

Newsletter

Week of Aug. 29, 2005

Vol. 6, No. 18



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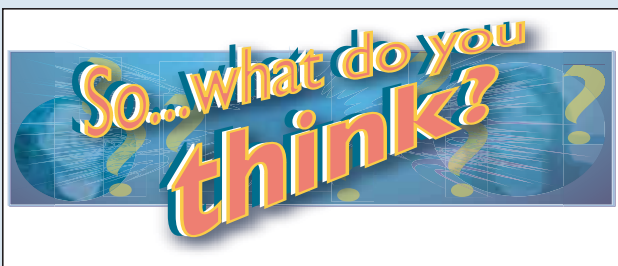
Colleagues, family remember Bethe at Lab symposium
Trustworthy, forthright and brilliant — this was Hans Bethe. Bethe was honored by Lab employees, family, friends, colleagues and admirers at a symposium at the J. Robert Oppenheimer Study Center at the Laboratory.Page 4

Hazmat Challenge

The Laboratory recently held its ninth annual HAZMAT Challenge. The challenge, which tests the hazardous materials response skills of emergency responders, was won this year by the city of Farmington Fire Department, while the Norman, Okla., Fire Department received the sportsmanship award.Page 5



Yuntian Zhu:
A researcher racing for results
Yuntian Zhu of the Laboratory's Superconductivity Technology Center (MST-STC) may have started late in the race to develop ultra-long carbon nanotubes, but he is now on the fast track to success.Page 8



Recent studies indicate that Americans need to exercise more and make healthier food choices. With that in mind, what does "eating healthy" mean to you? Learn what your co-workers had to say on Page 6.

Recovered sealed sources disposed at WIPP

Fourteen 55-gallon drums containing plutonium-239/beryllium sealed sources recovered by the Off-Site Source Recovery Project recently were shipped to the Waste Isolation Pilot Plant near Carlsbad. This July 28 shipment was the first of its kind since May 2003.

The OSRP in the Nuclear Nonproliferation (N) Division at the Laboratory, recovers excess and unwanted radioactive sealed sources and other radioactive material from all around the nation that may pose a threat if used by terrorists in a radiological dispersion device. Recovery of the sealed sources is part of the U.S. Global Threat Reduction Initiative led by the Office of Nuclear Nonproliferation of the National Nuclear Security Administration/Department of Energy. Los Alamos' OSRP has recovered more than 11,000 radioactive sources and expects to recover a total of 18,000 sources by the end of the decade.

Sealed radioactive sources are used for research, medical diagnostics and therapy and for a variety of industrial applications where a source of ionization radiation is required. The isotopes are generally encapsulated (sealed) in steel jackets to prevent leakage. Sealed sources are used in pacemakers, moisture and density gauges, oil-well logging equipment, cancer radiation therapy units, smoke detectors or as thermal-electric generators. Laboratory personnel recover the excess or unwanted sources from private and government institutions, but currently, only a very few are eligible for disposal at WIPP.

Shipping of these WIPP-eligible Pu-239 sources is a team effort by a number of organizations at the Laboratory, the Nevada Test Site and DOE Carlsbad.

For shipping of WIPP-eligible sources, the Lab's OSRP team members first recover and package the sources in special 55-gallon WIPP-approved containers used for transport, storage and disposal. Typically, plutonium-239 sources are first sent to a staging site at the Nevada Test Site. The Central Characterization program WIPP shipping contractor at DOE Carlsbad then reviews the radioactive material documentation packages and certifies the eligibility for shipment to WIPP. Once certified for shipment and received at the Laboratory, where they are held under safeguards, the drums are loaded by Nuclear Waste and Infrastructure Services (NWIS) Division personnel into TRUPACT-II WIPP shipping containers and then transported to WIPP.

Los Alamos has been the lead DOE site for excess sealed source recovery for 25 years. So far during the 2005 fiscal year, 973 sources have been recovered.

Sources containing americium-241 or plutonium-238 are transported directly to Los Alamos for storage. Those containing plutonium-239 are transported to Los Alamos or the Nevada Test Site for temporary storage under appropriate safeguards. Those that are eligible are disposed at WIPP.

In addition to transuranic sources, the OSRP continues to recover sources containing radioactive cesium, cobalt and strontium from medical, agricultural, research and industrial locations throughout the nation as part of the expanded mission from NNSA.

Another shipment was made Aug. 12, and the OSRP hopes to ship a total of approximately 100 drums containing plutonium-239 sealed sources to WIPP by the end of the second quarter of 2006.



