



Discover LLNL

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

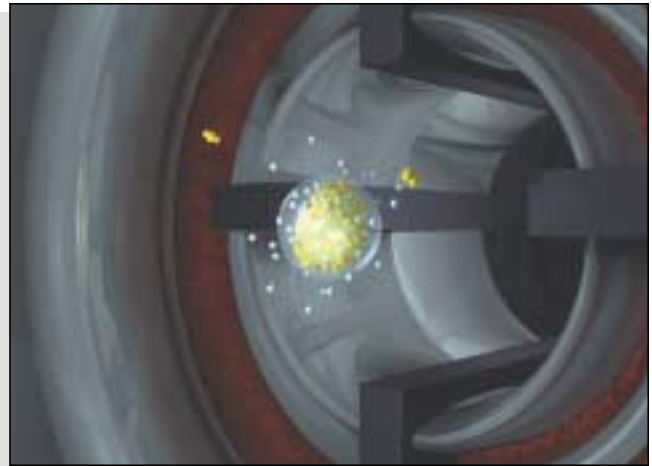
New Elements

LLNL scientists, in collaboration with researchers from the Joint Institute for Nuclear Research (JINR) in Russia, have discovered two new heavy elements, element 113 and element 115.

In experiments conducted at JINR in July and August of last year, the team of scientists observed atomic decay patterns, or chains, that confirmed the existence of the two elements. In these decay chains, element 113 is produced from the alpha decay of element 115. The experiments produced four atoms each of element 115 and element 113 through the fusion reaction of a calcium-

48 nuclei pressing on an americium-243 target. The results were officially announced earlier this year. "This just opens up the horizon on the periodic table," said Ken Moody, LLNL's research team leader. "It allows us to expand the fundamental principles of chemistry."

The Laboratory has studied heavy elements since its inception in 1952. It has been successful in the dis-



A graphic representation of the collision between a calcium isotope and americium, which creates the new element 115 that begins alpha decaying into element 113.

covery of several new elements over the years, including element

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Woman of the Year

LLNL's Tammy Jernigan was recently named the 2004 Outstanding Woman of the Year in the science category of the Alameda County Women's Hall of Fame. The county Women's Hall of Fame was established to recognize outstanding women in Alameda County for their achievements and contributions to the county and its citizens.

Jernigan, who joined the Lab in the Fall of 2001, is a former NASA astronaut who took part in five Space Shuttle missions. Her last mission in 1999

involved the first docking to the International Space Station. She began working for NASA as a 19-year old physics undergraduate student. Along with her space flight experience, she also held supervisory positions at NASA in the astronaut office assisting in the management of military and civilian astronauts and support personnel, and with the space station program where she contributed to the design and operation of the space station.

Jernigan began her career at LLNL



Tammy Jernigan

as a senior manager in the Physics and Advanced Technologies (PAT) Directorate with responsibilities for strategic planning and program review. Currently, as PAT principal deputy associate director, she is responsible for the day-to-day operations of the directorate.

Throughout her career, Jernigan has been a strong supporter of educational outreach, and is a much sought-after speaker for local school and career-related events such as Expanding Your Horizons for girls in grades 6-12. ♦

Science Fair

The 8th annual Tri-Valley Science & Engineering Fair took place at the San Ramon Valley Conference Center in San Ramon on March 24-27. 264 science projects, submitted by area students in grades 7-12, were judged by approximately 140 local science professionals, 65 of which were from LLNL. Judges based their evaluations on students' creativity, scientific thought, thoroughness, skill and clarity of presentation.

"The main goal of the science fair is to motivate students in pursuing their interest in science and engineering, and to support teachers in encouraging the students," said Christine Mixan, this year's Science Fair co-director. The Tri-Valley

Science Fair is one of the main community programs the Laboratory sponsors each year.

This year, San Ramon Valley Unified School District students took home top honors in both the senior and junior divisions. The senior division winning project in the team category was won by 12th graders Lenny Pekelis and Jonathan Vinea of Monte Vista High School, with an entry entitled, "Bacterial Electroporation." The individual category winner was 9th



Harvest Park Middle School student Alexander Manaa talks about his project with judge Chelle Clements of LLNL. Manaa received a first place in the junior division, and the U.S. Navy special award.

grader Samuel Finlayson of San Ramon Valley High School with an entry entitled, "Effect of Chlorine on Lung Function of Outdoor Swimmers."

Senior division winners will compete at the Intel International Science and Engineering Fair in Portland, Oregon in May. They will also be offered summer employment at either LLNL or with a Tri-Valley technical organization.

At the Fair Awards ceremony, LLNL Engineering Associate Director Steve Patterson offered his congratulations to all entrants for a job well done. Project entries covered a wide spectrum of science areas including biochemistry, botany, computer science, earth and space science, engineering, environmental science, mathematics, physics and zoology.

In addition to the Laboratory, the Tri-Valley Business Council, Pacific Gas & Electric Co., the Contra Costa Times, the Tri-Valley Community Foundation, and Chevron Texaco also lend their support to this important educational outreach project. ♦

Technology Award

Laboratory research on a portable, easy-to-use radiation detector led to a unique public-private partnership that helped bring a critical homeland security technology to the marketplace, and garnered a 2004 "Excellence in Technology Transfer" award from the Federal Laboratory Consortium (FLC). The FLC is a nationwide network of more than 600 national laboratories from 16 federal agencies that recognizes outstanding work in transferring technology from the national laboratories to the public and private sectors.



