

LOS ALAMOS NATIONAL LABORATORY **CURRENTS**

March 2009

*All aboard the training revolution
Improvements turn tide on glovebox work
Young researcher contributes to science
Guitar-playing scientist gets start as postdoc
Unraveling the secrets of nature's protein factory*

Creating a strong safety culture

Through its Voluntary Protection Program (VPP), the Laboratory two years ago set up a system to encourage workers to get personally involved in safety. These Worker Safety and Security Teams (WSST) have brought about tremendous improvements in safety and generated an ever-increasing commitment to safety from Lab workers.

As we enter our third year, I am excited by the opportunity as new chair of the institutional WSST to continue this progress. Among our 10 safety goals, recently adopted by senior management, is the intent to increase the visibility of division WSSTs, expand our manager and worker involvement in safety, and employ a more systematic and integrated approach to safety and accident analysis, as set out by the Human Performance Initiative.

To do this, each month we'll roll out a new focus for safety—from our winter campaign of ice scrapers, bag tags, and personal deicer cups to yearly calendars with safety topics and tips and more concentrated attention on stair safety, electrical safety, recycling, and other topics. This year, we also are planning influential speakers and community events to keep safety always on employee minds.

March will be an especially important time, when our trained WSST leaders will conduct a Labwide safety self-assessment. This assessment is part of a larger Laboratory effort to achieve VPP Star status, a highly sought-after Department of Energy recognition of the best in class for safety and Occupational Safety and Health Administration compliance.

I strongly believe safety is a team effort. Through VPP, the WSSTs lay the groundwork for a safety culture. On the institutional level, managers are increasing their commitment to safety, and WSST leaders are being trained in the principles of best safety practices. At the division level, the WSSTs are working to engage employees in safe work practices, increase safety awareness, and recognize and reward excellence in safety.

Only as a team, looking out for each other both at work and at home, can we create a strong and productive culture of safety.

**—Marilyn Peabody, Stockpile
Manufacturing and Support
Directorate, Institutional WSST chair**



Richard Robinson

About the cover: Todd Conklin races to keep employees on the track to safety. See page 4 for story.
Photo by LeRoy N. Sanchez

Buelow appointed Energy Security Center leader

Steven Buelow is the Laboratory's new Energy Security Center leader. Buelow currently is deputy group leader for Physical Chemistry and Applied Spectroscopy and also leads the Lab's Institute for Advanced Studies. He takes over from acting leader Cathy Wilson, who will continue her technical leadership role in the areas of natural systems and global climate change.

The Energy Security Center was established to foster the development of new science, technology, and programs at Los Alamos. Its focus areas include concepts for clean energy, predicting and mitigating the impacts of global energy demand, and sustainable nuclear energy.

Cerreta, Gray elected to TMS board of directors

Ellen Cerreta and Rusty Gray, both of Structure/Property Relations, have been elected to the board of directors of The Minerals, Metals, and Materials Society (TMS). Gray will serve as vice president, and Cerreta will be membership and student development director.

A researcher, Cerreta focuses on dynamic damage due to shock loading and shear deformation of metals. In the past, she was chair of the TMS Young Leaders Committee, which offers professional development



Ellen Cerreta



Rusty Gray

opportunities for early-career materials scientists and engineers.

Gray, a Laboratory Fellow, is a member of the National Materials Advisory Board of the U.S. National Academies. At the Laboratory, he has served as team leader of the dynamic materials properties section, where he promoted dynamic structure/property research on materials within the Department of Energy.

Brosha to serve in Electrochemical Society

Eric Brosha of Sensors and Electrochemical Devices was elected secretary/treasurer of the Sensor Division of the Electrochemical Society. His duties will include maintaining records of division meetings and related correspondence in addition to overseeing Sensor Division finances.

Brosha earned his bachelor's degree in physics from Rider College in New Jersey. He was awarded an Ashton Fellowship from the University of Pennsylvania and received his doctorate in materials engineering.

Detter joins ALA board of directors

John "Chris" Detter recently joined the board of directors of the Association for Laboratory Automaton, a multidisciplinary, nonprofit scientific society spanning diverse industries and technology sectors.

