboratory opportunities and user facilities available to TAMU System faculty. [Contact us](#) for assistance or questions.

## Savannah River Site/Savannah River National Laboratory

Aiken, South Carolina

The Savannah River Site/Savannah River National Laboratory is recognized for its environmental stewardship, innovative technology and national security. Using science, researchers provide practical solutions to the nation's environmental cleanup, nuclear security and clean energy challenges. Specific mission areas include:

- ◆ **National Security:** Supporting national defense through capabilities and experience in defense, homeland security and nuclear material issues, including tritium stewardship, non-proliferation, nuclear materials recovery, forensics and atmospheric technologies.
- ◆ **Environmental Stewardship:** Applying unique expertise and technology to assist Department of Energy sites across the nation in meeting cleanup requirements, including tank waste processing and disposition; nuclear materials storage, processing, and transportation; scaled testing and demonstration; groundwater and soil remediation; and nuclear facility deactivation and decommissioning.
- ◆ **Secure Energy Manufacturing:** Exploring new, clean, safe, secure methods of obtaining energy sources, including hydrogen production and storage, renewable energy research and nuclear fuel cycle research and development.

## Y-12 National Security Complex

Oak Ridge, Tennessee

Y-12 National Security Complex contributes to national security by maintaining the nuclear stockpile, reducing global threats and providing feedstock to fuel the U.S. Nuclear Navy. Y-12's unique emphasis is on processing and storing uranium and developing technologies that coincide with its mission. Its expertise in science-based product evaluation, materials science, precision manufacturing, applied manufacturing technology, nuclear nonproliferation, data-driven operations management, software and the handling of nuclear materials has spurred scientific research and sparked innovation. Specific mission areas include:

- ◆ **Nuclear Deterrence:** Ensuring safety, security and reliability in the nation's deterrent for national security.
- ◆ **Global Security:** Globally training nuclear industry professionals, emergency responders and other security forces.
- ◆ **Naval Reactors:** Supplying the U.S. Navy feedstock with weapons removed from the nation's nuclear weapons stockpile to fuel submarines and aircraft carriers.
- ◆ **Technology Development and Transfer:** Ensuring innovative solutions and technologies and guaranteeing commercial rights to site-developed technologies licensed to the private sector.
- ◆ **Security:** Maintaining and improving the complex's security.

# U. S. Department of Energy National Laboratories

## Ames Laboratory

Ames, Iowa

Ames Laboratory conducts fundamental and applied research that supports development of new and unique materials, processes and technologies that advance the nation's economic competitiveness and enhance national security. Specific mission areas include:

- ◆ **Chemical and Biological Sciences:** Studying control and manipulation of chemicals and biological materials, developing new catalysts, discovering new biofuel conversion methods, exploring solvents and molecule diffusion, and developing tools and methods for biological and chemical processes.
- ◆ **Materials Sciences and Engineering:** Performing materials research across a broad spectrum, conducting discovery research that improves understanding of complex states of matter, and designing new materials and applications in advanced energy technologies.
- ◆ **Simulation, Modeling and Decision Science:** Developing effective, low-cost methods to improve power plant control, resulting in greater overall efficiency, lower carbon emissions and reduced costs.

## Argonne National Laboratory

Lemont, Illinois

Argonne National Laboratory is a science and engineering research center working in concert with universities, industry and other national laboratories on questions and experiments too large for any one institution to do by itself. Through collaborations, researchers develop energy innovations, create novel materials and gain a deeper understanding of the planet, the climate and the cosmos. Specific mission areas include:

- ◆ **Advanced Computing:** Modeling, computing and simulation are major components of Argonne's research efforts.
- ◆ **Discovery Science:** Conducting research to understand, predict and control matter and energy at the electronic, atomic and molecular levels.
- ◆ **Energy Research and Development:** Focusing on reliable, clean and affordable energy sources to ensure a strong economy, healthy environment and secure nation.
- ◆ **Global Security:** Maintaining the security and welfare of the nation.

