

# LOS ALAMOS NATIONAL LABORATORY CURRENTS

AUGUST 2009

Magnet-building duo share multidisciplinary zeal



Graduate student proud to continue family's Lab legacy

Geochemist passionate about cutting-edge science

Miner looks for technology diamonds in the rough

 **Los Alamos**  
NATIONAL LABORATORY  
EST. 1943

## Partnerships expand the Lab's reach

As a capabilities-based Laboratory we must sustain a strong base of science, technology, and engineering expertise to respond to emerging national security challenges. This issue of *Currents* highlights the importance of partnerships in keeping Los Alamos at the leading edge.

The National High Magnetic Field Laboratory, featured in the cover story, is a unique user facility, funded by the National Science Foundation, where we have applied our expertise in high magnetic field science and pulsed-power engineering. We also have honed this expertise through some very fine staff and a decades-long partnership with Florida State University and the University of Florida. Like our other user facilities, the NHMFL draws the best scientists and students in this field to Los Alamos, enriching our international scientific connections.

Partnerships also are central in extending from invention (creating a new idea) to innovation (creating a technology impact in the wider world). Our MBA intern program, now in its 12th year, is a unique effort to provide opportunities for MBA students to train with Los Alamos scientific and business experts to analyze science inventions for their technology innovation potential.

Our LabStart program, in its first year, is another unique partnership. We work with national leaders in venture capital to incubate new businesses from Laboratory technologies. The LabStart entrepreneur-in-residence, Russ Hopper, seeks and polishes new inventions to the point that they can be the basis of viable start-up companies. LabStart will then build a business and management team outside the Lab with the necessary experience and funding to be successful.

And our R&D100 awards continue to provide a strong demonstration of our technology excellence and are a focal point for new cooperative research partnerships with industry and government sponsors.

Taken together, these examples show how, even in the most challenging business environment in decades, our strong connections to the outside technical and business communities can help sustain important scientific capabilities at Los Alamos.

— **Duncan McBranch**, *deputy principal associate director for Science, Technology, and Engineering*



LeRoy N. Sanchez

*About the cover: Dwight Rickel and Mike Pacheco inside the NHMFL's Single-turn Magnet chamber. The magnet is capable of producing a field in excess of 300 tesla and is proven to leave the sample probe intact in fields up to 240 tesla. See page 4 for story. Photo by Robb Kramer.*

### **Rees to head Lab's new global security organization**

William Rees Jr. is the new principal associate director for Global Security, a position that elevates the importance of the Laboratory's work in key program areas, including nonproliferation, intelligence support, defense, nuclear counterterrorism, and homeland security. This new organization will play a leading role in the overall strategy and performance for these programs across the Laboratory.

Rees comes to Los Alamos from the Science and Technology Policy Institute in Washington, D.C., where he is a fellow and deputy undersecretary of defense for Department of Defense Laboratories and Basic Sciences.

An internationally recognized chemist, Rees earned his bachelor's degree from Texas Tech and his doctorate from the University of California Los Angeles. He was a postdoctoral fellow at the Massachusetts Institute of Technology (1986 – 89), holds seven patents, and was a full professor and director of the Molecular Design Institute at Georgia Tech.

### **David Telles wins NNSA Security Professional of the Year**

David Telles of the Vulnerability Analysis Office received a 2008 National Nuclear Security Administration Security Professional of the Year award.



Telles authored the Lab's Site Safeguards and Security Plan, administered the Performance Assurance Program, and leads a group of security professionals who conduct vulnerability analyses. Under his leadership, the

Vulnerability Analysis teams were recognized among the most talented in the NNSA complex.

The NNSA award recognizes one federal employee and one contractor employee whose contributions to the security programs within NNSA exemplify the highest ideals of public service.

### **Baker elected Fellow of the American Nuclear Society**

Randal Baker of Computational Physics and Methods was elected Fellow of the American Nuclear Society for his contributions toward the advancement of nuclear science and technology. Baker is a pioneer in the research and development of numerical algorithms for radiation-transport simulations.

The American Nuclear Society is a professional organization of scientists and engineers devoted to the applications of nuclear science and technology. Its 10,500 members come from government, academia, research laboratories, and private industry and represent a variety of technical disciplines ranging from physics and nuclear safety to operations and power.

