



Discover LLNL

The Community Newsletter of Lawrence Livermore National Laboratory ♦ ♦ ♦ Winter 2004

Award-Winning Science

For the second consecutive year, LLNL researchers took away six R&D 100 Awards in the annual R&D 100 Awards competition sponsored by *R&D Magazine*.

Laboratory technologies honored represented a variety of breakthroughs such as a highly advanced electro-optic switch that will allow fast optical switching of high-average power lasers for machining, energy research and national defense applications; a sophisticated biological aerosol sentry system that will lead to early detection of biological pathogens; a first-of-its-kind extreme ultraviolet lithography (EUVL) system that can print features on computer chips almost twice as small as other available systems; and a Lasershot Precision

Metal Forming process that strengthens metal

components.

The Lasershot process is an advanced laser peening technology developed out of a collaboration between LLNL and Metal Improvement Company Inc. of Paramus, N.J. It is a revolutionary approach to shaping large-panel structural components for aircraft and other metal components. Metal Improvement Company has manufacturing and processing facilities in both Livermore, CA and Earby, United Kingdom.

R&D 100 project participants represented a broad range of Laboratory disciplines, including the Laser and Technology Program, Engineering, the Biology and Biotechnology Research Program, Physics, and Chemistry.

Laboratory researchers have won 97 R&D 100 Awards since 1978. ♦



Laser peening induces deep compressive stress, which significantly extends the service lifetime over any conventional treatment.

HOME Campaign

LLNL's 2003 HOME (Helping Others More Effectively) Campaign set a new record with more than \$1.5 million committed by Laboratory employees to community non-profit agencies and



charities, and organizations such as the Tri-Valley Community Fund and United Way.

This is the eighth straight year that LLNL employees have surpassed the \$1 million mark in commitments, which are made through one-time monetary gifts or payroll deductions. "The 2003 campaign generated donations for well over 200

agencies," said Patricia Axelrod, Laboratory employee and campaign co-chair. Employee giving will help these non-profit organizations meet their objectives and cope with increasing demand for their services.

The 2003 campaign represented the 29th year of giving by Laboratory employees. Since 1995, HOME Campaign fundraising has collected more than \$9 million for local worthy causes. ♦

Holiday Giving

As in years past, LLNL employees joined in the spirit of the holiday season by giving back to their community. The 13th annual Defense & Nuclear Technologies Directorate toy drive, “Toys for Children,” distributed more than 1,500 toys, infant clothing, and new gifts to area youngsters. D&NT employees, Laboratory carpenters, and the employee quilting group “Piecemakers” worked in conjunction with several agencies, including Tri-Valley Haven for Women, the Child Abuse Prevention Council of Contra Costa County, Oakland Children’s Hospital Foundation, San Joaquin County Prevention Services, and Council for the Spanish-Speaking, as well as individual families in need.

The annual Brighter Holidays program ‘sponsored’ needy area families again this year and provid-

ed them with clothes, toys and basic necessities. The program began in 1989 under the direction of former LLNL employee Betty Klino. It started with two families in Livermore. In 2003 it helped 138 families (623 people) in 10 counties have a brighter holiday. Many donated bicycles, refurbished by the Laboratory’s bicycle club (the Cycletrons), were also given to adults and children that had them on their wish list.

The Laboratory’s American Indian Activity Group sponsored a holiday gift program to benefit the Oakland American Indian Child Resource Center and the Indigenous Nations Child and Family Agencies foster children, and the Fire



Tony Calderon, 4, Maria Rangel, 4, and Antonio Rodriguez, 3, are all cheers as they pick out gifts from the Defense & Nuclear Technologies Directorate toy drive.

Department also joined in the gift giving by collecting 10 barrels of new toys for the “Toys for Tots” program. ♦

Research Facility

LLNL will soon put the finishing touches on its new International Security Research Facility (ISRF), housing researchers and analysts from its Non-Proliferation, Arms Control & International Security Directorate.

The ISRF is a state-of-the-art facility that will enable the Laboratory to continue to meet the United States intelligence community’s need for accurate and timely analysis of the threats posed by the



The International Security Research Facility

proliferation and terrorist acquisition of weapons of mass destruction. This will be accomplished by using integrated communications and computational capabilities that have revolutionized the way intelligence information is gathered and disseminated.

The building, located on the West side of the LLNL campus near the Mesquite entrance, will provide work-space for offices, information processing, image printing, electronic archiving, and secure conferencing. ♦

Site Security

The Department of Homeland Security (DHS) developed the Homeland Security Advisory System to provide a comprehensive and effective means of disseminating information regarding the risk of terrorist acts to Federal, State and local authorities and the general public. This system provides warnings in the form of a set of graduated “Threat Conditions” that increase when the risk of threat increases. In response, federal departments and agencies implement a corresponding set of “Protective Measures” to further reduce vulnerability or increase response capabilities during a period of heightened alert.

