LAWRENCE LIVERMORE
REPORT

A weekly collection of scientific and technological achievements from Lawrence Livermore National Laboratory: Nov. 9-Nov. 16, 2009.

New York Times touts underground coal gasification

The first flare at a UCG plant in South Africa.

A new underground coal gasification (UCG) project with a 100-megawatt power plant and carbon capture and sequestration technology planned for Anchorage, Alaska would be the biggest UCG plant in the nation.

A recent story in the *New York Times* features an interview with LLNL's Roger Aines, who works in the Lab's Carbon Management Program. UCG is a process by which a well is drilled into a coal seam deep underground, where oxygen or air is injected to start a combustion process, and the resulting synthesis gas, or syngas, would be produced through a second well to create electricity.

Aines says that combining UCG with a carbon capture and storage technology at the source is a new concept.

Because carbon dioxide can be removed from syngas before combustion, capturing the greenhouse gas should be a lot cheaper than with a traditional coal-fired power plant, according to Aines. Stripping the carbon dioxide pre-combustion leaves the syngas with a carbon footprint similar to that of natural gas.

To read more, go to http://greeninc.blogs.nytimes.com/2009/11/06/syngas-with-carbon-capture-at-cook-inlet/#more-30877

***SF Business Times* features Lab-developed carbon nanotubes**

Olgica Bakajin, CTO of Porifera Inc.

A recent edition of the *San Francisco Business Times* highlights a Lab technology using carbon nanotubes to desalinate water or capture carbon that may soon move into the marketplace.

Several Bay Area companies won funding from the Department of Energy's Advanced Research Projects Agency (ARPA-E). One company was Hayward-based Porifera Inc., whose chief technology officer, Olgica Bakajin, just happened to help create the carbon nanotubes while she was working at the Laboratory.

The company licensed the technology for carbon nanotubes from the Lab after discovering that both gas and water run through carbon nanotubes quickly, which demonstrated that the nanotubes could be used as effective filtering devices.

To read more, go to http://sanfrancisco.bizjournals.com/sanfrancisco/stories/2009/11/09/story3.html?b=1257742800^2398801#

Lab researchers win eight R&D 100 awards and Editors' Award

The entire LLNL contingent, exuberant after winning eight R&D 100 awards and a coveted Editors' Award.

It was a gala night of shiny tuxedos and exquisite ballgowns, as eight teams of Lawrence Livermore National Laboratory researchers stepped to the stage last week in Orlando, Fla. to receive eight prestigious R&D 100 awards, often dubbed the "Oscars of invention."

At the conclusion, it was LLNL and its partners who were awarded a coveted "Editors' Award," signifying the upmost achievement in developing new technology.

Satinderpall Pannu, the team leader of the Lab's artificial retina program, received the plaque on behalf of the four other national laboratories, four universities and one industrial partner working on an implant that may one day restore sight to patients with impaired vision.

The eight Lab technologies receiving the awards were developed by seven teams of LLNL scientists and engineers -- and one solo LLNL researcher. They worked with six universities, six industrial firms, four other national labs, one medical institute, the U.S. Department of Energy (DOE) and the Defense Threat Reduction Agency.

To learn more about the Lab winners, go to
https://publicaffairs.llnl.gov/news/news_releases/2009/NR-09-07-03.html

Livermore contributes to world's premier supercomputing forum SC09

One of the Lab's supercomputers: BlueGene/L.

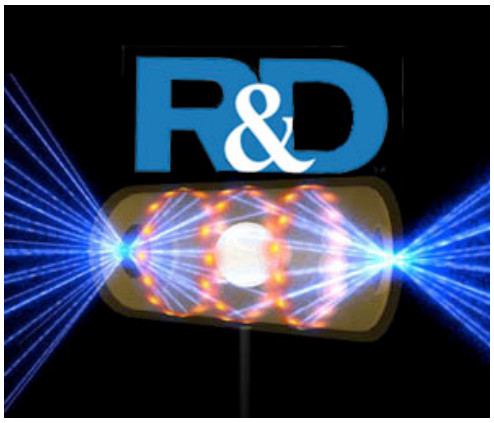
Supercomputing 2009 (SC09) is under way in Portland, Ore. This week. Lawrence Livermore, a global leader in high-performance scientific computing, is contributing to the technical program at the heart of the conference, competing and assisting with technical challenges and participating in the exhibits as a partner in the National Nuclear Security Administration's (NNSA) Advanced Simulation and Computing (ASC) program booth (#735).

ASC will offer a series of technical presentations by scientists from Livermore, as well as Los Alamos and Sandia national laboratories. A schedule will be posted in the booth (#735).

Livermore scientists played a key role in founding the conference 21 years ago and continue to lead the Department of Energy/NNSA's effort to push the limits of high-performance computing, an effort that advances national security, basic science and the nation's economic competitiveness.

To access information about high-performance computing programs at Lawrence Livermore, a new HPC Web gateway has been created and can be found at https://publicaffairs-dev.llnl.gov/news/sc09/sc_09_index.html

R&D Magazine highlights NIF accomplishments



A rendering of the NIF target.

The National Nuclear Security Administration (NNSA), along with officials from the National Ignition Facility (NIF) at the Laboratory have announced an important milestone in the National Ignition Campaign at the recent 51st annual meeting of the American Physical Society Division of Plasma Physics in Atlanta.

Highlighting results from recent NIF tests, NNSA and LLNL and its NIC partners—Los Alamos National Laboratory, the Laboratory for Laser Energetics (LLE), General Atomics and Sandia National Laboratories showed that NIF's laser beams can be effectively delivered and are capable of creating sufficient X-ray energy to drive fuel implosion, an important step toward the ultimate goal of fusion ignition. The Laboratory for Laser Energetics also presented results showing the most compressed fusion capsules to date.

The NIF was built as a part of the NNSA's program to ensure the safety, security and effectiveness of the nuclear weapons stockpile without underground testing. With NIF, scientists will be able to evaluate key scientific assumptions in current computer models, obtain previously unavailable data on how materials behave at temperatures and pressures like those in the center of a star, and help validate NNSA's supercomputer simulations by comparing code predictions against observations from laboratory experiments.

To read more, go to the *R&D Magazine* article at http://www.rdmag.com/News/2009/11/General-Science-Successful-test-marks-major-milestone-for-NIF/

Latest *Newsline* available

NEWSLINE

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

Photo of the week

Get your motors running: More than 80 Lab motorcycle riders took to the streets last week in honor of

Veterans Day for the sixth annual Lab Ride. Riders donated $2,200 to support the "Hope for the Heart" food bank and East Bay Stand Down 2010. Employees staged at Outer Loop Road, exited the East Gate and rode to Site 300. The ride is organized by the Alameda County Firefighters Association and the Lawrence Livermore Lab Armed Forces Veterans Association.

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:
https://publicaffairs.llnl.gov/news/lab_report/2009index.html