Fourteen 55-gallon drums of plutonium-239 sealed sources are bundled in two layers and wrapped in strips of heavy plastic, ready to be loaded into a TRUPACT-II container at Technical Area 54. The sealed sources recently were delivered to the Waste Isolation Pilot Plant near Carlsbad. Paul Apodaca, left, of the Nuclear Waste and Infrastructure Services (NWIS) Division and Mitch Carter of Carlsbad Operations (EES-12), supervise the loading as the waste drums are hoisted in the air and moved to an open TRUPACT-II. Photos by Patricia Leyba, Environmental Stewardship (ENV) Division

Los Alamos
Newsletter

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Go to higher ground

Flash floods

Flash floods develop quickly. They can occur, along rivers or creeks, in low water crossings or in a dry stream bed. They can occur during any month and at any time during the day.

Flash floods can be deceptive. Flood waters are likely deeper and moving faster than they appear to be.

Flash floods and flooding are the No. 1 weather-related killer, with around 140 deaths recorded in the United States each year.

When inside

- If ordered to evacuate or if rising water is threatening, leave the building immediately and move to higher ground.

If caught outdoors

- Go to higher ground immediately. Avoid small rivers or streams, low spots, canyons, dry riverbeds, etc.
- Do not try to walk through flowing water more than ankle deep.
- Do not allow children to play around streams, drainage ditches or viaducts, storm drains or other flooded areas.

If in a vehicle

- Do not drive through flooded areas, even if it looks shallow enough to cross. The large majority of deaths due to flash flooding are due to people driving through flooded areas. Water only one foot deep can displace 1,500 pounds. Two feet of water can easily carry most automobiles. Roadways concealed by floodwaters may not be intact.

Kuckuck is positive about science; emphasizes safety

"It is clear to me that this Laboratory does science like no one else does science."

—Laboratory Director Bob Kuckuck

by Hildi T. Kelsey

Laboratory Director Bob Kuckuck noted several of the many positive contributions of the Lab and discussed the need for safety improvement at an all-employee talk in the Administration Building Auditorium at Technical Area 3. "We need to feel good about what is happening [at the Lab] and work our way through the difficult parts," he said.

While the director was complimentary of the Laboratory's science efforts, as well as its role in weapons design, the Lab's national radiation source recovery program and recent success at DARHT, safety was a key priority as he outlined his goals. In general, Kuckuck said he wants to change how employees think about the way they do their work and react to incident and safety elements.

He said the Lab has been hurt by bad publicity around safety incidents and needs to "change the perception of Los Alamos" by the outside world.

While he acknowledged that safety involves both procedures and behavior-based programs — he prefers the term "action" as opposed to "behavior" — Kuckuck told employees, "I want you to get to the level where you relate to what safety means to you."

Alluding to the recent incidents involving americium contamination and the Aqua Regia chemical exposure, Kuckuck, added, "we are not there yet if people are getting hurt."

Kuckuck stressed that procedures are necessary, but he believed that in some places they are overkill and can lead to too much reliance on procedures at the expense of good judgement and expertise.

"The devil is in the details when putting procedures in place ... We don't need 25 pages when three pages will work," he said.

But, he explained that his intent was not to move away from procedures. Rather, he wants to make them realistic and "fit what we have to do."

"You need to rely on expertise in your labs, but procedures are there to make you think and to give you guidance," said Kuckuck.

He noted that as the Lab moved out of the Cold War to focus on the future, it had to shift from an expert-based system to a procedure-based system. This shift was necessary, he explained, given the evolving complexity of the Lab. "We can't say to the public, we are the expert in radioactivity — just trust us," said Kuckuck.

On the employee action side, he mentioned that it is equally important to figure out those factors that influence people's decisions, realizing that time constraints, facility maintenance and other elements can adversely impact employees and may influence their behavior.

Kuckuck said he is "trying to sort out these drivers that aren't helping us" and mitigate them. He asked for employees' help "in thinking about how we are doing safety."

Mitigating barriers and enabling science have been the focus of a couple of off-site meetings and several other meetings the director has held with management and other Lab organizations. He also briefly discussed the fix-it team made up of technical and compliance staff members working together toward this same goal.

Kuckuck said he was personally feeling pretty confident that "we are setting down a path" that will overcome the obstacles employees are facing and strengthen the Laboratory.

While he admits "it has been a tough year for science," including a potential cut in LDRD funding of one percent, Kuckuck talked of progress in new building construction for a science complex, keeping the Enterprise Project on course and supporting the operational efficiency effort. Kuckuck also noted he is aware of child-care issues and will re-examine the feasibility of a Lab-sponsored day-care program.

To discuss the re-institution of an alternative work schedule for Laboratory workers, Kuckuck yielded the floor to Lynn Boland, acting Human Resources (HR) Division leader. See the Aug. 18 Daily NewsBulletin at www.lanl.gov/news/index.php?fuseaction=nb.main online for detailed information, including questions and answers, regarding the new alternative work schedule.



