

# Building on Success

*Sandia facilities meet diverse needs for national security, research and partnerships*

Sandia National Laboratories' state-of-the-art facilities represent a unique set of scientific and engineering resources. They serve Sandia's national security mission and research needs. Certain facilities also are available to industry, academia, other laboratories, state and local governments and the broader scientific community. And, more than 10 percent of Sandia's building square footage is LEED (Leadership in Energy and Environmental Design) certified.

## Key facilities include:

The **Z Machine** is the world's most powerful laboratory pulsed-power driver, creating extreme states of matter at pressures equal to planetary interiors and at temperatures hotter than the center of the sun. Scientific experiments at Z address nuclear weapon issues, the frontiers of materials science and challenges of fusion ignition and high yield to provide a clean, abundant energy.

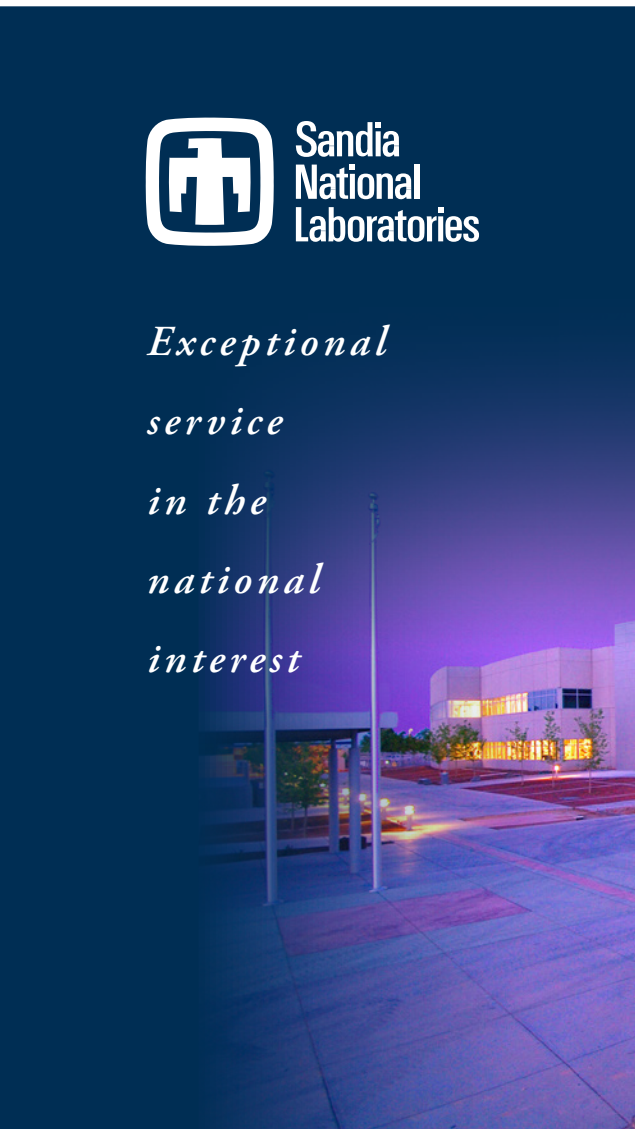
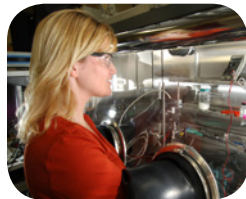
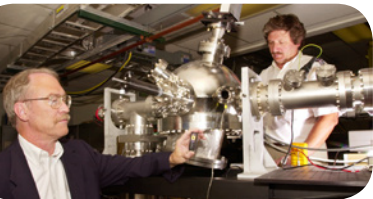
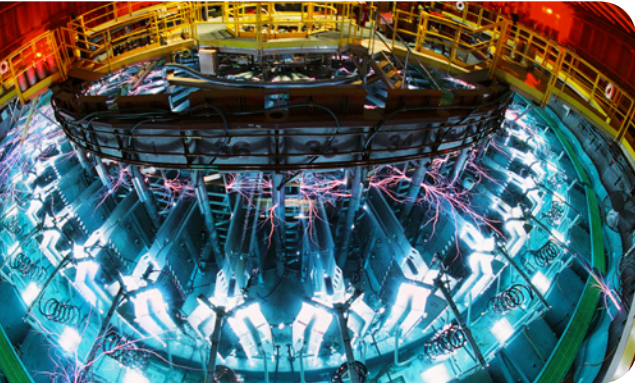
The **Microsystems Engineering Sciences and Applications Complex (MESA)** is a suite of facilities encompassing 400,000 square feet that produces unique silicon-based microsystems and includes cleanrooms and laboratories devoted to microsystems research and development. The complex unites numerous scientific disciplines to produce functional, robust, integrated microsystems for fundamental research and a myriad of technological applications.

