

Lawrence Livermore National Laboratory:

Science and Technology on a Mission



Scot Olivier

Program Leader, Nonproliferation R&D



- Established in 1952
- ~ 8,000 LLNS employees
- 1 square mile and 526 facilities
- Annual budget: ~ \$2.8B
- Operated by LLNS, LLC
(University of California and Bechtel, BWXT, Amentum, Battelle)



Experimental Test Site
(11 miles² near Tracy, CA)



Nuclear security is LLNL's core national security mission, and Nuclear Threat Reduction is one of the pillars of this mission

Stockpile Stewardship



- Annual Assessment
- Life extensions
- Improved predictive capability
- Enterprise integration and responsiveness

All-WMD Threat Reduction



- Nuclear nonproliferation
- Counterterrorism
- Chemical/biosecurity
- Forensic science
- All-source intelligence

Multi-Domain Deterrence



- Strategic defense
- Conventional strike
- Space security
- Cybersecurity

Energy and Climate Security



- Diverse domestic energy resources
- Enhancing reliable delivery
- Climate impact assessment

The Nonproliferation R&D program develops new capabilities to reduce nuclear threats at every developmental stage

Monitor • Detect • Characterize



Prevent • Counter • Respond

The Nonproliferation R&D program applies the Lab's core competencies to the nuclear threat reduction mission

Nonproliferation R&D

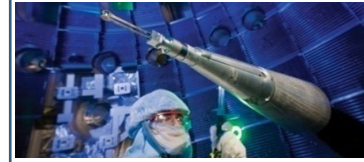
Nuclear Weapon Design



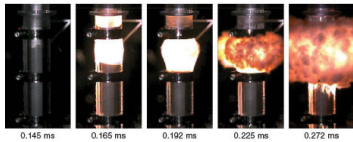
High-Performance Computing and Data Science



High-Energy Density and Laser Science



Explosives



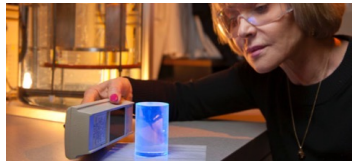
Intelligence



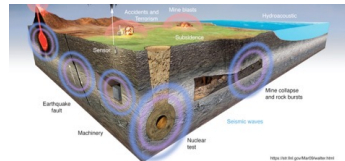
Forensic Science



Radiation Detection



Nuclear Explosion Monitoring

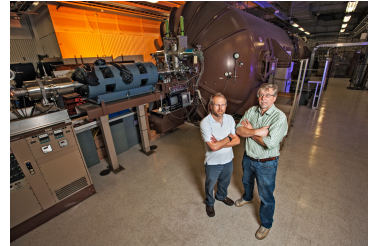


Atmospheric Modeling



Nonproliferation R&D Areas with Active University Collaborations

Nuclear physics, science and engineering
Radiation detector science and applications
Nuclear material science
Radiochemistry
Nuclear chemical engineering
**Computational and optimization methods
for nuclear security applications**
Nuclear Security Policy



Nuclear Safety Intern Pipeline



- Partnering with universities in nuclear safety and operations R&D
- Opportunities for BS, MS, PhD students and postdocs
- Accident and hazard analysis, control selection, system engineering
- Criticality Safety R&D and training
- Additive manufacturing for nuclear applications (ceramics, metals, polymers, scintillators, etc.)
- Radiochemistry
- Health Physics, Nuclear accident dosimetry



Figure 1. Students conducting research with ISSA.

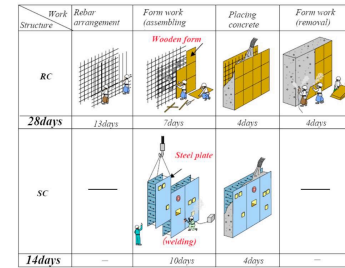
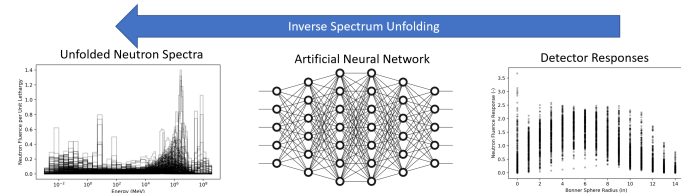
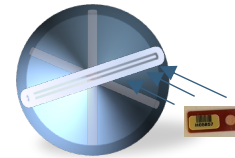


Figure 2: Illustration of how SC construction shortens the construction timeline.