### **Goddard receives Federal Laboratory Consortium award**

Greg Goddard of Bioscience Division received a Federal Laboratory Consortium for Technology Transfer (FLC) Award for Excellence in Technology Transfer on behalf of the team that developed the Portable Acoustic Cytometer.

The FLC award recognizes federal laboratory employees (and their commercial partners) who have accomplished outstanding work in the process of transferring a technology developed by a federal laboratory. The Federal Laboratory Consortium for Technology

Transfer is the nationwide network of federal laboratories that provides the forum to develop strategies and opportunities for linking laboratory mission technologies and expertise with the marketplace.

The Portable Acoustic Cytometer harnesses acoustic waves to focus cells into a tight, centered stream for analysis. It is the world's first portable acoustic cytometer. Developed by researchers within the National Flow Cytometry Resource, the Portable Acoustic Cytometer received a 2007 R&D 100 Award.

Goddard received the FLC award at the FLC National Conference in Charlotte, North Carolina.

### **Barth named Associate Director for Business Services**

Mark Barth is the new associate director for Business Services.



Prior to joining the Laboratory, he held various positions related to nuclear marketing and business development within the Bechtel group of companies. A Six Sigma site champion, Barth directed the Indirect, Capital, and Readiness in Technical Base & Facilities programs at the BWXT, LLC Y-12 National Security Complex in Oak Ridge, Tennessee.

Barth has a master's degree in business administration from Auburn University and a bachelor's degree in oceanography from the U.S. Naval Academy. He also is a registered mechanical engineer and a member of the American Nuclear Society and the Project Management Institute.

# Magnet-building duo relies on trust and collaboration

They were born on planet Earth, but Mike Pacheco and Dwight Rickel can unleash Earth-shaking forces at will. The source of their amazing superpowers is the massive electromagnets at the National High Magnetic Field Laboratory's Los Alamos Pulsed Field Facility. The electromagnets are as much as 6 million times stronger than the planet's natural magnetism.

To harness such crushing forces, Pacheco and Rickel, who have worked together on record-breaking electromagnets for 16 years, rely on their highly developed powers of trust, collaboration, and cooperation.

But first, they had to build the magnet lab itself.

"Together, we built this facility from the ground up, starting in 1992," said Alex Lacerda, a former center leader. "There was a generator here and nothing else," added Pacheco. The size of the colossal motor and generator is hard to fathom. The rotating part alone weighs more than 25 fully loaded cement trucks and spins at 1,800 revolutions per minute. The generator sits atop dozens of enormous springs to avoid shaking the surrounding countryside.

Although they had the generator, they had little else. "We were trying to scrounge everything we could find that would be of any use," Rickel said. "We essentially found a million dollars worth of parts to put together the first capacitor bank. It was like going to a giant salvage sale."

The Lab's Pulsed Field Facility is one of three campuses of the National High Magnetic Field Laboratory; the other two are at Florida State University, Tallahassee and the University of Florida, Gainesville. The NHMFL is sponsored primarily by the National Science Foundation with additional support from the State of Florida and the U.S. Department of Energy.

## Versatile magnet team

Pacheco, a research technologist, is a hands-on guy who can build anything. "Mike is essentially an encyclopedia of materials, methods, and vendors. The postdocs are in his office all the time," said Rickel, who is an applied physicist and pulse-power designer.

As senior scientist, Rickel oversees the construction, commissioning, and operation of the lab's large magnets. He designs the power systems that slam the energy from the 600-ton, 1.4 million-watt motor and generator into a finger-sized area.

Perhaps what makes Pacheco and Rickel such a super duo is that they can trade places in the wink of an eye. Rickel is usually in charge, but "I could go away, and Mike would take care of business," Rickel said. Similarly, Rickel might step away from the drawing board to weld and fabricate. Collaborator Ross McDonald said, "Both of them go well beyond the boundaries of their traditional roles."

There is a tremendous overlap in their skills, so they work in elegant synchronization.

The pair is proudest of their most recent accomplishment: the 100 Tesla Multishot Magnet, unique in the world because it doesn't explode. Ordinarily, super-strong electromagnets are purposely ripped apart by explosive and electromagnet forces each time they are used. With the 100 T magnet, the power of as much as 100 sticks of dynamite is pumped into the magnet coils in a fraction of a second and the magnet survives intact.



