Lawrence Livermore National Laboratory

Materials Science
with a global impact

Start your journey in a collaborative research environment, where you can tailor your research trajectory to fit your interests.

Discover your mission. Are you passionate about designing and optimizing specialized materials? Do you want to leverage state-of-the-art experimental and computational tools to accelerate material discovery and scale-up? Are you excited about using novel advanced manufacturing techniques to fabricate structures with unique properties and performance? Do you want to address high-priority national security challenges? Our mission space is broad, and it continues to evolve.

Find your team. Materials science experts play key roles on team-based research projects at LLNL. For example, they:

- **Design innovative materials** for energy systems, advanced alloys, quantum devices, and extreme conditions.
- **Fabricate materials used in targets** at LLNL's National Ignition Facility, the world's highest-energy laser system, where fusion ignition was demonstrated in the lab for the first time.
- **Develop and test energetic materials,** analyzing their performance and stability across their lifespan.
- **Develop next-generation optical materials** for use in high-power laser systems, satellites, and telescopes.
- **Leverage LLNL's predictive modeling and artificial intelligence tools** to understand how materials will perform at scale, in relevant conditions, over their service lifetime.

The Gleeble thermomechanical simulator enables LLNL researchers to study the properties and characteristics of materials in extreme conditions and under massive loads.

Build connections. Our research environment is designed to foster collaboration. LLNL research teams bring together experts from multiple disciplines (e.g., predictive modeling, additive manufacturing, materials testing, system design, and quantum science), as well as collaborators from other institutions.

Access unique resources. Our scientists leverage LLNL's cutting-edge experimental and computational resources to drive innovation.

- Advanced Manufacturing Laboratory
- Polymer Enclave
- Metallurgy and Ion Accelerator Laboratory
- Energetic Materials Development Enclave
- High Explosives Applications Facility
- National Ignition Facility
- High-performance supercomputers

Through partnerships with other institutions, our scientists expand the scope and impact of their research—with activities involving:

- **Light sources** at SLAC and Argonne (HPCAT), where our scientists study material responses and phase transformations under extreme conditions of pressure, shock, and detonation.
- **Academic collaborators**, such as the Colorado School of Mines, Georgia Tech, and MIT—with shared research focused on critical materials, polymer formulations, separations science, and 3D printing.
- **International institutions**, including entities in Finland, Japan, and the Republic of Korea—exploring topics such as metallurgy, catalysis, hydrogen fuel carriers, energy materials, and quantum science.

LLNL researchers use a Hydride-Dehydride process to transform uranium–niobium alloy into a powder, which can then be formed into spherical feedstocks, ready for use in additive manufacturing.

Explore new pathways, personalizing your journey to focus on the work you value most.

Boost your skills. Lifelong learning is front and center at LLNL. Employees benefit from opportunities to attend seminars, gain new technical skills, take courses, or complete a certificate program. You can also receive coaching from experts in areas such as enhancing presentation skills, developing research proposals, and boosting project management skills.

Lead projects. LLNL provides an ideal environment for early-career staff and postdocs to develop as principal investigators. For example, they can apply for internal funding to lead a feasibility study or guide a small research team through an exploratory study. Project leaders receive guidance regarding managing project budgets and deliverables, hiring interns or postdocs, establishing collaborator agreements, participating in mid-term project reviews, and writing final project reports.

Embark on new challenges. Throughout your career at LLNL, you will have opportunities to take on new challenges, whether it's a new research area, a new mission focus, or a new leadership role. Examples include serving as a mentor, fostering new research collaborations, or leading a research group. Our staff also take on short-term assignments at LLNL, federal agencies, or universities. New opportunities make LLNL a great place to work and grow throughout your career.

Are you ready to start your journey at LLNL?

Educational degree. Our scientists come from a variety of backgrounds, and our research teams include experts in materials science, chemical and mechanical engineering, physics, biochemistry, and data science. Connect with us to explore how your knowledge, skills, and experience (including military experience) might be a great fit for a position at LLNL.

Expand your toolkit after joining LLNL. Innovation is often sparked through new perspectives. With this in mind, we aren't looking for the "perfect" job candidate who already has every skill we need. In fact, because LLNL missions often demand expertise in non-traditional fields of study—such as actinide science, material interactions and compatibility, alloys for extreme environments, and laser–material interactions—many essential skills are gained after joining LLNL, through mentorship, on-the-job-training, and personal discovery.

You'll learn throughout your career at LLNL as you serve on multidisciplinary research teams. For example, you'll have opportunities to collaborate with Lab experts who develop new additive manufacturing techniques. You can also gain insight from LLNL experts in artificial intelligence and machine learning, and you can serve on research teams that are exploring new ways to use these powerful tools to discover and optimize new materials.

Learn more

Explore our research areas:
materials-science.llnl.gov

We're hiring!
Scan code for more info

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