Laboratory Director Bob Kuckuck updated employees on several topics, including safety, the planned new alternative work schedule, the status of LDRD funding and other matters at an all-employee talk in the Administration Building Auditorium at Technical Area 3. Photo by LeRoy N. Sanchez

Los Alamos National Laboratory NewsLetter

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Los Alamos enhances global security by ensuring safety and confidence in the U.S. nuclear stockpile, developing technologies to reduce threats from weapons of mass destruction and improving the environmental and nuclear materials legacy of the Cold War. Los Alamos' capabilities assist the nation in addressing energy, environment, infrastructure and biological security problems.



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Lab Director seeks input from the Science and Engineering Advisory Council

SEAC gives TSMs a voice

by Hildi T. Kelsey

“Here [at Los Alamos] science is underneath — coming up in everything you do,” Laboratory Director Bob Kuckuck told members of the Science and Engineering Advisory Council.

Acknowledging the unique burdens faced by Los Alamos employees in dealing with bureaucracy and pursuing science within the constraints of a regulated environment where nuclear work is conducted, Kuckuck solicited suggestions from SEAC regarding Lab issues and possible solutions specific to technical staff members.

The director said that he is aware of and understands the variety of burdens staff is facing in the current atmosphere, such as difficulty with procurements, problems with getting foreign nationals into the Lab administrative systems and delays in obtaining clearances.

He stressed that while it would be impossible to tackle the complexity of all of the

Lab’s problems as a whole, he plans on grabbing “bite size chunks” and trying to solve them. In his short time here at the Lab, Kuckuck said it would be more productive to resolve smaller, “fixable” issues over the next few months than try to implement sweeping grand-scale change.

“Trying to do all of this at once is like trying to take a bite out of an elephant,” said Kuckuck. Rather, he is looking at triaging programs, operations, business and science topics where certain matters can be prioritized as critical, some problem areas eliminated completely or reduced in scope, and others evaluated for effectiveness and value to the work force.

According to Kuckuck, conducting this process beforehand will “mitigate the impact of the step function” for the new director and his team. By implementing small, but solid, complete changes, he feels the overall transition under the new contract will be smoother for all involved.

SEAC Member Bill Junor of Space and Remote Sensing Sciences (ISR-2), who also serves on Chief Science Officer Tom Bowles’ Science Council, told the director, “It is important to take these small victories and communicate them where you can find them.” Junor also emphasized that it is imperative this communication reach TSMs and staff without getting stuck somewhere in management.

Since SEAC focuses on specifically addressing concerns that directly impact the ability of scientists and engineers to produc-

tively pursue focused scientific research and projects at the Laboratory, it is an obvious resource on which Kuckuck can draw.

“We will be looking to SEAC as a resource,” the director said.

Members of SEAC are volunteers nominated by division leaders from across the Lab. Howard Hanson of Laboratory-Directed Research and Development (STB-LDRD) said the theory behind SEAC is not that members will act as formal representatives, relaying information between managers and TSMs. Members of SEAC come together as people from different scientific and technical divisions to discuss their concerns and propose solutions to those issues. As a result, “impressions from those in many individual divisions will coalesce into a useful, unified picture of issues as viewed by Laboratory scientists,” said Hanson.

SEAC recently has examined three issues: improving the purchasing system, enhancing initiatives surrounding the recruitment and retention of scientists and engineers and exploring the concept of promotional levels for technical staff members.

Regarding the purchasing system, members are looking into making it easier for researchers and designers to “get a hold of the stuff they need.” SEAC recently met with Warren Finch of IT, Equipment and Services (SUP-9) to discover ways to smooth the process for TSMs making routine and customized purchases. One option generated

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Update on Appendix F: Objective 5

by Janet Mercer-Smith of the strategic research directorate

Objective 5 in Appendix F is often called the “Science Mission” objective. Specifically, Objective 5 focuses on enhancing and nurturing a strong science, engineering and technology base in support of national security missions. The grade of the objective is based on the Laboratory’s ability to demonstrate excellence in science. This is done through division review committees, peer review publications and awards. The grade is based on the work in all the technical directorates, and as such, research and development supported by a variety of sponsors build on unique Laboratory capabilities to meet current and future national security needs. Active participation in the broad scientific and technical community and strategic collaborations with other national laboratories, industry and academia benefit the Lab’s scientific capabilities.