Mike Pacheco prepares to test probe components.

Robb Kramer

## Magnetic intensity

What does it take to join this versatile team? Rickel suggested “a PhD physicist who liked to build rockets and bombs as a kid.” He went on to explain that “people who had the passion of science from an early age have a different skill set. They’re the ones who make things run.”

And passion seems to drive both Pacheco and Rickel forward when it comes to their work. “I can call those guys at 2 a.m. Saturday, and they will deliver,” Lacerda said.

Sharing this multidisciplinary zeal, said Rickel, are teammates Chuck Mielke, Ross McDonald, Jon Betts, and James Michel. “It’s nice to work with skilled people because you don’t have to say many words, and the job gets done,” he noted.

Pacheco and Rickel’s work is known around the world, but like all superheroes, they are humble. “It’s not really magic; more like commonsense,” Rickel said. “I’d call it experiential knowledge,” said Pacheco with a wink.

*Excerpted from an article by Tom King published in MPA Materials Matter.*



Dwight Rickel adjusts signal output at his workbench in the National High Magnetic Field Laboratory.

Robb Kramer

## Lab’s Pulsed Field Facility is one of a kind

Powerful magnets—some of the most powerful in the world—are available to researchers visiting the National High Magnetic Field Laboratory’s Pulsed Field Facility (NHMFL-PFF). The facility is the only pulsed, high-field user facility in the country.

Scientists at the PFF use high magnetic fields as a basic tool to predictably manipulate an electron’s trajectory and its spins in a reversible and nondestructive manner. By studying materials under extreme magnetic field conditions, scientists can develop a better understanding of quantum mechanical principles—from the mechanisms that drive superconductivity at high temperatures, to fundamental magnetic-, electrical-, and structural properties that open the way to design of materials that will function in a specific way.

The NHMFL Pulsed Field Facility features both destructive and nondestructive magnets and is the only place in the world where researchers can design experiments using the highest magnetic fields ever produced on a repetitive basis.

Nondestructive pulsed-magnet designers must solve the problem of the exceedingly high stresses generated in the magnet during pulsing. These stresses typically reach 200,000 pounds per square inch, which is greater than the strength of most materials. As such, pulsed-magnet technology relies on state-of-the-art materials research. The 100 Tesla Multishot Magnet is the NHMFL’s flagship, and marks a major milestone in magnet design and materials engineering. As the world’s most powerful, pulsed nondestructive magnet, it is capable of delivering magnetic fields 2 million times more powerful than Earth’s magnetic field.

Destructive pulsed magnets sidestep the strength-of-materials problem and are designed to self-destruct with every pulse. Because the intense magnetic field exists only as long as it takes a shockwave to propagate through the magnet, the pulse duration is limited to a few microseconds.

The Pulsed Field Facility, one of three campuses of the NHMFL, also gives researchers access to assistance from some of the world’s leading experts in condensed-matter physics and pulsed-magnet science. All user support scientists are active researchers who collaborate with multiple users each year.



# Laboratory researchers win five R&D 100 awards

*“Oscars of Invention” recognize 2009’s greatest innovations*

Laboratory scientists won five of *R&D Magazine’s* 2009 R&D 100 Awards, which honor the top 100 proven technological advances of the past year. MagViz, the SIMTECHE CO<sub>2</sub> Capture Process, Lasonix, TeraOps Software Radio, and the Artificial Retina Project bring the Laboratory’s R&D 100 awards to 112 since it first entered the competition in 1978.

“The Department of Energy’s national laboratories are incubators of innovation, and I’m proud they are being recognized once again for their remarkable work,” said Energy Secretary Steven Chu.

“Congratulations to our R&D 100 winners, who pushed the frontiers of science to create practical applications that will benefit the nation and the world,” said Laboratory Director Michael Anastasio.

MagViz, a technology that employs ultra-low-field magnetic resonance imaging (MRI) to quickly scan even the tiniest amounts of liquids, will enhance passenger safety and, by making airline liquid restrictions obsolete, will speed airport security lines. Michelle Espy of Applied Modern Physics and an interdisciplinary team developed the technology. “MagViz was a huge effort that spanned many organizations across the Laboratory,” Espy said. “We hope that winning this award will help MagViz gain interest from a commercial partner. We think there are many applications for our instrument, ranging from airport security and other industrial applications to low-cost medical imaging instruments.”

