

Lawrence Livermore National Laboratory

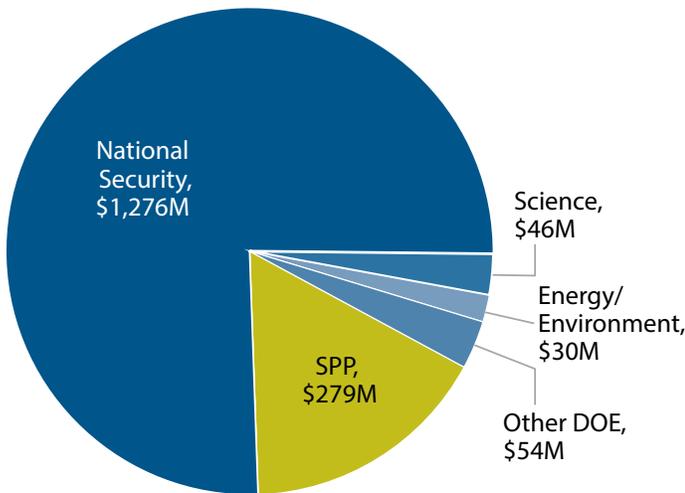
At a Glance



Science and technology on a mission— These are the hallmarks of LLNL. In service to DOE/NNSA and other Federal agencies, LLNL develops and applies world-class science, technology, and engineering (ST&E) to ensure the safety, security and reliability of the Nation's nuclear deterrent. LLNL also applies ST&E to confront dangers ranging from nuclear proliferation and terrorism to energy shortages and climate change that threaten national

security and global stability. Using a multidisciplinary approach that encompasses all disciplines of science and engineering, and employs unmatched facilities, LLNL pushes the boundaries to provide breakthroughs for counter-terrorism and nonproliferation, defense and intelligence, and energy and environmental security. Lawrence Livermore National Security, LLC has managed the Lab since 2007.

FY 2016 Funding by Source



Lab operating costs: **\$1,706M**
DOE/NNSA costs: **\$1,434M**
SPP costs: **\$271M**
SPP as % of total Lab operating costs: **16%**

Facts

Location: Livermore, California
Type: Multidisciplinary National Security Laboratory
Year Founded: 1952
Director: William H. Goldstein
Contractor: Lawrence Livermore National Security, LLC
Responsible Site Office: Livermore Field Office

Physical Assets

7,700 acres and **535** buildings/trailers
6.4M GSF in active buildings
0.8M GSF in 142 non-operational buildings
24,000 GSF in leased facilities
Replacement plant value: **\$6.8B**

Human Capital

6,500 full-time equivalent employees (FTEs)
20 joint faculty
200 postdoctoral researchers
500 undergraduate students
50 graduate students
4,300 facility users
1,500 visiting scientists

Core Capabilities

- Advanced Materials and Manufacturing
- Bioscience and Bioengineering
- Earth and Atmospheric Sciences
- High-Energy-Density Science
- High-Performance Computing, Simulation, and Data Science
- Lasers and Optical Science and Technology
- Nuclear, Chemical, and Isotopic Science and Technology
- All Source Intelligence Analysis
- Nuclear Weapons Design
- Safety, Risk, and Vulnerability Analysis

Mission Unique Facilities

- National Ignition Facility
- Livermore Computing Complex
- National Atmospheric Release Advisory Center
- High Explosives Applications Facility
- Contained Firing Facility
- Forensic Science Center
- Center for Micro and Nanotechnology
- Center for Bioengineering
- Jupiter Laser Facility
- Center for Accelerator Mass Spectrometry

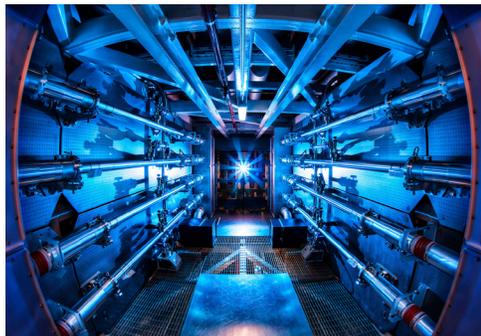
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Accomplishments



Unique Facility

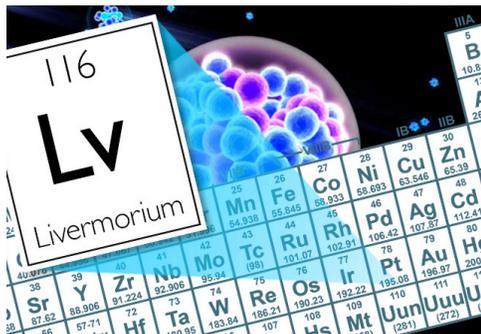
The World's Largest, Most Energetic Laser



LLNL is home to one of the complex's flagship user facilities, the National Ignition Facility (NIF). The world's largest and most energetic laser, NIF conducts experiments to generate data relevant to understanding nuclear weapon performance – information critical to DOE's stockpile stewardship mission. NIF also is used to study fundamental properties of matter at high energies and densities, such as astrophysical plasmas and planetary cores. NIF will begin using complex new diagnostic capabilities to directly observe the burning hot spot in fusion experiments. LLNL's long-standing leadership in high performance computing is indispensable for effectual design and interpretation of these complex NIF experiments.

Research Highlight

LLNL: a pioneer of super-heavy element research



In recognition of its pioneering work in nuclear science, LLNL has been awarded a place on the periodic table of elements. In collaboration with researchers in Dubna, Russia, LLNL scientists discovered super-heavy elements 114 and 116. These discoveries provide new insights into fundamental nuclear physics and formation processes for elements in the universe. In 2011, the International Union of Pure and Applied Chemistry (IUPAC) approved the name of Livermorium for element 116. In 2015, IUPAC confirmed that LLNL scientists and their collaborators had also discovered elements 115, 117, and 118. In November 2016 these elements were officially named moscovium (115), tennessine (117) and oganesson (118).

Technology to Market Highlight

Rapid Radiation Detection



A public-private partnership between LLNL and Tennessee-based ORTEC helped speed critical homeland-security technology to the marketplace. Radscout is a portable radiation detector developed by Lawrence Livermore National Laboratory for emergency first responders and inspection personnel for detection and rapid identification of material to determine the nature and scope of a threat. The product, now called Detective and Detective-EX, has been used to screen for dangerous radioisotopes in luggage and shipping containers, and rapidly reports its results on-the-spot. The detector also is being used at border crossings, cargo ship docks, and transportation terminals.