The ORTEC Detective

The detector, called RadScout, had been developed by LLNL, but was not commercially available

until the Laboratory partnered with ORTEC Products of Oak Ridge, Tennessee. ORTEC is a world leader in the manufacture of radiation detectors.

Utilizing an integration of state-of-the-art technologies, RadScout can be used

by security and emergency response workers to quickly and accurately screen for dangerous radioisotopes in luggage or shipping containers. This can help address the potential threat of radioactive materials entering the country. The first commercial version of RadScout, the ORTEC Detective, is now available. ♦

Joint Genome Institute

The Department of Energy's (DOE) Joint Genome Institute (JGI) in Walnut Creek has launched a new genome sequencing effort called the Community Sequencing Program. This program offers researchers an opportunity to take advantage of one of the world's most powerful DNA sequencing facilities.

"The primary goal of the Community Sequencing Program is to provide a world-class sequencing resource for the expanding diversity of disciplines: geology, oceanography, and ecology, among others that

can benefit from the application of genomics," said JGI Director Eddy Rubin.

Earlier this year, JGI began considering applications from researchers. Proposals will be evaluated by a group of experts from the scientific community and, once approved, the DOE will cover the cost associated with the sequencing effort at JGI. The data generated will be made available to the entire scientific community in accordance with JGI's data release



policy.

Founded by DOE in 1997, JGI is a collaboration of Lawrence Livermore, Lawrence Berkeley and Los Alamos national laboratories. One year ago it announced the completion of the Human Genome Project, an international effort to determine the complete sequence of the human genome, of which it was a major participant.

Additional information on the Community Sequencing Program can be found at www.jgi.doe.gov/. ♦

New Biology Leader

Elbert Branscomb, former chief scientist for the Department of Energy's Genome Program and founding director of the Joint Genome Institute in Walnut Creek, has been selected as the new associate director for the Biology and Biotechnology Research Program at LLNL.

Branscomb brings years of experience as a physicist and biomedical scientist to his new position. As associate director he will be responsible for developing and managing an array of interdisciplinary research and technology development programs in bioscience, biotechnology and biomedicine.

"There is a profound revolution going on in life sci-



Elbert Branscomb

ence research and I look forward to helping the Laboratory become a major engine of discovery for the nation," said Branscomb upon his appointment.

Branscomb had been chief scientist for the Genome Program since 2000. He joined LLNL in 1964 as a theoretical physicist. He replaces former acting associate director Bert Weinstein. ♦

Elements

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114 in 1998 and element 116 in 1999.

"For our scientists to find two more pieces of the puzzle is a testament to the strength and value of the science and technology of the Laboratory," said Tomas Diaz de La Rubia, associate director for LLNL's Chemistry and Materials Science Directorate.

This research was supported by the Russian Ministry of Atomic Energy and the U.S. Department of Energy as part of the Russian Federation/U.S. Joint Coordinating Committee for Research on Fundamental Properties of Matter. Additional information and images on the new elements can be found at www.cms.llnl.gov/e113_115/. ♦

Site-Wide Study

The National Nuclear Security Administration (NNSA), which oversees the Department of Energy's national security laboratories, has released a draft Site-wide Environmental Impact Statement (EIS) for the continued operation of the Laboratory.

Entitled "Draft Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement," this document analyzes the potential environmental impacts associated with current and foreseeable new and/or modified operations and facilities at LLNL and Site 300 for approximately the next ten years. It is being prepared in accordance with Council of Environmental Quality and Department of Energy National Environmental Policy Act guidelines. This is the fourth site-wide assessment prepared for LLNL, with

Environmental Impact Statement availability

The draft EIS is available for viewing at the Livermore Public Library, the Tracy Public Library, the LLNL Public Reading Room adjacent to the Laboratory's Discovery Center, and the NNSA Energy Information Center, located on the eighth floor of the Oakland Federal Building (1301 Clay Street – 510-586-3142).

Local EIS public hearings:

- **Livermore** – Tuesday, April 27, at 1 and 6 p.m. at the Double Tree Club Hotel (720 Las Flores Road – 925-443-4950)
- **Tracy** – Wednesday, April 28, at 1 and 6:30 p.m. at the Holiday Inn Express (3751 N. Tracy Boulevard – 209-830-8500)

a full EIS last completed in 1992.

A Notice of Availability was published in the Federal Register and in local newspapers in February announcing the availability of the draft EIS and supporting documentation. The public is invited to participate in the ongoing Public Comment period, which will run through May 27. Written comments may be sent to Tom Grim, NNSA Document Manager at

tom.grim@oak.doe.gov, by fax to 925-422-1776, or by mail to NNSA Livermore Site Office, L-293, 7000 East Avenue, Livermore 94550-9234.

Public hearings are also scheduled for the local area on April 27 and 28. More information on the draft EIS can be found at the Laboratory's Environmental Community Relations Website - <http://www-envirinfo.llnl.gov/>. ♦

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.

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