Lasonix, a novel process that uses lasers to grow micro- and nanoscale electronics, was developed by James Maxwell of Applied Electromagnetics, and his team. “Winning this award is already bringing visibility to this alternate manufacturing approach and shows how the Laboratory can apply fundamental research to important problems and bring new technologies to fruition for the commercial sector,” said Maxwell, who won a 2008 R&D 100 award for his Laser-Weave™ technology.

The SIMTECHE CO<sub>2</sub> Capture Process collects carbon dioxide emitted by fossil fuel power plants and other industrial operations and compresses it. Robert Currier of Physical Chemistry and Applied Spectroscopy and SIMTECHE



worked jointly under a cooperative research and development agreement to develop the technology. “Our hope is that the award will serve to make more potential commercialization partners aware of the technology and consider it in their pending decisions,” Currier said.

TeraOps Software Radio uses commercial off-the-shelf components to dramatically extend the lifetimes of electronic systems aboard satellites and in space payloads. Mark Dunham of International, Space, and Response and Michael Pigue of Space Instrumentation Systems developed the technology. “Our work is already well known in the industry and nationwide,” Dunham said. “Winning this award is raising our visibility locally and will hopefully lead to Laboratory Directed Research and Development funding.”

The Laboratory shared a fifth award with other national laboratories and private companies for developing the Artificial Retina, a bioelectronic implant that restores useful vision to patients blinded by retinal diseases. John George of Applied Modern Physics, who led the Los Alamos team, said, “My hope is that the R&D 100 award will allow us to pursue our original objective of building a device of at least 1,000 channels. Next-generation systems will lead to a significantly more capable and useful visual prosthetic devices that will greatly enhance the quality of sight and of life for a much larger population of blind patients.”

— Tatjana K. Rosev

# Graduate student continues his family's Lab legacy through work with explosives

Unlike many people who sometimes find an eight-hour workday tiring, graduate student Daniel Preston of High Explosive Science and Technology says he wakes up every day raring to go and excited to discover new things.

"It was always a goal of mine to someday work here [at the Lab] and be a part of something great and scientifically influential," he said. "Plus, who does not want to work with explosives? It's a blast!" As a third-generation Lab employee, Preston has succeeded in keeping his family's working legacy fun and exciting through his involvement with explosives.

"During my undergraduate career at New Mexico Tech, I saw my first shot," he said. "I stood in the bunker, looking through a periscope, and boom! I felt the shock wave pass through my body and from that moment I was hooked."

Preston has his bachelor's of science degree in mechanical engineering and is currently pursuing a master's degree in engineering mechanics with a specialization in explosives engineering.

Preston conducts small-scale sensitivity testing and research on new formulations of propellants and high explosives, populates a field deployable tool for use in communicating homemade explosives information, and recently completed a research project and served as lead author on a paper about the effects of damage on non-shock initiation of HMX-based explosives.

In addition to his work with the Lab, Preston recently participated in a television show called *Man vs. Cartoon* on truTV, where he recreated stunts performed by Wile E. Coyote in the popular Warner Bros. cartoon *Roadrunner*.

Preston said he is proud that his job at the Lab offers him a chance to serve his country. "I am passionate about my work and believe that it is meaningful and important to the country," he explained. "I feel it is patriotic to work at the Laboratory."

— Erika L. Martinez

Daniel Preston removes residual unreacted high explosive from a striker.



Sandra Valdez

# Passion for cutting-edge science leads to LANL Star Award

Geochemist Julianna Fessenden-Rahn of Earth System Observations is researching many projects that engage her with the science she loves. Whether it be analyzing the carbon, hydrogen, nitrogen, or oxygen isotopes of solids, liquids, and gases or expanding nuclear forensics and carbon programs, this stable-isotope geochemist always strives for new ways to explore science.

“I am most passionate about cutting-edge science because I’m able to work on finding the synergy between different disciplines, such as the research connections between threat reduction, carbon, climate, and water programs. I also enjoy teaching the next generation about research and the importance of doing science,” she said.