Detter is group leader for Genome Science and the center director of the Department of Energy Joint Genome Institute at Los Alamos. He also is the lead developer for high-throughput viral sequencing for the High-Throughput Laboratory Network, a joint project of the University of California, Los Angeles, and the Laboratory. In addition, Detter is a member of the American Society of Microbiology.



Wendy Cieslak

Cieslak named new MST Division leader

Wendy Cieslak is the new Materials Science and Technology Division leader.

Before joining the Laboratory, Cieslak was deputy to the vice president for Science, Technology, and Engineering at Sandia National Laboratories in Albuquerque and led Sandia's Laboratory Directed R&D Program, the University Partnerships program, and operations of the ST&E Strategic Management Unit.

She earned bachelor's and doctorate degrees in materials engineering from Rensselaer Polytechnic Institute. A graduate Hertz Fellow, Cieslak was named to the Hertz Foundation board of directors in October 2008. She is a Fellow of ASM, International. She currently serves on advisory boards for the College of Engineering at Rensselaer, and the Department of Chemical Engineering and Materials Science at the University of California, Davis.



LeRoy N. Sanchez

Todd Conklin of the ESH Integration Office frequently uses railroad references in his training classes.

All aboard the training revolution

changing perceptions about human performance

To err is human. Or is it? When accidents occur they often are attributed to human failure, the belief being that the processes or systems are fundamentally safe, except for the people using them. If the human factor is eliminated, the thinking goes, there won't be any accidents. Unfortunately, that kind of thinking gets you nowhere, according to Sidney Dekker of Lund University in Sweden and many other researchers who study human error.

One advocate of Dekker's view is Todd Conklin of the Laboratory's Environment, Safety, and Health Integration Office. Conklin has spent the last two decades helping employees learn to perform at their best, while identifying weaknesses in processes and practices that

lead to incidents.

Conklin, whose first job on the hill was working in the human resources office of the Lab's protective force subcontractor, joined Los Alamos as part of the Personnel Security Assurance (PSAP) program.

"I got that job because in the early days the concept of a program like PSAP was a tiny bit contentious. They asked me if I could come over and do the training and not make anyone mad," joked Conklin.

"When I first took over the training, it was presented as a lecture about PSAP," said Conklin. "I tried to turn it into more of a discussion, which allowed participants to become part of the instruction, as well as providing an oppor-

tunity for them to interact.”

Along the way, Conklin also became an expert on identifying unusual behavior in the workplace. He helped develop an early detection model for identifying unusual behavior and trained employees on how to use it. “People loved that class, and I think they learned a lot,” said Conklin.

These days, Conklin stays busy with his human-performance training, something that keeps him in high demand across the Department of Energy complex. “Human performance is the most interesting and enjoyable thing that I’ve done at the Lab,” said Conklin. And, even though he takes his expertise on the road, Conklin still remains loyal to the Lab.

“You look at the other sites, and you quickly realize that we at Los Alamos are doing a pretty good job at learning from our events and experiences,” said Conklin.

It feels to him as if there are big changes happening in the way we understand how we do our work. That is especially true for safety and human performance.

“We have begun to shift from blaming workers to giving them the resources they need to succeed,” said Conklin. This is in sharp contrast to the way things were even a few years ago, he said.

“In the work we do, people are going to make mistakes. That is both normal and predictable. What we need to do is mitigate the consequences or outcomes of those mistakes,” Conklin continued.

In mitigating mistakes and their consequences, Conklin teaches employees and managers that they should never be surprised by what may happen in the workplace. Instead they should anticipate that issues may occur and be prepared. Conklin’s basic

concept is “if you can predict it, you can prevent it.” Being on the front end, the predictive end, of these types of events allows us as a laboratory to reduce our event numbers, prevent consequences, and have the ability to do work easier and better.

Conklin also is quick to point out that it is the person doing the work who best knows where potential problems can arise. He said it’s his job to educate staff about preventing the next accident.