External awards are a measure of achievement and scientific breadth. Steve Elliot of Neutron Science and Technology (P-23), David Montgomery of Plasma Physics (P-24), David Moore of Materials Dynamics (DX-2) and John Singleton of the National High Magnetic Field Laboratory (MST-NHFML) were among 201 scientists nationwide recently elected as Fellows of the American Physical Society. Greg Kubas of Actinide, Catalysis and Separations Chemistry (C-SIC) and Joe D. Thompson of Condensed Matter and Thermal Physics (MST-10) were elected as American Association for the Advancement of Science Fellows, an

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Representation on the Science Council

by Tom Bowles, chief science officer



The Science Council is comprised of seven core members: Dave Clark of Nuclear Materials Technology (NMT-DO); Chuck Farrar of Engineering Sciences and Applications (ESA-DO); Bill Junor of Space and Remote Sensing Sciences (ISR-2); Jackie Kiplinger of Actinide, Catalysis and Separations Chemistry (C-SIC); Tom Terwilliger of Cell Biology, Structural Biology and Flow Cytometry (B-2); Steve White of Diagnostics Applications (X-5); and Ken Wohletz of Geophysics (EES-11).

While these members cover a broad range of the capabilities at the Laboratory, a number of constituencies at the Laboratory are not adequately represented. In order to provide better input to senior management on the issues that impact our ability to carry out science and engineering at the Lab, we have expanded the Council to include several ex-officio members. These members represent a variety of constituencies that will provide better communication of issues.

The new members are Carla Kuiken of Theoretical Biology and Biophysics (T-10), as the foreign national representative; David Chavez of Materials Dynamics (DX-2), as the postdoc representative; Vic Gehman of Neutron Science and Technology (P-23), as the student member on the Student Programs Advisory Committee; Pat Rodriguez of Hydrodynamics and X-ray Physics (P-22), as the technician representative; Michael Collins as the Science and Engineering Advisory Council (SEAC) chair; Merry Wood-Schultz of Thermonuclear Applications (X-2), as the LANL Fellows coordinator; Robbie Vogt (Cal Tech) as the University of California Science and Technology Panel chair; and Jared Dreicer as the Chief Science Office (CSO) chief of staff.

Communication between working staff and senior management is critical, particularly in times of stress like we now are experiencing with the contract re-bid. While David Sharp [deputy chief science officer] and I will continue to meet with groups to have discussions about issues affecting science, we feel it is important to increase the frequency of interactions with staff. Thus, members of the Science Council also will be meeting with groups around the Laboratory. We are assigning the regular members of the council as points-of-contact with all the technical divisions and will be working to meet with the support divisions as well. In addition, the ex-officio members will be available to meet with the groups they represent. One of the goals of these interactions is to determine which are the highest priority issues that we will undertake to resolve under the “Fix-It” initiative of Director [Bob] Kuckuck. Our goal is to make a real difference in a number of aspects of everyday life over the next four to nine months.

Colleagues, family remember Bethe at Lab symposium

Trustworthy, forthright and brilliant — this was Hans Bethe. His scientific accomplishments, policy influence, amiable personality and honesty left an irrevocable impression in his field and shaped the history of the nation. Bethe was honored by Lab employees, family, friends, colleagues and admirers at a symposium at the J. Robert Oppenheimer Study Center at the Laboratory.

“Hans Bethe was in a unique class who made a profound impact on this world,” said Laboratory Director Bob Kuckuck. “In addition to his insights, his stature and leadership were critical to the success of [the Manhattan Project]. He also was a voice of reason in support of national security, a strong proponent of arms control and adviser to many administrations,” Kuckuck added.

Speakers echoed similar sentiments regarding Bethe’s contributions. These presenters included Chief Science Officer Tom Bowles, Theoretical (T) Division Leader Alan Bishop, former Laboratory Director Harold Agnew, Bradbury Science Museum Director John Rhoades and Stanford Professor Sidney Drell.

Acknowledging the importance of family during the Manhattan Project, Bishop introduced Bethe’s wife, Rose, son Henry, daughter Monica and grandsons Paul and Yuli.

In short speeches, Henry Bethe, photo at right, recalled educational walks with his father, while Monica talked about her father’s love for the mountains around Los Alamos. With the same strength and conviction as her husband, Rose Bethe, inset photo, urged that Los Alamos continue to uphold Bethe’s legacy to the nation and keep the world safe from nuclear threat.

Other talks by Edwin Salpeter on early science and Gerald Brown on the evolution of compact binaries, which focused on Bethe’s scientific discoveries, were followed by a round table discussion on Bethe’s influence on the Laboratory.



Lab director seeks input ...

continued from Page 3

from that meeting may be the creation of a Web site that guides staff members through online purchases and improves computer interfaces as part of the Enterprise Project.

Kuckuck also sees the purchasing system as an area of interest and said he is going to make an effort to convince people to use their purchase cards. “I will make it clear to the Lab that people with purchase cards are accountable, but are not going to be punished for honest mistakes,” he said.

In terms of recruiting staff, SEAC is working with the Human Resources (HR) Division to find ways to better match quali-

fied applicants with available positions in Laboratory technical divisions.

The director and members of SEAC agree that uncertainty surrounding the future of the contract to operate the Lab has had a devastating impact on employee morale. Michael Collins of Safeguards Science and Technology (N-1), SEAC chair, commented that there is a feeling of paralysis in the work force when it comes to addressing issues that require long-term solutions.