The **Ion Beam Laboratory (IBL)** houses accelerator systems capable of generating ions of every element in nature from 1 electron volt to 400



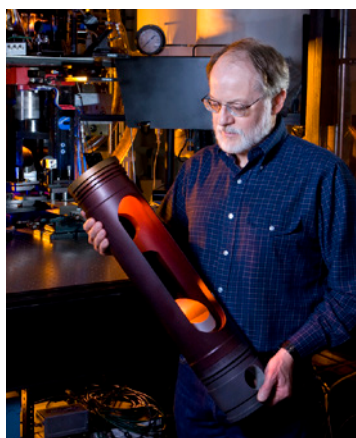
Sandia  
National  
Laboratories

*Exceptional  
service  
in the  
national  
interest*





million electron volts and at intensities ranging from single ions to trillions of ions per second. Among the uses of the building's high-energy beams is to rapidly analyze materials. A low-energy ion implantation beam then modifies them. This artificial condition helps improve predictions of the performance of materials used in electronic components.



The **Combustion Research Facility (CRF)** at Sandia's California site conducts basic and applied research aimed at improving our nation's ability to use and control combustion processes. Research ranges from studying chemical reactions in a flame to developing laser diagnostics.

The **Center for Integrated Nanotechnologies (CINT)** enables scientific understanding that governs the design, performance and integration of nanoscale materials. CINT, run jointly by Sandia and Los Alamos national laboratories, explores the path from scientific discovery to the integration of nanostructures into the micro and macro worlds.

The **National Solar Thermal Test Facility (NSTTF)** supplies experimental engineering data for the design, construction and operation of components and systems in proposed solar thermal electrical plants for large-scale power generation. Some 218 computer-controlled heliostats reflect concentrated solar energy onto the 200-foot-tall tower.

The NSTTF can provide high heat flux and temperatures for materials testing or aerodynamic heating simulation, a solar furnace and large fields of optics for astronomical observations or satellite calibrations.

The **Distributed Information Systems Lab (DISL)** at Sandia's California site develops technologies that make possible collaborative, high-performance computational work across the nuclear weapons enterprise. DISL research is focused on computing, visualization, distributed systems,



collaborative technologies and information technology. The 71,500 square-foot facility supports classified and unclassified work and has infrastructure for local and distance interaction with people and data.

The **Battery Abuse Testing Laboratory (BATLab)** is a world-renowned center for testing the limits of what batteries can safely handle, providing critical data for developing next-generation battery technology. Batteries of all kinds are run through every imaginable test, from crushing and piercing to heating and boiling, to make sure they are safe and reliable for commercial use.

Sandia's **large-scale environmental test facilities** provide controlled environments to test equipment's ability to withstand heat, shock and high-velocity impact, aerodynamics, acceleration and other environmental factors. These facilities include the **Thermal Test Complex**, the **Mechanical Shock Facility**, the **Rocket Sled Test Facility** and others. Experiments at these facilities can simulate scenarios to provide maximum research, test and evaluation data.

