



Jim Annis

Research Highlights . . .



Fields of gold nanoparticles nodding in the sun

A smash radio hit in 1979 was a song about Californians “turning music into gold.” In 2002 in California, DOE’s [Stanford Linear Accelerator Center](#) has a case of [alfalfa turning in the gold](#). More specifically, researchers at SLAC and the University of Texas-El Paso have an instance of using, as tiny factories, the alfalfa’s natural, physiological need to extract metals from the medium in which they are growing. Of most value here is that the alfalfa extracts gold from the medium and stores it in the form of nanoparticles-specks of gold less than a billionth of a meter across. This may get the nanotechnologists humming happily.

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Sandia techs, bomb squads train for terrorist threats

Bomb-disablement experts from DOE’s [Sandia National Laboratories](#) joined about 125 colleagues representing federal, state, and local agencies recently in a hands-on training conference sponsored by the Virginia State Police. Since 1992, Sandia’s Chris Cherry and his Sandia team have developed some of the world’s most technically advanced and widely used “render-safe” technologies. [Operation America](#) “ is the honors program for bomb techs,” he says. “We are proud to work with some of the country’s best bomb squads to discuss and practice the art and science of disabling the increasingly complex terrorist bombs of today while protecting the lives of the public and our first responders.”

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Intruders beware

Computer software created by researchers at DOE’s [Idaho National Engineering and Environmental Laboratory](#) lends its users watchful eyes. The program perfectly aligns pairs of digital snapshots—even those taken from different perspectives or with different cameras. By toggling between the two views, tiny inconsistencies between the images become readily apparent, providing an alert to alterations and possible trespass. “It would be very difficult to change something in one of the images without the software detecting the difference,” said scientist Gregory Lancaster. In addition to physical security, INEEL scientists foresee a wide range of applications, from detecting cancer to forged signatures.

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New institute will make ag wastes useful

Two DOE national labs and a pair of Northwest land grant universities are mobilizing to develop new methods for converting agricultural and food processing residue and wastes into commercially valuable “[bio-based](#)” energy and industrial products. Members of the new Northwest Bioproducts Research Institute include [Pacific Northwest National Laboratory](#) and [Idaho National Engineering and Environmental Laboratory](#), as well as Washington State University and the University of Idaho. They will examine and develop methods for converting agricultural and food processing residue and wastes into bio-based fuels, power and industrial products, such as chemicals for plastics, solvents and fibers.

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DOE Pulse highlights work being done at the [Department of Energy’s](#) national laboratories. [DOE’s laboratories](#) house world-class facilities where more than 30,000 scientists and engineers perform cutting-edge research spanning DOE’s science, energy, national security and environmental quality missions. *DOE Pulse* (www.ornl.gov/news/pulse/) is distributed every two weeks. For more information, please contact Jeff Sherwood (jeff.sherwood@hq.doe.gov, 202-586-5806).

