

LAWRENCE LIVERMORE REPORT

A weekly collection of scientific and technological achievements from Lawrence Livermore National Laboratory: Sept. 1-8, 2008.

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For more on Livermore's iTunes page, go to <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=286458989>

A look into next-generation vehicles



In the September issue of *Popular Mechanics*, the Lab's Salvador Aceves discusses features of the Laboratory's hydrogen-powered vehicle.

The article "Beyond Gasoline" looks into cleaner, cheaper fuels on the horizon. Aceves discusses the challenges of storing hydrogen onboard a vehicle. His group recently demonstrated a prototype vehicle with a cryogenic tank that holds liquid hydrogen, and can retain gas that boils off – a development carmakers are keeping their eyes on.

For more information, go to
<http://www.popularmechanics.com/science/research/4279508.html?series=19>

New look for Newslines



Since transitioning to a Web-based publication in February, *Newsline*, the Laboratory's weekly compendium of science, technology and operational news, has received numerous comments and suggestions about the design and format. Guided by those ideas, *Newsline* has unveiled a new look.

The new design improves readability, both from a visual perspective and by simplifying content categories.

Newsline can be found at <https://newsline.llnl.gov/> . Previous editions of *Newsline* may be found at: <https://publicaffairs.llnl.gov/employee/>

LLNL wins three FLC Far West Region Awards



Lawrence Livermore's technology transfer efforts were recognized in a Far West Regional competition sponsored by the Federal Laboratory Consortium. FLC is the nationwide network of federal laboratories that provides a forum to develop strategies and opportunities for linking laboratory technologies and expertise with the marketplace.

LLNL won three 2008 awards in the following categories:

Outstanding Partnership: Cargo Container Intrusion Detection -- LLNL, in collaboration with Secure Box Corporation and the National Infrastructure Institute, has developed a low-cost, reliable, reusable advanced cargo container security system to improve the security of cargo containers during shipping. The device, known as SecureBox, reliably detects intrusions through any of the container's six walls.

Outstanding Technology Development: Autonomous Pathogen Detection System -- Scientists at LLNL have invented a stand-alone system for rapid, continuous monitoring of multiple airborne biological threat agents in the environment called the Autonomous Pathogen Detection System. Previously, bioagent identification could be done only in a laboratory and took days to weeks. However, Livermore technology advances led to fully automated biodetectors for real-time sample collection, detection and identification in the field.

Outstanding Technology Development: Noninvasive Pneumothorax Detector -- Pneumothorax is a medical condition caused by air trapped in the space between the wall of the chest cavity and the lung. It often results in reduced lung capacity or a collapsed lung. If not treated quickly, it could cause death in minutes. The noninvasive pneumothorax detector uses ultrawideband (UWB) technology to diagnose this serious medical condition in seconds.

More information on FLC is available at <http://www.federallabs.org/>

Photo of the week



Golden moment -- Dennis Doster, a ninth grade physics teacher at Dublin High School, investigates phase changes in solids under nonequilibrium conditions at the Lab's Jupiter Laser Facility for an

experiment measuring the dynamics of warm dense gold. Doster's mentors were Andrew Ng and Yuan Ping of the Lab's Physical Sciences Directorate.

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.

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