“When there is [an organizational] problem that might take six or eight months to solve, but a new contract team will be announced in five months, people wonder if they should even bother to address the problem now,” Collins said. He suggested that Lab management could avoid these

doldrums by “acting now as if the University of California will get the new contract, and use these next five months as a head start toward achieving the UC-led contract team’s long-term vision for the Lab.”

In light of morale concerns Junor mentioned, “You must convince staff that there is a worthwhile job for them here. ... You need to show them there is hope — a light at the end of the tunnel.”

Junor sentiments tie directly into Kuckuck’s goal of “articulating in the short-term that there is optimism in the long-run.”

Along these lines, SEAC was asked by management to weigh the benefits of a career ladder system for TSMs consisting of levels within the technical staff member category, much like the specialist staff member (SSM) category. SEAC discussed how advancement through the various levels might be determined and talked about the creation of a base salary / bonus system, as well as the pros and cons of implementing a tiered system overall.

In addition, SEAC works very closely with Chief Science Officer Tom Bowles, who occasionally requests that the group develop a white paper on an important issue. One such issue addressed by SEAC in 2004 was the value and preservation of small science.

Junor said the SEAC white paper on small science is one of three that the Science Council is now using to construct its own document.

For the most part, SEAC communicates informally with management. However, sparked by encouragement from Kuckuck, it will seek regular meetings with the director.

SEAC members also act as resources for outside organizations and the media. Collins said, “It’s easy to call on us and say, such and such a group is coming here, and they need to talk to some scientists.”

However, SEAC’s main responsibility continues to be representing the needs of the Laboratory’s scientists and engineers.

Calendar year 2005 SEAC members*

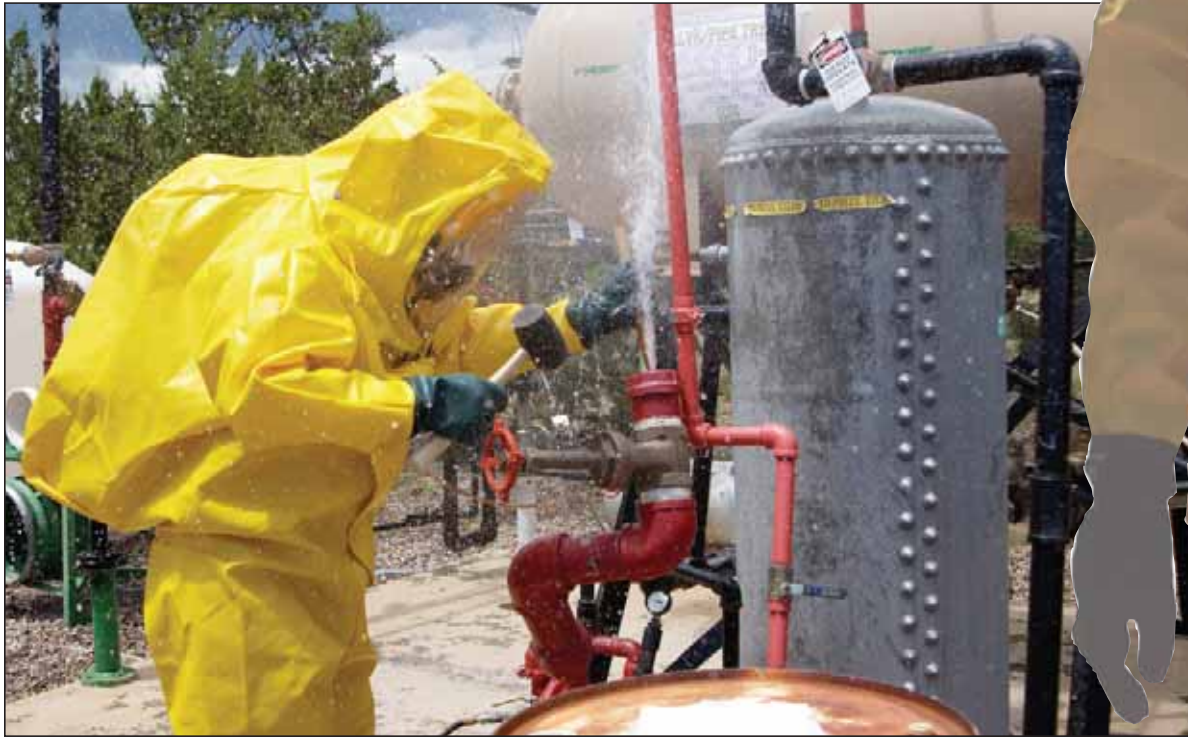
- Mike Collins of Safeguards Science and Technology (N-1)
- Matt Bement of the Engineering Sciences and Applications (ESA) Division
- Chris Bradley of Geophysics (EES-11)
- Sam Clegg of Advanced Chemical Diagnostics and Instrumentation (C-ADI)
- Bill Junor of Space and Remote Sensing Sciences (ISR-2)
- David Janecky of Ecology (ENV-ECO)
- George Tompkins of Stockpile Complex Modeling and Analysis (D-2)
- Hong Cai of Structural Biology and Flow Cytometry (B-2)
- Rob Coker of Thermonuclear Applications (X-2)
- Brian Bluhm of International Research, Analysis and Development (N-3)
- James Fincke of Thermonuclear Applications (X-2)
- Terry Holesinger of the Superconductivity Technology Center (MST-STC)
- Brett M. Kettering of High-Performance Computing Systems Integration (CCN-9)
- Paul Rightley of Hydrodynamics (DX-3)
- Gary Rouleau of LANSCE-1
- Beth Wingate of Continuum Dynamics (CCS-2)