LLNL Website for NNSA/DNN University Consortia

**Global Security**

Energy and Homeland SecurityNuclear Threat ReductionIntelligenceBiosecurity CenterForensic Science CenterFeatured Scientists

home / nuclear threat reduction / consortium

NNSA/DNN University Consortia

Consortia HomeProjectsResearchersStudent ResourcesLab CapabilitiesFAQ



LLNL supports several University Consortia to help build the pipeline of talent for the next generation of nuclear national security technical experts. The goal is to bridge the academic and Department of Energy (DOE) national laboratory knowledge bases to build broader support for non proliferation research and development.

LLNL has been actively engaged since the inception of the DNN consortia structure in 2012, contributing to the training of dozens of students so far. LLNL's world-class laboratory facilities and expertise provide unique opportunities for students to work at the cutting edge of national security research as part of their training. This successful collaborative enterprise has forged deep and enduring connections between LLNL and academia, and resulted numerous job opportunities at LLNL for consortium graduates. Through ongoing student-mentor collaborations, the university consortia program is training the next generation of nuclear science and security experts to lead the nation's research endeavors across government, industry, and our national labs.

gs.llnl.gov/nuclear-threat-reduction/consortium

Consortia HomeResearchersStudent ResourcesLab CapabilitiesFAQ



- LLNL Student Portal
- LLNL Student Opportunities
- LLNL Careers Page
- About Livermore

Student Resources

Working at LLNL

- Overview of the Lab

LLNL Points of Contact

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Summer Opportunities


- Summer Institute programs
 - Data Science Summer Institute (DSI)
 - Computational Chemistry and Materials Science (CCMS) Summer Institute
 - Materials and Chemistry Institute (MCI)
 - Seaborg Summer Institute on Nuclear Forensics
- International Nuclear Safeguards Policy Internship (joint with Middlebury Institute)
- General Summer Internships

Other In-residence Opportunities

- Consortia Information
- Student Resources
- Lab Capabilities
- Current R&D projects
- LLNL Researchers
- FAQ


NNSA/DNN University Consortia


Consortia HomeProjectsResearchersStudent ResourcesLab CapabilitiesFAQ





Lab Capabilities


LLNL offers a wide range of opportunities. The facilities listed below highlight some of the capabilities available.



Forensic Science Center


Advanced Manufacturing Lab (AML)


Livermore Computing (LC)


Center for Accelerator Mass Spectrometry (CAMS)


Nuclear and Radiological


Q-100 Robotics Laboratory

LLNL Points of Contact

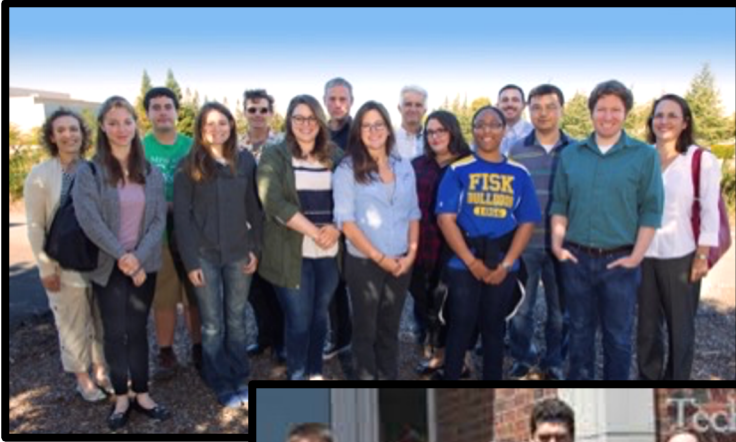
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Establishing strong academic collaborations is crucial for maintaining forefront S&T and training the next generation workforce



LLNL is hiring!



- Cutting-edge science and technology
- Some of the world's fastest supercomputers
- Career development and advancement
- Flexible work schedule
- Opportunities for varying levels of experience and education
- Competitive salary and benefits package

computing.llnl.gov/careers

careers.llnl.gov



Postdoc opportunities at LLNL

Professional development

- Research that is complementary to funded project
- Maintain university collaborations
- Travel and professional training activities

LLNL culture

- Networking and team building
- Postdocs allowed to PI grants
- Publishing is a priority

Emphasis on mentoring

- One-on-one meetings to help postdocs succeed

For more information email visit <https://postdocs.llnl.gov/>



2017 Diving Dog Event



Science and Technology on a Mission