“I teach people to never be only one step away from failure,” said Conklin.

As an example of predicting and preventing failures, Conklin said, “Most people would never drive a car with bald tires, bad brakes, and no seat belts, so why would you take those risks at work, using substandard processes and equipment.”

“When we think about things that way, they become really powerful ideas to help us improve our outcomes,” said Conklin.

And at the end of the day, with the lessons over, what does Conklin take away with him?

“The coolest thing about this place is that we are so good at learning, especially from our mistakes in safety and security, that we are only going to get better.”

—Ed Vigil

Todd Conklin of the Environment, Safety, and Health Integration Office and Melissa Rachel Zelic of Weapons Facilities Operations engage in a friendly game of Jenga to demonstrate that removing one important step or process can bring down and entire operation.



Dixon Wolf

Improvements turn tide on glovebox work *save Laboratory time and money*

When a large wave comes at you, Michael Cournoyer believes you either jump on it and enjoy the ride of your life or get smothered. A research and development scientist in Technical Area 55 Operations, Cournoyer recently went for the ride—using Lean Six Sigma as his surfboard.

Cournoyer's process improvement project findings not only led to improved cycle time for glovebox glove disposal, but to the design of a more ergonomically favorable glovebox glove. They also prompted the retrofitting of gloveports with push-through technology to improve the glove change process and reduce unplanned glove openings.

Time saved by glovebox workers as a result of his analyses approaches 25 percent, cost savings uncovered equates to \$25,800 per year, and transuranic mixed-waste generation is reduced from 4.5 to 1.5 cubic meters. The Lean Six Sigma project also consolidated procedures, which lessens associated administrative work.

"The most rewarding Lean Six Sigma experience was the genuine look of interest from my upper management when I completed my Yellow Belt Certification presentation," he said.

Cournoyer's work, it turns out, definitely piqued management's interest.

"Michael's work demonstrates the effectiveness of Lean Six Sigma on the science side of the house," said Mike Mallory, principal associate director for Business and Operations. "His efforts not only improved the Lab's glovebox processes, they increased safety in the form of ergonomic injuries."

Certification as a Lean Six Sigma Yellow Belt is but the latest achievement for this Purdue University graduate who holds a doctorate in theoretical organic chemistry.

He has received several Pollution Prevention Awards, 1995 and 2007 Distinguished Performance Awards, a 2006 DOE P2 Award, 1995 R&D 100 Award, and his most prized possession, a 1997 LANL Outstanding Mentor award.

Cournoyer is now employing LSS tools for the Technical Area 55 facility operations director metrics and the Institutional Dashboard Metric.

"Los Alamos National Security, LLC is taking the Lab in a new direction," he said. "Applying Lean Six Sigma tools contributes to this direction, and I wanted to be a part of this paradigm shift."

—Mig Owens

Michael Cournoyer, a recently certified Lean Six Sigma yellow belt, tests the passive glovebox glove leak detector at Technical Area 55.



Young researcher contributes to science, builds community

In the short time post-baccalaureate student Pawan Rastogi has been at the Laboratory, he has made a difference in both the research and student community.

Rastogi came to the Lab in 2007 as a summer intern when he was a junior at Columbia University. He was attracted to the Lab, he said, because of its “historical significance, modern facilities, and great minds.”

After graduating early magna cum laude with a bachelor’s degree in chemistry and pre-medicine, Rastogi returned in 2008 as a nanotechnology and nanochemistry intern.

Rastogi works in Los Alamos’s Center for Integrated Nanotechnologies (CINT), where he conducts cutting-edge research on sensitizing and protecting lanthanide ion emission using optically active nanocrystals.

“I work with my mentor, Jennifer Hollingsworth, postdoctoral Fellows Nickolaus Smith, Javier Vela, and Alfred Wooten; and technologist Darrick Williams, all of whom have ample more years of experience in research than I do,” he said. “But never once in my time working at CINT was I spoken to in a condescending manner. My colleagues value me as an integral part of their team and take a genuine interest in my research and project.”