Ex officio representatives include

- Howard Hanson (Liaison between SEAC and management) of Laboratory Directed Research and Development (STB-LDRD)
- John A. Sanchez (Employee Advisory Council representative) of Materials Dynamics (DX-2)
- Charmian Schaller (SEAC’s writer-editor) of Communication Arts and Services (IM-1)

* SEAC members, who are nonmanagement TSMs nominated by their division offices, serve two-year terms with half the membership rotating off each year. A call for new members will go out to the appropriate division offices in November.

HAZMAT Challenge



New Mexico State Police emergency personnel respond to a valve pipe leak during the first day of the ninth annual HAZMAT Challenge sponsored by the Laboratory. The challenge, which tests the hazardous materials response skills of emergency responders, was won this year by the city of Farmington Fire Department. The Norman, Okla., Fire Department received the sportsmanship award. Eleven teams from New Mexico, Texas and Oklahoma participated in the challenge held at Technical Area 49.



Above: Emergency responders from Midwest City, Okla., pull a colleague from a confined area. The exercise is designed to test the ability of emergency personnel to respond to situations in which individuals are trapped in an area where hazardous conditions exist. The Laboratory's HAZMAT team sponsors and coordinates the HAZMAT challenge.

Right: Personnel from Intel Corp.'s Albuquerque fabrication facility attempt to stop a leak from a cylinder during one of the HAZMAT challenge skills tests. Team members are wearing personal protective equipment; the exercise is designed to test responders' skills with tools and materials for stopping leaks. Rain shortened the challenge, with the obstacle course competition cancelled because of inclement weather.



Photos by LeRoy N. Sanchez, Public Affairs

So...what do you think?

Q: Recent studies indicate that Americans need to exercise more and make healthier food choices. With that in mind, what does “eating healthy” mean to you?



Raquel Lizarraga Jurado of Mechanics of Materials and Equation-of-State (T-1)

Having salads, avoiding McDonald's, French fries and fast food.



Albert Kemp of Materials Control and Accountability (S-4)

I like to eat whatever I like. However, I do try to keep it in moderation. That's how I feel it is best for me.



R. Mitch Loza of S-4

Well balanced nutrition (vitamins, minerals), moderate calorie intake, lean meat and fish, fiber intake, minimize processed foods (tough to do). Don't be too fussy; life's realities don't

always accommodate purely healthful wishes.”



Donivan Porterfield of Actinide Analytical Chemistry (C-AAC)

A well-balanced diet on a routine basis — an obvious challenge. An important component being some chocolate.



Melissa Therrien of Internal Controls and Compliance (CFO-4)

To the best of my ability, eat lots of fruits and veggies, and probably stay away from all the junk food.



Phil Pelleriti of Deployed Resources (HR-D-TR)

Staying away from excess sugar, no alcohol or high sugar content fruit. Also, eating more leafy green vegetables, less red meat and more poultry and fish. Of course, drinking plenty of water and staying away from soft drinks.



Leslie Knowlton of Training and Development (HR-TD)

It's all about balance — not too much of any one thing. That allows me to enjoy my French fries every once in a while.

PEOPLE



Nerses “Krik” Krikorian honored in Armenia

The National Academy of Sciences of Armenia has awarded to Nerses “Krik” Krikorian of International Research, Analysis and Development (N-3) the title of Doctor Honoris Causa. He has been invited to attend the



meeting of Presidium of the Academy for the inauguration ceremony Oct. 9-14 in Yerevan, Armenia.

Krikorian began work on the Manhattan Project as a chemist at the Union Carbide Research Labs in Niagara Falls, N.Y., in 1943, where he helped produce high-purity uranium. He came to Los Alamos in 1946, where he continued to work on the Manhattan Project. He joined Los Alamos as a chemist specializing in radiochemistry, inorganic and physical chemistry, high-temperature chemistry and materials science.

