LAWRENCE LIVERMORE
REPORT

A weekly collection of scientific and technological achievements from Lawrence Livermore National Laboratory: Oct. 5-12, 2009.

USA Today covers Lab's BioWatch program

USA Today recently featured the Lab's BioWatch program in a front page article. The article includes an interview with the Laboratory's Tom Slezak who received an early morning call on Oct. 6, 2001 to set up a system to protect Washington D.C. and other U.S. cites from a major bioterror attack.

Slezak helped pioneer the genetic analysis of biological agents at Lawrence Livermore National Laboratory in California. Eight years after the anthrax attacks, the system Slezak's research team started, known as BioWatch, is quietly operating in more than 30 cities.

A federally funded, locally run program with an $80 million annual budget, it depends on a network of vacuum pumps that draw surrounding air through filters, sniffing for signs of biological agents.

The pumps' precise locations are secret, but they are in high-traffic destinations such as subway stations and where prevailing winds might carry a toxic plume.

For more, read the article at http://www.usatoday.com/news/health/2009-10-05-biowatch-biological_N.htm?loc=interstitialskip

Berni Alder receives National Medal of Science

Berni Alder

Retired Lab physicist and computational pioneer Berni Alder received the National Medal of Science last week during a White House ceremony.

President Obama awarded nine eminent researchers as recipients of the National Medal of Science, the highest honor bestowed by the United States government on scientists, engineers and inventors.

Alder is widely regarded as the founder of molecular dynamics, a type of computer simulation used for studying the motions and interactions of atoms over time. His expertise includes changing kinetic molecular theory by showing that simulations can significantly affect a scientific field. In 1980, Alder was one of the pioneers who used large-scale simulations to solve quantum mechanics problems.

The National Medal of Science was created by statute in 1959 and is administered for the White House by the National Science Foundation. Awarded annually, the medal recognizes individuals who have made outstanding contributions to science and engineering. Nominees are selected by a committee of presidential appointees based on their advanced knowledge in, and contributions to, the biological, behavioral/social, and physical sciences, as well as chemistry, engineering, computing and mathematics.

To view the White House ceremony, go to http://www.whitehouse.gov/video/President-Obama-Awards-National-Medal-of-Science-and-Medal-of-Technology/

For more on Alder, go to https://publicaffairs.llnl.gov/news/news_releases/2009/NR-09-09-02.html

The Laboratory's innovative computer's lineage recognized

**A rack of "Dawn," the BlueGene/P supercomputer system.**

Laboratory scientists took a good measure of pride Wednesday evening when IBM's BlueGene line of supercomputers received a Presidential Medal of Technology and Innovation from President Barack Obama in a White House ceremony.

Scientists with NNSA's Advanced Simulation and Computing program at LLNL played a key role in the development and design of BlueGene/L (BG/L), the first of the BlueGene machines, which is housed in LLNL's Terascale Simulation Facility (TSF). BG/L has been largely dedicated to NNSA's program to ensure the safety and reliability of the nation's nuclear deterrent without nuclear testing -- Stockpile Stewardship.

"The decadal partnership with IBM has produced impressive results with the BlueGene series of scalable platforms. We look at this model of award winning industry-DOE collaboration as the model for future development activities," said Robert Meisner head of DOE/NNSA Office of Advanced Simulation and Computing (ASC).

The BG/L and successor systems represent a revolutionary, cost efficient design for high-performance computing systems, with significantly lower power requirements and a smaller footprint than previous supercomputing systems. BG/L held the No. 1 ranking on the industry standard Top500 list of the world's fastest supercomputers seven times running over three years (November 2004 to June 2008).

Funds injected into carbon sequestration effort
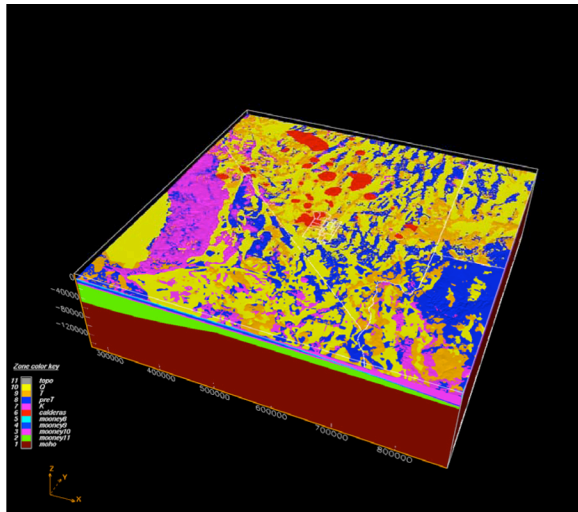
A geomodel of southwestern U.S. region that includes wave propagation modeling.

The Laboratory has received $3 million in American Recovery and Reinvestment Act dollars to capture and transport 1 million tons of carbon dioxide from Bay Area power plants and inject it more than two miles underground.

Laboratory researchers will collaborate with Lawrence Berkeley and C6 Resources, a Shell Oil Company affiliate, on the carbon sequestration project.

The goal of the LLNL project is to capture carbon dioxide at its source, preferably coal burning power plants, and transport it via a pipeline to the Central Valley where it will be injected two miles underground into a saline formation.

The Lab project is one of 12 projects that last week received $21.6 million in ARRA funds from Energy Secretary Steven Chu.

LLNL principal investigator Elizabeth Burton said LLNL will address the risk elements of the project including assessing seismic hazards in the area and from there, build a regional geological model. The model will support large-scale pressure response and brine migration simulations, which will be performed by LBNL.

"This project provides the Laboratory with an opportunity to test and transfer decision-making tools in support of the ARRA's objectives of greenhouse gas reduction," Burton said. "Our overreaching goal is to deploy carbon capture and sequestration (CCS) safely as a greenhouse gas emissions reduction technology."
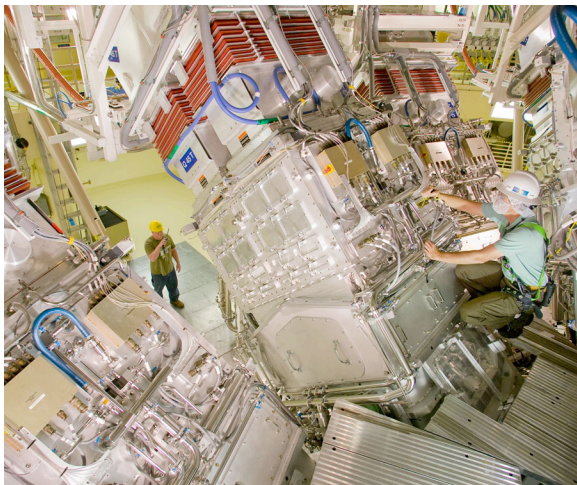
To read more, go to https://newsline.llnl.gov/_rev02/articles/2009/oct/10.09.09-co2.php

Latest *Newsline* available

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

Photo of the week

A room with a view: Technicians adjust three of the 96 laser beam tubes (there are 192 laser beams in total) as they enter the National Ignition Facility target chamber. NIF is scheduled to begin experiments to create fusion in 2010.

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