The excellence of Rastogi’s work is reflected in the prizes he’s won, such as the Charles D. Coryell Award for Undergraduate Research in Nuclear Chemistry from the American Chemical Society, the Lab’s Distinguished Student Performance Award, Outstanding Presentation in Chemistry at the 2008 Laboratory Student Symposium, First Place at Technology Transfer



Dixon Wolf

Pawan Rastogi of the Center for Integrated Nanotechnologies prepares a quantum dot sample for optical characterization.

Division’s 2008 Innovation Challenge, and First Place in Chemistry at the Department of Energy’s 2008 Science and Energy Research Challenge.

In addition to his research, Rastogi is chair of the Students’ Association and sits on the Student Programs Advisory Committee at the Lab. His involvement in student affairs helps him make Lab internships as enriching to students as possible, he said. “I want to ensure that students are having a well-rounded and stimulating internship experience,” Rastogi said.

— Tatjana K. Rosev

Kathy Prestridge plays a Fender Telecaster electric guitar in her spare time.



Dixon Wolf

Guitar-playing scientist gets start as postdoc *gives back by mentoring*

Kathy Prestridge of Neutron Science and Technology sees her work at Los Alamos as an exciting learning experience. “There is a lot of interesting science going on here, and I enjoy working with a technically diverse group of people,” she said.

Prestridge holds a bachelor’s degree in aerospace engineering from Princeton University and a doctorate in applied mechanics from the University of California, San Diego. She won the 2000 Postdoctoral Publication Prize in Experimental Sciences and currently is studying shock-driven fluid instabilities to better understand how such instabilities hinder the development of a fusion energy source.

Prestridge was named a LANL Star by the Women’s Diversity Working Group for her technical work and her achievements as a mentor, project leader, and deputy group leader. “I think the Star program is a nice way for the Lab to recognize the achievements of women,” she said. “There still are not a lot of women with doctorates in either physics

or mechanical engineering, and if our professional work is highlighted, it can offer hope for young women interested in pursuing these career paths.”