## Brookhaven National Laboratory

Upton, New York

Brookhaven National Laboratory is home to multidisciplinary science and engineering efforts that contribute to nuclear science, energy science, data science, particle physics, accelerator science and technology, quantitative plant science, and quantum information science, using science and technology solutions. Specific mission areas include:

- ◆ **Photon Sciences:** Conducting research using photons to probe the structure and makeup of materials.
- ◆ **QCD (Quantum Chromodynamic) Matter:** Exploring how the matter that makes up atomic nuclei behaved just after the Big Bang.
- ◆ **Energy Research:** Developing technologies to power the transition to new, sustainable energy sources.
- ◆ **Physics of the Universe:** Leading high-energy/particle physics experiments to discover the secrets of the universe and answer questions about the fabric of space and time.
- ◆ **Climate, Environment and Bioscience:** Advancing scientific methods with the goal of achieving a sustainable future by providing guidance and opportunities for climate change management strategies, approaches to adaptation and policy decisions.

Visit the [National Laboratories Office website](#) for more information on laboratory opportunities and user [facilities available](#) to TAMU System faculty. [Contact us](#) for assistance or questions.



## Fermilab

Batavia, Illinois

Fermilab is America's particle physics and accelerator laboratory. It works to understand the smallest building blocks of matter, energy, space and time, and probes the farthest reaches of the universe to study the nature of dark matter and dark energy. Specific mission areas include:

- ◆ **Deep Underground Neutrino Experiment:** Unlocking the mysteries of neutrinos to understand the universe and how it works.
- ◆ **Particle Physics:** Discovering what the universe is made of and how it works to expand knowledge of energy, matter, space and time.
- ◆ **Accelerator Science and Technology:** Operating particle accelerators to investigate the mysteries of energy, matter, space and time, and to solve some of society's challenges.
- ◆ **Detectors, Computing and Quantum Science:** Utilizing detectors, sensors and other instruments to view and understand the subatomic world.

## Idaho National Laboratory

Idaho Falls, Idaho

Idaho National Laboratory conducts research that sustains and develops nuclear energy technologies, scales other clean energy technologies, protects infrastructure, supports national defense and homeland security, bolsters national security and protects nuclear materials. Specific mission areas include:

- ◆ **Nuclear Energy:** Leading research, development and demonstration projects to help the nation maintain and expand its use of nuclear energy.
- ◆ **Energy and Environment:** Ensuring the availability of clean energy, developing technologies to protect the environment and improving U.S. energy security and industrial competitiveness.
- ◆ **National and Homeland Security:** Solving issues such as threats posed by global terrorism, the proliferation of nuclear materials and the vulnerability of U.S. critical infrastructure.

## Lawrence Berkeley National Laboratory

Berkeley, California

Lawrence Berkeley National Laboratory's mission is to bring science solutions to the world, conduct research for a secure energy future, understand living systems to improve the environment, understand matter and energy in the universe and safely operate scientific facilities for the nation by bringing together multidisciplinary teams of research. Specific mission areas include:

- ◆ **Biosciences:** Solving national challenges in energy, environment and health issues, and advancing the engineering of biological systems for sustainable manufacturing.
- ◆ **Computing Sciences:** Computing and networking in fields of mathematical modeling, data analysis and computer system architecture and software.
- ◆ **Earth and Environmental Sciences:** Tackling environmental and energy issues to enable sustainable stewardship and judicious use of the Earth's subsurface energy sources.
- ◆ **Energy Sciences:** Seeking solutions to global energy-related challenges by understanding interactions between energy and matter.
- ◆ **Energy Technologies:** Leading internationally in energy-efficient technologies to develop science and policy solutions to address global challenges.
- ◆ **Physical Sciences:** Exploring forces and particles of matter from atoms across the farthest edges of the universe.

Visit the [National Laboratories Office website](#) for more information on laboratory opportunities and user facilities available to TAMU System faculty. [Contact us](#) for assistance or questions.