Fessenden-Rahn joined the Lab in 2002 as a postdoctoral fellow and two years later became a technical staff member. Her work at the Lab includes being a principal investigator on several nuclear forensics and carbon programs at the Laboratory, where she has guided multitechnical staff member teams in research related to these topics. “I am constantly looking to expand these programs into new directions and with new sponsors,” she said.

She also is involved with numerous science-education projects, such as teaching environmental science to kindergarten through 12th-grade students and helping graduate students, postdocs, and young professionals with environmental monitoring, mitigation, and verification research.

A recipient of a 2009 LANL Star Award, Fessenden-Rahn said she was shocked and very flattered to have been nominated. “I didn’t expect to receive this honor,” she said. “But I am extremely happy to be included with such a talented group of women, all of whom inspire me.”

Fessenden-Rahn said she is extremely grateful to Don Hickmott, her group leader, for the LANL Star nomination and that she appreciates the many Lab managers who provided advice and support to her over the years.

— Erika L. Martinez



LeRoy N. Sanchez

Julianna Fessenden-Rahn uses a flux chamber to take air samples for isotope analysis at Technical Area 3.



# MBA students provide business expertise to local entrepreneurs

Running a business and looking for advice? Look no further than the Master of Business Administration summer internship program in the Technology Transfer Division.

This innovative program is designed to match scientists and high-tech entrepreneurs with some of the nation's future business leaders from colleges and universities across the country.

MBA interns work with businesses in Northern New Mexico to help the businesses address issues that may affect their ability to succeed. This year, one team of interns didn't choose a business that had to do with a state-of-the-art technology, but rather one that focuses on the area of sports art.

The interns took on the one-woman enterprise of Sportartist.com, based in Chama and operated by Jolene Jessie, a renowned artist who specializes in art dedicated to capturing the sporting world's greatest moments. Jessie got involved with Technology Transfer Division and the Community Programs Office through Northern New Mexico Connect, a program sponsored by Los Alamos National Security, LLC dedicated to helping local businesses grow and strengthening the Northern New Mexico economy.

"I became interested in the Sportartist.com project because it isn't what most people think of as a technology transfer endeavor," said MBA intern Aaron Sauers. "I think many would be surprised to learn that TT's activities go beyond moving technologies from the Lab to the marketplace — we also support Northern New Mexico's business community through solid business know-how."

"Our goal is to work with Jolene to increase the profitability of her business while allowing her to focus on painting as well," said MBA intern Jacqueline Shen. "After evaluating the current status of the business, we will benchmark it against competitors, identify best practices, and present Jolene with a number of recommendations to achieve that goal."

Fellow intern Brandon McGirr said the MBA summer program is unique and helpful to both Northern New Mexico's economic development and the Laboratory. "Not only does the program provide business expertise and help individuals jump-start their businesses, it creates a positive image of the Laboratory in the community because it demonstrates the Lab's support of small businesses," McGirr said.

While the MBA interns are in the beginning stages of their project with Jessie, they have prepared preliminary plans for how she can improve her business. Most notably, they propose that she improve her marketing strategy by first upgrading her Web site to attract more customers.

Other regional technology businesses receiving assistance from the TT MBA program include Adaptive Radio Technologies, Los Alamos Visualization Associates, and Energy Related Devices.

For more information about Technology Transfer's MBA internship program, contact Belinda Padilla in TT at 667-9896 or [bee@lanl.gov](mailto:bee@lanl.gov).

— Erika L. Martinez



LeRoy N. Sanchez

MBA interns Aaron Sauers (far left), Jacqueline Shen (near left), and Brandon McGirr (far right) help local entrepreneur Jolene Jessie display one of the items sold through her business, Sportartist.com.



**Employee picnic is September 26**

Mark your calendars! The Laboratory's annual employee picnic will be held from 11 a.m. to 3 p.m. September 26 at Overlook Park in White Rock.

This new venue provides plenty of space and parking for the "Family Fun Fest," an event filled to the brim with good family fun, great food and music, and games and activities for children and adults.

The picnic is open to all Laboratory employees and subcontractors and their families. No pets are allowed.

**Fall 2009 Benefits Open Enrollment is coming**

Open Enrollment 2009 is scheduled for October 26 to November 25 for Los Alamos National Security, LLC employees. A positive enrollment in an offered medical plan is required for employees and retirees so that they and their dependents can receive medical insurance during 2010.