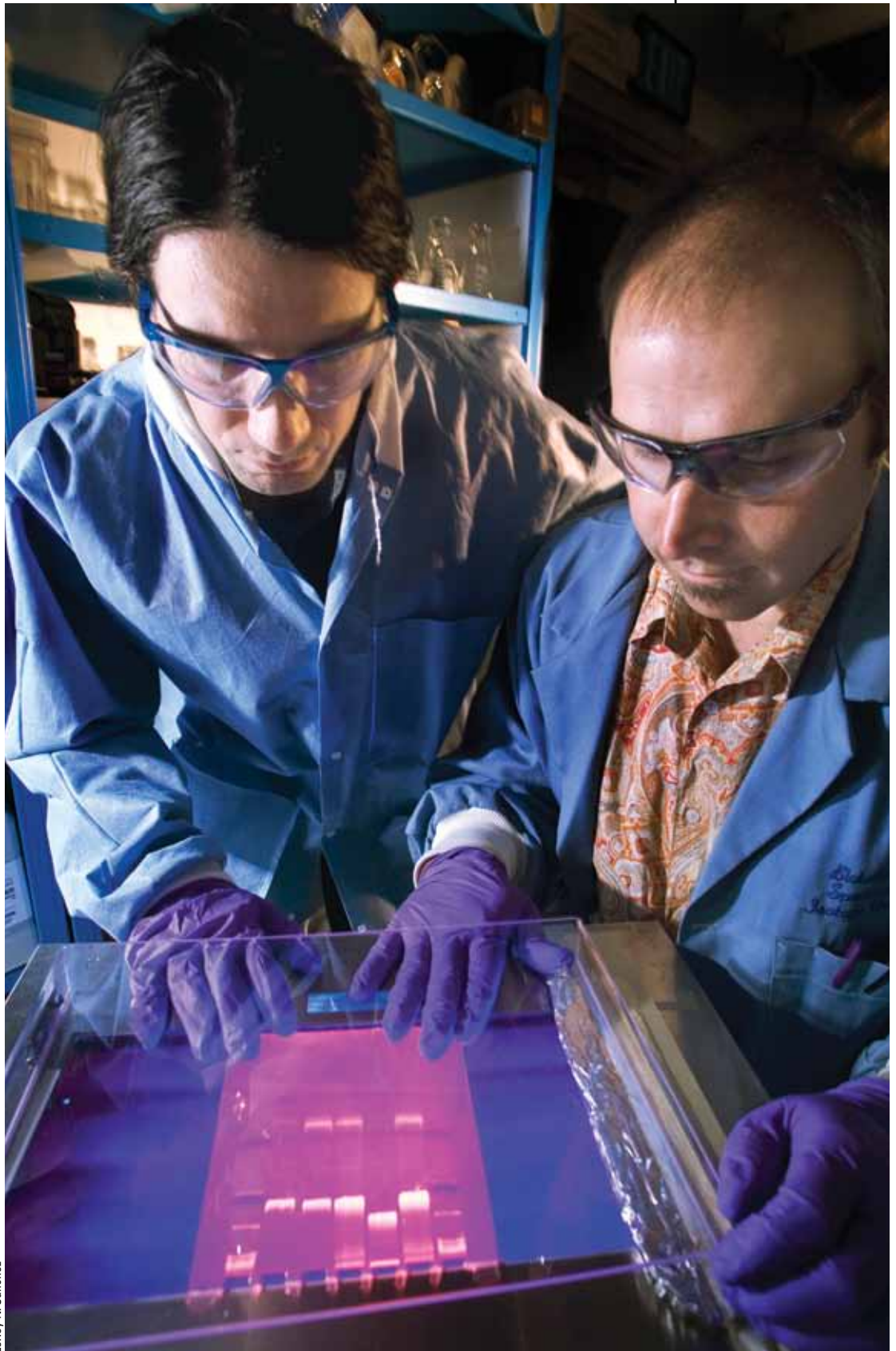
Prestridge said she joined Los Alamos because retired Laboratory Fellow Robert Benjamin recommended the Lab’s postdoctoral experience. “I met Benjamin at an American Physical Society conference and came here as a postdoc in 1998,” she said. Benjamin, who became her mentor, was very supportive of her career. “He gave me lots of opportunities to thrive,” she said, adding, “I’ve tried to use his philosophy as a model for the students and postdocs that I now mentor.”

In her spare time, Prestridge plays acoustic and electric guitar, she said. “And my husband, Ben Sims, who works in Statistical Sciences, plays lap steel guitar. Because we are so busy with work and kids, it’s fun for us to have a hobby that we do together.”

—Tatjana K. Rosev

Unraveling the secrets of nature's protein factory

Kevin Sanbonmatsu, left, and Scott Hennesly of Theoretical Biology and Biophysics work at the National Stable Isotope Resource to understand how RNA (ribonucleic acid) molecules act as genetic switches that regulate protein synthesis. Sanbonmatsu also uses powerful biomolecular computer simulations to reveal how the ribosome (nature's protein factory) maintains quality control.



LeRoy N. Sanchez



New Web site features Laboratory videos

View short videos about the Laboratory on its new video Web site, including a video titled "Pushing Frontiers" that highlights Lab accomplishments during the second half of 2008 (<http://www.lanl.gov/videos/>). If you have potential materials to upload, contact Nancy Ambrosiano at nwa@lanl.gov by e-mail.

Research Library has new Nature publications

The Research Library now has four new publications from *Nature*. *Nature Chemistry*, *Nature Geoscience*, *Nature Nanotechnology*, and *Nature Photonics* are available to employees online.

Full text articles from these publications are available from *Nature's* Web page and also through links in OPPIE, the library's new search tool.

For more information, write to library@lanl.gov.



Snowing? Check UPDATE

In the event of inclement weather, Laboratory workers should call the Laboratory's UPDATE phone line at 667-6622 or toll free at 1-877-723-4101 for information about the Lab's operating status.

Nominations accepted for 2009 Ernest Orlando Lawrence Award

Nominations for the 2009 Ernest Orlando Lawrence Award are being accepted by the Department of Energy. The award is one of the longest running and most prestigious science and technology awards given by the U.S. government.