In 2003, Krikorian received the Los Alamos Laboratory Medal, the Lab's highest honor. This year, his alma mater, Niagara University, awarded Krikorian an honorary doctor of science. “When someone at the Lab gets honored, people notice that,” Krikorian said. “They (National Academy of Science in Armenia) recognized that and realized, ‘gee, this guy must be pretty good.’ ”

Krikorian said he was shocked when he received the letter [from the Armenian National Academy of Sciences] informing him of the honor. “They had contacted my daughter for my biography and she kept it a secret from me,” Krikorian said. “When I got

the letter, I said ‘Oh my God!’ ”

Krikorian added, “What people don't realize is that the Lab is really recognized internationally for high-quality work. The Lab gave me a goal and the right aspirations.

“This country and this Laboratory have given me the opportunity to grow mentally and spiritually,” Krikorian said.

Fazio new ISR division leader

Michael Fazio is the new International, Space and Response (ISR) Division leader.



Doug Beason, associate director for threat reduction, announced the appointment, saying that Fazio's selection from many excellent candidates with outstanding credentials puts ISR in a very strong position for the future.

“Mike is a very exciting choice for the division leader position, as he is a long-time Laboratory scientist with experience in some of the most challenging, cutting-edge areas of ISR's science, and at the same time he has excellent leadership skills and is very people oriented,” said Beason.

Fazio has been at Los Alamos since completing his graduate studies in 1978. Most recently the group leader of the High Power Electrodynamics Group (ISR-6), Fazio has background in the fields of high-power microwave sources and intense beams, radio frequency technology, advanced accelerators, electrodynamics and related sciences. Fazio has served in group leader or deputy

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In Memoriam

Stanley “Peter” Marsh

Laboratory retiree, Stanley “Peter” David Marsh, 77, of Cameron Park, Calif., died May 26. He was born in September 1927 in Highland Park, Mich. A U.S. Navy veteran, Marsh joined the Laboratory as a technical staff member in 1954.

While employed at Los Alamos, Marsh did work in the field of equation of state and high explosives. He was part of several groups, including the former Weapons (W) and Dynamic Experimentation (M) divisions. He retired from the Lab in 1996.

Marsh received a master's degree in physics from Utah State University.

He is survived by his sons, David of Orem, Utah, and Jim of South Jordan, Utah; his daughters Sally Marsh of Ogden, Utah, Noel Laverty of Cameron Park, Calif., and Kate Kettering of Los Alamos; and a brother, Paul, of San Diego.

V. Adele Hopkins

Laboratory retiree V. Adele Hopkins, 70, died June 14. She was born in August 1934 in Seattle.

Hopkins received a bachelor's degree in chemistry in 1956 from the University of Washington. Soon after, she began to work for the Laboratory. She worked in the former Chemistry and Metallurgy (CMR-2) as a research assistant and also in the former Analytical Chemistry (former CMB-1 and CLS-1) groups. She retired in 1993.

She is survived by her husband, John Chapman Hopkins, and two daughters.

Darrell Wayne Allison

Laboratory retiree Darrell Wayne Allison died May 7 in Santa Fe. He was 62.

A Vietnam veteran born in Fayetteville, Ark., Allison came to Los Alamos in 1984 as a procurement and contract specialist in the former Materials Management (MAT) Division. He was deputy group leader and group leader in two MAT Division groups, a group leader in the former Integration and Coordination Office (ICO) and a group leader and program team leader in two groups in the former Environment, Safety and Health (ESH) Division.

He retired from the Laboratory in 2002.

Allison earned a bachelor's degree in education from Northeastern State University in Oklahoma and a master's degree in human resources management from the University of Utah.

He is survived by a son and daughter and several nieces and nephews.

Fazio ...

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group leader positions since 1987, and has had extensive interactions with the Department of Defense, national security and Department of Energy Office of Science communities.

"ISR Division has some of the best people in the Laboratory along with a culture of doing exciting science and engineering, building real hardware, and getting it deployed," said Fazio. "ISR also has a strong program development culture. These people and cultural assets, along with the emerging national security needs in the intelligence and defense communities, make this a time of new opportunity."

Fazio received his bachelor's, master's and doctoral degrees in electrical engineering from Rice University. In addition to winning numerous awards from national security organizations and other sponsors, Fazio is a past recipient of two Los Alamos Distinguished Performance Awards and author or co-author of approximately 100 scholarly publications.

Two Lab technologies receive nanoscience awards

Two technologies developed by Laboratory scientists are winners in the 2005 Nano 50™ Award competition by Nanotech Briefs, a digital publication from the publishers of NASA Tech Briefs.