Stay tuned for details about upcoming information sessions in October.

**New mentor-protégé agreements with veteran-owned businesses**

Los Alamos National Security, LLC (LANS) and the Laboratory entered into new mentor-protégé agreements with SDV Construction and Trillacorp Construction, both service-disabled veteran-owned small businesses.

Under terms of the three-year contract, LANS will:

- Provide Laboratory badging, site access, and related training support for personnel.
- Provide engineering and facility construction opportunities for the companies to expand their skills and technical abilities.
- Assist the companies in areas meeting Department of Energy-National Nuclear Security Administration requirements, introduce them to best business practices, and expand their qualifications.
- Provide assistance in cost estimating, project controls, engineering, design, and quality assurance.

Both agreements fall under the umbrella of DOE's Mentor Protégé Program.

**Year-end capital purchase guidance**

As the 2009 fiscal year end approaches, employees should work with their Chief Financial Officer Division budget staff to convert funds for capital purchases prior to submitting a purchase request for equipment valued at \$50,000 or more with a useful life greater than two years. Incorrect fund codes can delay approval.

**Sexual harassment prevention training ends October 31**

The initial session of the mandatory, Web-based sexual harassment training must be completed by all Los Alamos National Security, LLC managers and LANS employees, including students, postdocs, and affiliates, by October 31. Managers and employees are trained in two separate courses.

**August service anniversaries**

Find the August service anniversaries online at <http://www.lanl.gov/news/currents/2009/august/anniversaries.shtml>.

**In Memoriam**

- James Rein, 86, died April 27
- David Lloyd Williams, 93, died May 18
- Eulogio Serrano, 90, died May 21
- Cornel Wohlberg, 96, died June 17
- David Maxwell Barton, 86, died June 20
- Christopher Quihuis, 58, died July 21



*Make safety and security integral to every activity we do*

## The Voluntary Protection Program

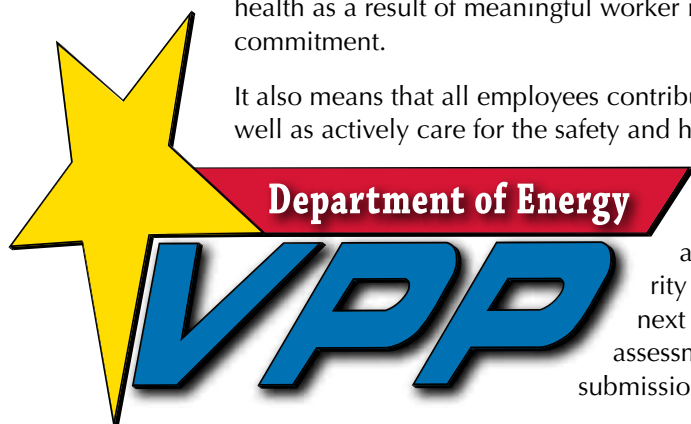
“Our goal is to provide all workers with an injury-free career,” said Associate Director for Environment, Safety, Health, and Quality Chris Cantwell. And the Laboratory’s Voluntary Protection Program (VPP) wants to help.

The VPP supports this goal by creating active employee-management partnerships in which employees solve issues together at the organizational level. VPP also strengthens the Integrated Safety Management System, the Laboratory’s overarching safety program, through increased employee involvement and management commitment.

### ***What does it mean to become a DOE VPP Star Site?***

The Department of Energy started an Occupational Safety and Health Administration-based Voluntary Protection Program program in 1994. To be recognized as a DOE-VPP site means that a facility has achieved excellence in safety and health as a result of meaningful worker involvement coupled with management commitment.

It also means that all employees contribute to the safety and health programs as well as actively care for the safety and health of each other.



The Lab started the VPP journey in June 2006 and is expected to submit its VPP application to the National Nuclear Security Administration’s Los Alamos Site Office next month. DOE will perform an on-site assessment of the 233 VPP criteria following submission of the application.

Benefits of a Voluntary Protection Program include minimizing hazards by identifying, predicting, and managing them, decreasing the number of injuries and illnesses by focusing on event prevention, and improving safety and health performance, resulting in greater customer satisfaction.