Nominations for the Lawrence Award are solicited in seven fields: chemistry; materials research; environmental science and technology; life sciences (including medicine); nuclear technologies (fission and fusion); national security and non-proliferation; high energy; and nuclear physics.

Nominations must be filed electronically at <http://www.ornl.gov/lawrence/>. The deadline for nominations is April 1.

LANS awards grants to 24 nonprofits

Local nonprofit organizations that benefit from volunteer efforts by employees of the Laboratory received \$265,000 in special one-time Community Giving grants from LANS. To read the Laboratory's news release, go to http://int.lanl.gov/news/index.php/fuseaction/home.story/story_id/15677.

Dentists added to Delta Dental's Premier Network

Delta Dental has added three local dentists to its Premier Network. All three dentists work out of the High Mesa Dental Arts office in Los Alamos.

A complete listing of in-network dentists is available on Delta Dental's Web site at <http://deltadentalins.com/> or by calling customer service at 1-800-777-5854.

March service anniversaries

Find the March service anniversaries online at <http://www.lanl.gov/news/currents/2008/mar/anniversaries.shtml>.


LOS ALAMOS REPORT

Get weekly Lab news

The latest edition of Los Alamos Report, which offers weekly news from the Laboratory, is available at <http://lareport.blogspot.com/>. To receive the e-mail version of Los Alamos Report, send an e-mail to listmanager@lanl.gov with the command "subscribe losalamosreport" in the body of the e-mail.

In Memoriam

- Robert H. Gattis, 91, died December 26
- Dion Fabian Martinez, 27, died January 5
- Richard Lee Stice, 87, died January 12
- Paul W. Lewis Jr., 74, died January 14
- Vernon Dale Bolton, 83, died January 23
- Elmer J. Sowder Jr., 86, died February 3
- Theodore Ray Cole, 82, died February 9

 *Deliver improved business processes, systems, and tools that meet the need of our employees, reduce the cost of doing business, and improve the Laboratory's mission performance*

Acquisition Spending Plan enhances procurement *managing taxpayer dollars wisely*

Purchasing goods and services accurately and in a timely manner is essential to the Laboratory's meeting its mission and programmatic requirements. Helping the Laboratory to better manage the procurements process is the goal of the Acquisition Spending Plan.

With an accurate Acquisition Spending Plan, the Laboratory can handle procurements more efficiently (e.g., combining same company contracts to leverage buying) and can ensure that the Procurement Group has the resources it needs to meet the Laboratory's procurements needs.

"In addition, it increases competition when you give vendors time to get their teaming partners together and compete for work here at the Laboratory," said Kevin Chalmers, Acquisition Services Management (ASM) Division leader. The Lab benefits from this increased competition in the form of more companies wanting to provide better quality goods and services, he explained.

The Laboratory's procurement process often has been a misunderstood function. "A lot of our requestors who require a product or service have uncertainty about their programs' funding," said Chalmers. "This causes many people to wait until the latter part of the year to spend those funds." This practice can create a bottleneck for procurement.