## National Energy Technology Laboratory

Morgantown, West Virginia\*

National Energy Technology Laboratory implements energy and environment research and development programs such as enabling domestic coal, natural gas and oil to power the nation, protecting the environment and enhancing energy independence. Specific mission areas include:

- ◆ **Coal:** Furthering the Department of Energy Fossil Energy Coal Program's goals and supporting existing and future power plants through the safe capture, use and storage of carbon and coal.
- ◆ **Crosscutting:** Creating transformational technologies and improving plant efficiency and reducing water consumption and costs under a single research umbrella.
- ◆ **Oil and Natural Gas Research:** Conducting research to improve production, processing, transportation and storage of oil and natural gas resources.
- ◆ **Energy Analysis:** Providing solutions in support of economic sustainability, energy supply security, mitigation of global climate change and improved environmental performance.

\*Additional Locations: Albany, Oregon; Anchorage, Alaska; Houston, Texas; Pittsburgh, Pennsylvania

## National Renewable Energy Laboratory

Golden, Colorado

The National Renewable Energy Laboratory focuses on finding creative solutions to today's energy challenges including fundamental science breakthroughs, new clean technologies and integrated energy systems that power the nation. Its research areas include bioenergy, geothermal, materials science, wind, water, computational science, energy analysis and more. Specific mission areas include:

- ◆ **Advanced Manufacturing:** Assisting manufacturers in finding energy efficient solutions for their products and processes.
- ◆ **Bioenergy:** Exploring biomass to bring biofuels and bioproducts to market.
- ◆ **Buildings:** Advancing the science and engineering of energy efficiency in buildings.
- ◆ **Chemistry and Nanoscience:** Investigating materials and processes to convert renewable resources into chemical and electrical energy.
- ◆ **Computational Science:** Solving challenges using computing, applied mathematics, scientific data management, visualization and informatics.
- ◆ **Energy Analysis:** Informing policy and investment decisions for more reliable and efficient energy systems.
- ◆ **Energy Storage:** Creating storage options with high-energy density, long storage life and market adaptability.
- ◆ **Geothermal:** Researching and developing technologies to advance geothermal energy.
- ◆ **Hydrogen and Fuel Cells:** Developing and demonstrating hydrogen production, delivery and storage and fuel cell technologies.
- ◆ **Materials Science:** Providing materials science discovery for next-generation renewable energy.
- ◆ **Solar:** Researching photovoltaics, concentrating solar power, solar grid and systems integration and more.
- ◆ **Water:** Evaluating and developing hydropower, marine and hydrokinetic renewable energy systems.
- ◆ **Wind:** Advancing wind technologies from conception to deployment.

## Naval Nuclear Propulsion Program

Washington D.C.\*

The Naval Nuclear Propulsion Program focuses on design, development and operational support to provide the military effective propulsion plants with the task of ensuring they are safe and reliable. Military and civilian personnel design and manage the nuclear-powered ships and facilities that support the naval fleet.

\*Additional Locations: Germantown, Maryland; Albuquerque, New Mexico

Visit the [National Laboratories Office website](#) for more information on laboratory opportunities and user facilities available to TAMU System faculty. [Contact us](#) for assistance or questions.

## Oak Ridge National Laboratory

Oak Ridge, Tennessee

Oak Ridge National Laboratory studies a broad range of scientific and engineering disciplines such as neutron research, high-performance computing, materials and nuclear processes to support scientific discovery, clean energy and security. Specific mission areas include:

- ◆ **Advanced Materials:** Leading in research for the development and manufacturing of advanced materials for energy generation, storage and use.
- ◆ **Clean Energy:** Delivering scientific discoveries to solve critical problems regarding society at the nexus of energy, environment and security.
- ◆ **National Security:** Providing science-based solutions for security threats through a multidisciplinary approach.
- ◆ **Neutron Science:** Utilizing neutron scattering to understand materials and initiate breakthroughs in medicine, energy, technology and industry.
- ◆ **Nuclear Science:** Focusing on fission and fusion technologies, advanced modeling and stable and radioactive isotopes, and researching technologies to address nuclear security challenges.
- ◆ **Supercomputing:** Conducting state-of-the-art research and development in computer and computational sciences.