See Security, page 3

LLNL Partners with Schools

How can the Laboratory better assist Livermore students in mastering science? To answer that question, LLNL and the Livermore Valley Joint Unified School District are teaming up to examine ways to enhance the Laboratory's current science education programs and provide Livermore students with quality science education opportunities.

The Laboratory's education outreach efforts are particularly critical this year as the school district copes with severe budget constraints.

Currently, LLNL offers a variety of programs geared for students at all grade levels. The Public Affairs Office conducts a school tour program for local 4th and 5th grade classes that is now in its second year. An annual summertime lecture series, "Sizzlin' Summer Science", is also presented for science enthusiasts of all ages.

The Laboratory's Science Technology and Education Program

(STEP), in conjunction with the recently dedicated Edward Teller Education Center (ETEC), offers an array of lectures, workshops, and presentations for both science teachers and students.

Information on ETEC programs can be found at <http://etec.ucdavis.edu/>.

STEP also brings its "Fun with Science" presentation to area elementary schools, and conducts an annual lecture series called "Science on Saturday" that pairs Laboratory scientists with teachers to spotlight state-of-the-art research being conducted at LLNL. "Science on Saturday", held this year in January and February, is free and open to the general public. Included with "Science on



LLNL's Ed Moses, second from left, was featured at this year's first "Science on Saturday" event. His talk, entitled "Catch a Falling Star," focused on LLNL's National Ignition Facility.

Saturday" is an opportunity to join in a more intimate one-hour discussion, or "Science Chat", with a Laboratory scientist. More information on this year's series and "Science Chat" is available at <http://education.llnl.gov/sos>.

Last fall LLNL hosted meetings with Livermore school administrators and teachers to review these programs and explore new ones that will best serve teachers and students in the classroom.

Two initiatives that came out of those discussions are bringing a Laboratory scientist into the classroom as a 'guest speaker', and holding a 'careers-in-science-day' to help inspire students at all grade levels to pursue careers in science and engineering.

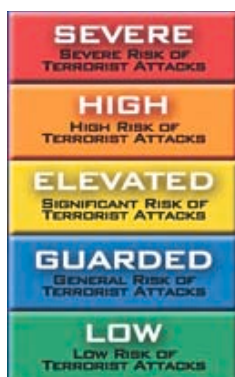
"The strong partnerships that have been developed between LLNL and the Livermore Valley Joint Unified School District are second to none, and definitely enrich science education for Livermore students and teachers alike," said Linda Maguire, the district's Director of Curriculum and Special Projects. ♦

Security

Continued from page 2

In evaluating threat conditions, DHS takes into account such factors as the credibility of the threat information, if it can be corroborated, and whether it is specific or imminent.

Federal departments and agencies are responsible for developing their own protective measures. At the direction of the Secretary of Energy, LLNL responds to threat con-



ditions by implementing site-specific measures to safeguard the Laboratory, its employees, and the surrounding community. These can include increased employee awareness efforts and additional patrols by Laboratory Security Police Officers.

In times of heightened alert the Livermore Police Department, in cooperation with LLNL security, may also increase the frequency of its patrols around the Laboratory main site. ♦

Discover the Lab

Discover LLNL's contributions to national security and the world of science at the Laboratory's Discovery Center. There you will find a broad-based display of the scientific technologies developed at LLNL, as well as highlights of the Laboratory's history and research in such areas as defense, homeland security, and new energy sources.

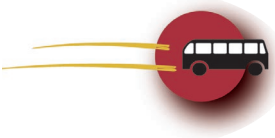
The Discovery Center is located on Greenville Road just outside the Laboratory's East Gate. It is open Monday through Friday, from 1-4 p.m. Call (925) 422-5815 for more information.

The Laboratory's Public Affairs Office also offers a tour of LLNL that may include stops at the Biology & Biotechnology Research Program, the National

Atmospheric Release Advisory Center, and ASCI White, the nation's fastest and most powerful super computer. Tour participants may also

visit the National Ignition Facility, the world's largest and most energetic laser system, and the Center for Accelerator Mass Spectrometry, renowned for its carbon dating capabilities.

This free, two-hour tour is offered on Tuesdays and Thursdays at 9 a.m. U.S. citizens must register two weeks in advance, and non-U.S. citizens must register sixty days



in advance. Special group tours can also be arranged. Tour participants must be at least 18 years of age. For more information about Laboratory tours, go to www.llnl.gov/pao, or call 925-422-4599. ♦



LLNL's Discovery Center

Discover LLNL is a publication of the Public Affairs Office at Lawrence Livermore National Laboratory.

If you would like to be included in the distribution of *Discover LLNL*, please contact Scott Wilson, wilson101@llnl.gov, or call (925) 423-3125.

Lawrence Livermore National Laboratory is a Department of Energy, National Nuclear Security Administration laboratory managed by the University of California.

“Ensuring national security and applying science and technology to the important problems of our time.”

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