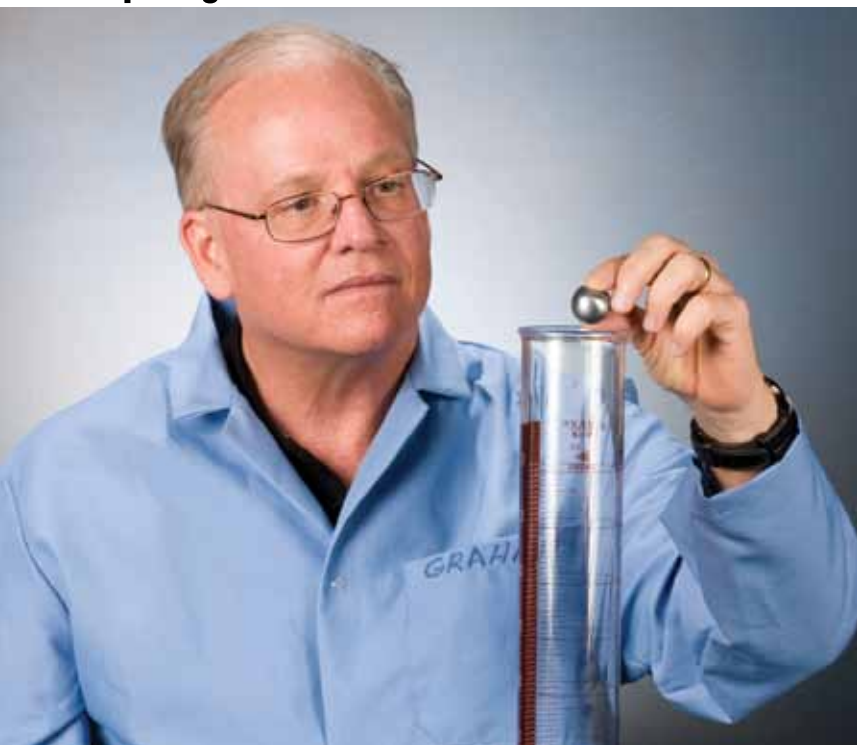
To get a better handle on Laboratory procurements, Chalmers provided all associate directors a spending analysis report for what they spent in fiscal year 2008. The report broke down purchases by type of transaction, average dollar amount per purchase, and top suppliers for transactions.

Chalmers then asked Lab directorates to provide ASM with forecasts for purchases greater than \$100,000 to be made in fiscal year 2009.

Each forecasted procurement has been assigned a procurement specialist to enable better internal customer service early on in the procurement cycle. Before a requisition is even initiated by the requesting organization, ASM contacts the organization to provide assistance with their procurement needs.

"The Acquisition Spending Plan will be used this fiscal year as a performance measure on how well the Laboratory plans and executes its procurement needs, so it is very important for all procurements to be captured on the plan. However, Procurement will work hard at supporting all unanticipated or emergency purchases." Chalmers said.





Dixon Wolf

Lab researcher coordinates work-for-others projects

As the leader of several programs in which the Laboratory works with U.S. industry, Alan Graham of Polymers and Coatings (MST-7) knows how to play well with others.

Graham manages joint projects between the Laboratory and Procter and Gamble, Chevron, the Defense and Energy departments, and other customers. “We put together teams and help them get the best help on the planet,” he said. “We do world-class science, enhance Lab capabilities, and help U.S. industry maximize its profits.”

Graham’s team includes researchers from Los Alamos, P&G, the University of New Mexico, and the University of California, Santa Barbara. The group is tackling a variety of material issues at the forefront of soft matter research, such as the manufacture and stability of self-assembling vesicle systems and the production of a new generation of nanofibers.

Alan Graham uses falling balls or momentum tracers as a basis for extending Einstein’s theory used to predict molecular size to a multiscale theoretical approach for nano-scale suspensions.

Vesicle systems are the primary component in a wide variety of consumer products ranging from fabric softeners to hair conditioners. At present, vesicle stability calculations are based on mixing products, placing them on shelves, and watching their performance over long periods of time.

By using nuclear magnetic resonance spectroscopy and magnetic resonance imaging, Graham’s team has produced cutting-edge research that has led to a better understanding of the behavior of vesicle systems. It also has allowed P&G to move into new global markets, Graham said.

“Alan tends to put together powerful and winning teams—where they win proposals or are successful at meeting the task objectives,” said Pat Reardon of MST-7.

Before joining MST-7, Graham led the Laboratory’s Institute for Multiscale Material Studies. He was chair and professor of the Department of Chemical Engineering at Texas Tech University and was elected a Distinguished National Laboratory Professor at the University of New Mexico. Graham is an adjunct professor at UCSB.

The Laboratory’s work-for-others program is in its third year and represents an interdisciplinary, interdivisional effort that is funded annually at more than \$1 million.

—Excerpted from an article published in the January 2009 issue of MST e-News (http://int.lanl.gov/orgs/mst/mst_eneews.shtml).

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