

LAWRENCE LIVERMORE REPORT

A weekly collection of scientific and technological achievements from Lawrence Livermore National Laboratory: July 13-20, 2009.

LLNL wins eight R&D 100 awards



The Laboratory has captured eight R&D 100 awards this year -- more than it has ever received in the annual competition. The previous LLNL record of seven awards was reached five times -- in 1987, 1988, 1997, 1998 and 2006.

Also known as the "Oscars of invention," the awards are given each year for the development of cutting-edge scientific and engineering technologies with commercial potential.

This year's awards hike the Lab's total to 129 since 1978.

The winning technologies are:

- GeMini Spectrometer
- Artificial Retina: Restoring sight to the blind
- The FemtoScope: A time microscope
- ROSE: Making compiler technology accessible to all programmers
- Land Mine Locator: Eradicating the aftermath of war
- Laser Beam Centering and Pointing System
- Spectral Sentry -- Protecting high-intensity lasers from bandwidth-related damage
- Precision Robotic Assembly Machine -- for building nuclear fusion ignition targets

The winning teams will receive their awards in November -- Orlando, Fla.

For more information, go to https://publicaffairs.llnl.gov/news/news_releases/2009/NR-09-07-03.html

San Francisco Business Times opens up on LLNL/Sandia project



Lawrence Livermore and Sandia national laboratories are working to open their doors to the private sector.

Technologies developed at the labs to build and test warheads and nuclear weapons could be transformed into clean energy, climate change, biotech and other sectors.

The federal agencies are pursuing better ways of commercializing their technology with other applications. They are partnering with the private sector in new ways and pushing for an open campus on 50 acres to help the labs better collaborate with the best and brightest.

In addition, the two Livermore-based labs are working with the local business council, consulting with MBA students and launching a formal "hub" program to partner with the transportation industry.

LLNL's Erik Stenehjelm and Roger Werne, director and deputy director of the industrial partnerships office, are tasked with forging new partnerships that will help get its discoveries to market.

To read more, go to

<http://www.bizjournals.com/sanfrancisco/stories/2009/07/13/story1.html?b=1247457600^1858206>

IEEE Spectrum keeps an eye on solid-state lasers



The Lab's Solid-State Heat Capacity Laser

When insurgents fire rockets and mortars on U.S. troops, the U.S. military wants to defend itself by selectively shooting down explosive-laden projectiles in the air before they reach their targets.

To tackle the problem, the Lab's solid-state heat capacity laser could be used. In 2002 the U.S. military launched a grand challenge called the Joint High Power Solid State Laser (JHPSSL). The Army's goal was a 100-kW electrically powered laser that it could use for distant battlefield targets.

The first step was a competition to reach 25 kW by late 2005 between four entrants: Northrop Grumman, Textron, Raytheon and Lawrence Livermore National Laboratory. The 25-kW output beam needed to remain tightly focused for 300 seconds while ensuring that the laser didn't self-destruct.

Lawrence Livermore had already developed a solid-state heat-capacity laser with a cooling system to ensure the laser would not be damaged.

To read how the laser works, go to <http://www.spectrum.ieee.org/semiconductors/optoelectronics/ray-guns-get-real/0>

Lab's Kennedy Reed earns Presidential Award for Excellence



Kennedy Reed

Lab physicist Kennedy Reed has been named by President Obama as a recipient of the prestigious Presidential Award for Excellence in Science and Engineering Mentoring.

Reed is a theoretical physicist at the Laboratory, working in research on atomic collisions in high temperature plasmas.

Reed has been a leader in national efforts to increase opportunities for minority students and professionals in the sciences, and has been instrumental in the development of programs that have had national impact.

He initiated and directed the Laboratory's Research Collaborations Program for Historically Black Colleges and Universities and Minority Institutions (HBCUs and MIs) -- an innovative program that links Laboratory scientists with professors and students in forefront research that benefits the Laboratory and the universities.

To read more, go to <https://newsline.llnl.gov/rev02/articles/2009/jul/07.17.09-reed.php>

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Newsline provides the latest Lab research and operations news. See the most recent issue at <https://newsline.llnl.gov>

Photo of the week



Fowl-feathered friends: One of the wild turkeys that frequent the Lab's one-mile-square site. Wild turkeys typically forage on forest floors, but also can be found in grasslands and swamps. They feed on nuts, seeds, fruits, insects and salamanders. The Wild Turkey was a very important food animal to Native Americans, but it was eliminated from much of its range by the early 1900s. Introduction programs have successfully established it in most of its original range, and even into areas where it never occurred before.

LLNL is managed by Lawrence Livermore National Security, LLC, for the U.S. Department of Energy's National Nuclear Security Administration.

LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

To send input to the Livermore Lab Report, send e-mail <mailto:labreport@llnl.gov>.

The Livermore Lab Report archive is available at:
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