## Pacific Northwest National Laboratory

Richland, Washington

The distinctive strengths of Pacific Northwest National Laboratory are using chemistry, earth sciences and data analytics to improve national security and the nation's energy resilience. The lab focuses on understanding the earth's climate, modernizing the electric power grids, safeguarding ports around the world and other projects that create a safer, more secure world. Specific mission areas include:

- ◆ **Scientific Discovery:** Incorporating biology, chemistry, earth system science, physics, computational research and materials science to fundamental research that makes the world safer and more secure.
- ◆ **Energy Resiliency:** Creating a new energy infrastructure that is resilient enough to withstand physical and cyber-attacks and adapts to incorporate renewables and engage customers.
- ◆ **National Security:** Developing science-based solutions that keep the nation safe by securing critical infrastructure, combating global terrorism and detecting concealed threats.

## Princeton Plasma Physics Laboratory

Princeton, New Jersey

Princeton Plasma Physics Laboratory is a national fusion center for fusion energy and plasma physics research. One of this facility's goals is to develop scientific understanding to implement fusion as an energy source for the world's long-term energy requirements. Specific mission areas include:

- ◆ **Experimental Fusion Research:** Recreating the process of fusion that powers the sun and stars by heating plasma and confining it in magnetic fields.
- ◆ **Theoretical Fusion Research:** Researching the scientific foundation for harnessing fusion energy and simulating plasma under different conditions.
- ◆ **Basic Plasma Science:** Exploring the behavior of electrically charged gas under a wide variety of environments.
- ◆ **Plasma Astrophysics:** Focusing on the behavior of plasma in the solar system and beyond.
- ◆ **Engineering:** Applying engineering to explore plasma science and develop fusion as a potential energy source for the future in collaboration with physicists.

Visit the [National Laboratories Office website](#) for more information on laboratory opportunities and user facilities available to TAMU System faculty. [Contact us](#) for assistance or questions.



## Stanford Linear Accelerator Center

Menlo Park, California

The Stanford Linear Accelerator Center National Accelerator Laboratory explores how the universe works at the biggest, smallest and fastest scales and invents powerful tools to help solve real-world problems and advance the interests of the nation. Specific mission areas include:

- ◆ **Accelerator Research:** Improving accelerators, on site and at other laboratories, toward the new generation of acceleration technology.
- ◆ **Astrophysics and Cosmology:** Studying the high-energy universe where cosmology and particle physics meet to understand the nature of dark energy and dark matter.
- ◆ **Elementary Particle Physics:** Studying high-energy particle collisions to understand the structure of matter and forces between subatomic particles.
- ◆ **Environmental Science:** Researching solutions to clean drinking water, contaminated sites and more by looking at chemical reactions taking place at the molecular and atomic scales.
- ◆ **Machine Learning:** Applying online data reduction, system controls, simulation and analysis of big data.
- ◆ **Materials, Chemistry and Energy Sciences:** Tackling problems such as finding cleaner energy sources and developing a more sustainable chemical industry through interdisciplinary research programs.
- ◆ **Matter in Extreme Conditions:** Understanding materials in exotic phases with unique characteristics using the center's X-ray and laser facilities.
- ◆ **Scientific Computing:** Enhancing the impact and scientific value of computing.
- ◆ **X-ray Science:** Providing powerful beams of X-ray light for thousands of researchers.

## Thomas Jefferson Laboratory

Newport News, Virginia

The Thomas Jefferson Laboratory utilizes its unique particle accelerator to study the basic building blocks of matter to understand the particles and the forces that bind them. The lab also uses technology to perform advanced computing and applied research with industry and university partners. Specific mission areas include:

- ◆ **Nuclear Physics:** Studying the subatomic world to learn how ordinary matter is formed.
- ◆ **Theory Center:** Pursuing a broad program of theoretical research for experimental nuclear physics.
- ◆ **Accelerator Science:** Using the lab's particle accelerator to study the quark structure of the atom's nucleus.

Visit the [National Laboratories Office website](#) for more information on laboratory opportunities and user facilities available to TAMU System faculty. [Contact us](#) for assistance or questions.