### ***Worker involvement is key***

The Lab has met the first VPP milestone: promoting worker involvement by establishing the Institutional Worker Safety and Security Team (WSST). The WSST’s mission is to improve safety and security by directly involving everyone who performs work.

This original WSST includes representatives from every Laboratory directorate. WSSTs now have been formed at every division and some group levels. Currently, there are about 500 WSST employee members. Through these WSSTs, every worker has the opportunity to be personally involved in the operations and decisions that affect worker safety and security.

Or Current Resident

# Wanted: Promising technologies ripe for spinoff

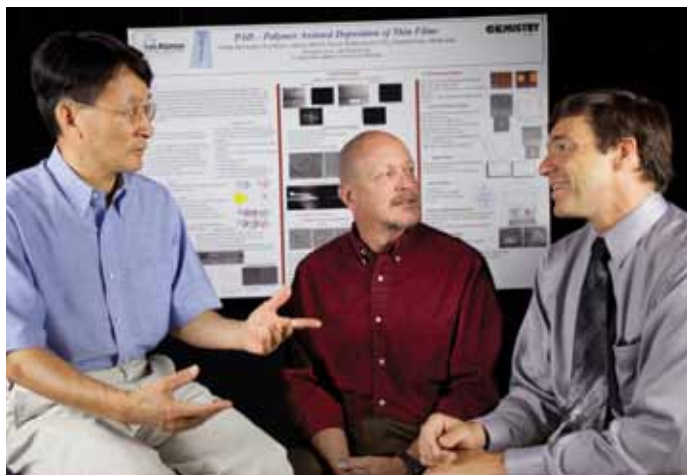
## *LabStart looks for diamonds in the rough*

A self-described miner panning for technological gems, Russ Hopper begins each day inviting principal investigators and Lab managers to learn about LabStart – with hopes of uncovering their market-potential technologies.

LabStart is a joint undertaking between two venture capital firms, Verge Fund and ARCH Venture Partners, each with a long history of starting companies based on national laboratory and university inventions. It is part of the Los Alamos Venture Acceleration Initiative developed by the Technology Transfer Division.

Hopper, LabStart's entrepreneur in residence, envisions the joint venture's efforts as producing the seed of a vibrant entrepreneurial culture in Los Alamos. "I would love to see 10 or 20 startups come out of the Lab and provide employment for talented individuals in the area," he said.

With the goal of starting three companies in the next three years, Hopper has identified three promising technologies to date: polymer assisted deposition, with applications from microelectronics to solid state lighting; Lasonix, which grows crystals with a laser that make electronic devices for microelectronics and photovoltaics;



Researchers Quanxi Jia of the Superconductivity Technology Center (left) and Mark McCleskey (right) of Materials Chemistry discuss with Russ Hopper of LabStart (center) the prospect of taking polymer assisted deposition to market.

Sandra Valdez

and Reagentless Biosensor, which is a field-deployable waveguide spectrometer that may have agricultural applications.

"I think the Lab is poised for big things in the future," said Hopper, a molecular biologist with 20 years experience in business development, both in industry and at the Lab. "We have a lot of technology in acoustics, deposition technology, and instrumentation that will likely lead to a number of exciting inventions that can be the basis of startups and general commercialization."

Lab-developed technology, deployed with the help of LabStart, will benefit industrial competitiveness as well as the country's economic security, said

Technology Transfer Division Leader Steve Girrens. "Closer to home, this effort will help stimulate a more diversified, high-tech regional economy as directed in the Laboratory's prime contract," Girrens said.

Hopper stresses that LabStart helps researchers get their inventions into the marketplace. "We're not here to entice principal investigators to leave the Lab. Our modus operandi is to send Cooperative Research and Development Agreement or Work for Others funds back to a principal investigator's lab," said Hopper. "However, if they have an entrepreneurial bent, we can help them achieve their goals."

For more information, contact Hopper at [brhopper@lanl.gov](mailto:brhopper@lanl.gov) or 665-1578.

— Mig Owens

CURRENTS is a monthly publication of the Communications Office, Los Alamos National Laboratory.

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Los Alamos National Laboratory is operated by Los Alamos National Security, LLC for the Department of Energy's National Nuclear Security Administration

**CURRENTS**

P.O. Box 1663  
Mail Stop C177  
Los Alamos, NM  
87545

LALP-09-0010

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