Materials Science & Engineering





Since 1949, Sandia National Laboratories has developed science-based technologies that support the protection of our national security. We continue to be one of the nation's premier research, development and engineering laboratories, with over 8,000 employees across our sites in Albuquerque, NM and Livermore, CA. Our highest goal is to become the laboratory that the United States turns to first for innovative systems engineering solutions to our most challenging and complex problems.

The Materials Science and Engineering Center at Sandia National Laboratories provides the knowledge of materials structure, properties, and performance and the processes to produce, transform, and analyze materials to ensure mission success for our customers and partners, both internal and external to the laboratories.

Below are just a few of the projects you may be working on:

ENGINEERED MATERIALS



(Scaffold made by 3D Robocasting)

Material Scientists develop new and novel materials with defined properties or performance characteristics to meet Sandia's mission requirements. Scientific advancements are needed to understand how materials properties and performance depend on composition, microstructure, and preparation.

MATERIALS PROCESSING



(Low pressure plasma spray)

Sandia research staff provide the knowledge base needed to understand, characterize, model, and ultimately control materials fabrication technologies that are critical to component development and production.

FAILURE ANALYSIS



(SEM image of fracture surface)

Sandia's expertise in materials characterization and analysis provides unique capabilities for failure analysis. Identifying deformation, corrosion product, wear marks, cracks, or other markings is an important step in diagnosing the cause of failure.

JOINING, WELDING, & BRAZING



(High-reliability laser weld)

Sandia builds capabilities in joining, welding, and brazing. Material Science capabilities include specialized materials testing and processdiagnostics equipment, as well as custom and commercial software for desktop PC through supercomputer analysis, design, and modeling.

POLYMER SYNTHESIS, PERFORMANCE, & AGING



(Reversable-light-activated polymer)

Sandia has extensive expertise in polymer synthesis, formulation, and characterization. Polymer scientists can design desired properties at the molecular level and study fundamental performance, aging, and degradation.

HIGH-PERFORMANCE COMPUTING



(Simulation of recrystallization)

Using advanced computational methods, Sandia researchers perform full physics simulations from atomistic scale to component scale models.



FOCUS AREAS:

- Catalysis and Reaction
 Processes
- Ceramic Synthesis and Processing
- Corrosion
- Data Acquisition and Instrument Control
- Electronic and Optical Materials
- Materials Aging
- Materials Characterization
- Materials Reliability Analysis
- Nanostructured Materials
- Organic Synthesis
- Polymer Science
- Process Diagnostics and Control
- Spray Coating
- Surface Cleaning and Processing
- Thin Films and Coatings
- Tribology

PROFESSIONAL ATTRIBUTES:

- Strong Communicator
- Commitment to National Service
- Delivers Results
- Continuous Learner
- Team Contributor







MOST JOBS REQUIRE A U.S. DEPARTMENT OF ENERGY SECURITY CLEARANCE.

Opportunities include, but are not limited to:

- Advanced Materials (development, modeling, reliability)
- Advanced Weapons Systems
- Aerospace Technology (rockets, satellites, aircraft)
- Biomedical Engineering
- Destructive/Nondestructive Testing
- Energy Storage
- Energy Technology (renewable, fossil, fission, fusion)
- Explosives Engineering
- Homeland Security (sensors, analysis, access control)
- Instrumentation and Diagnostics
- Manufacturing Science and

Facilities:

- Advanced Materials Laboratory
- Advanced Manufacturing Process
 Laboratory
- Processing and Environmental Technology Laboratory
- Center for Integrated Nanotechnologies
- Integrated Materials Research Laboratory

Technology

- Mechanical Systems (design, test, deploy)
- Microsystems Science and Technology (microelectronics, microsensors)
- Modeling and Simulation
- Nano Science and Technology
- Robotics
- Transportation Systems
- Solid Mechanics
- Structural Dynamics
- Systems Engineering
- Thin Films
- MESA MicroFab
 (Compound Semiconductors)
- MESA SiFab (Silicon)
- Computer Science Research Institute
- Ion Beam Laboratory
- Combustion Research Laboratory





Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Security Administration under contract DE-ACO4-94AL85000 SAND 2012-5314P.