Acknowledging the awards, Laboratory Director Bob Kukuck said, "I'm proud of the

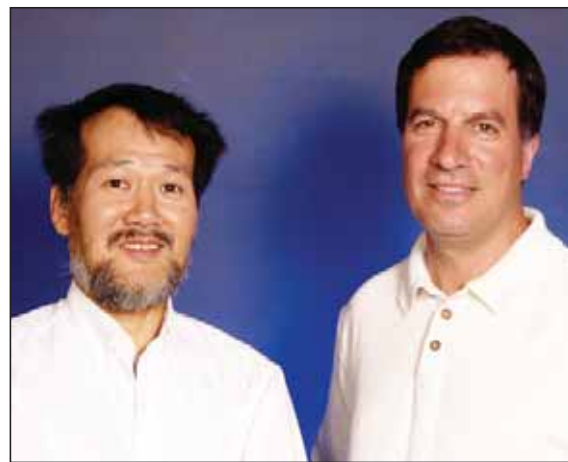
fact that Los Alamos scientists are a driving force behind the basic research required to produce nanotechnologies. Their collective work and creative genius are helping to ensure America's future."

The recently announced winners of the 2005 Nano 50 awards, which are designed to recognize "the 50 best of the best" in nanotechnology, include the development of 4-centimeter-long carbon nanotubes and the graphite lattice production technology.

Lianxi Zheng, a member of **Yuntian Zhu's** carbon nanotube team (see Page 8 for a related story), in the Superconductivity Technology Center (MST-STC), recently synthesized single-wall carbon nanotubes 4 centimeters long — the world's longest — using catalytic chemical vapor deposition from ethanol. Carbon nanotubes have a number of potential uses. Spun into fibers or yarns, they would be more than 10 times stronger than any currently known structural material. Used in lightweight, high-strength applications, metallic nanotubes could be used in electro-mechanical systems such as microelectric motors, diodes and as wires in microelectronic devices.



Lianxi Zheng



Toshi Shiina, left, and Jonathan Phillips

The graphite lattice production technology allows complex graphitic structures of virtually any design to be grown chemically, inexpensively with simple equipment, and at relatively low temperatures using a process developed by **Jonathan Phillips** of Materials and Explosives Engineering (ESA-MEE), along with **John Weigle** and **Toshi Shiina** of ESA-MEE; **Martin Nemer**, a former Laboratory post-doc; and other researchers from the University of New Mexico and University of Guadalajara. These graphite structures could be used for heat spreaders and integrated circuit packages, as well as for elements in fuel cells, or as key parts of nanoscale circuits. The graphite structures also could be used to create strong and light composites with the potential to replace carbon fibers in structural materials already employed in applications ranging from golf clubs to airplanes.

Nanotech Briefs annually names the Nano 50, the ultimate list of the top 50 technologies, products and innovators that have significantly impacted or will impact, key nanotechnology commercial markets, from automotive and electronics to biomedical and materials. The Nano 50 seeks to recognize the most innovative people and design ideas that will revolutionize nanotechnology in the near-term and beyond.



Richardson: Quality New Mexico assists the state

Bob Stuewe, left, of the Prime Contract Office (PCO), shakes hands with Gov. **Bill Richardson** at a presentation in the Governor's Office in Santa Fe. Representatives from Quality New Mexico presented a facsimile check to the governor representing the in-kind dollar value to the state of QNM volunteers who teach "quality principles" to private businesses and public sector entities. At the presentation, Richardson reiterated the value of Quality New Mexico to the state in terms of promoting economic competitiveness. The Laboratory participated as a Diamond Award recipient from QNM. At least six Lab employees are Quality New Mexico examiners this year. Also shown is **Teresa Trujillo**, loaned executive from the Laboratory to QNM. Photo by LeRoy N. Sanchez

Update on Appendix F ...

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honor reserved for individuals whose "efforts on behalf of the advancement of science or its applications are scientifically or socially distinguished." The Department of Energy's E.O. Lawrence Award is given for exceptional contribution to National Security, won by Fred Mortensen of X-2; Life Sciences, won by Bette Korber of Theoretical Biology and Biophysics (T-10); and Environmental Science and Technology, won by Greg Swift of MST-10.

Other awards recognize applied research that has industrial potential. Each year R&D Magazine selects the world's top 100 scientific and technical innovations showing the most significant commercial potential. This year the Laboratory received four R&D 100 awards for such diverse technologies as CartaBlanca: A High-Efficiency, Object-Oriented General-Purpose Computer Simulation Environment; MESA: Measuring Enzyme-substrate Affinities; nanoFOAM: A Metal-Nanofoam Fabrication Technique; and NESSUS: Probabilistic and Uncertainty Analysis for Large Scale Complex Systems. These awards reflect the breadth of the Lab's creativity and innovation. While these are but a few of the more highly publicized awards, they are examples of the technical contributions that enable the Laboratory to be the nation's premier resource for solving multidisciplinary scientific challenges.



Yuntian Zhu: A researcher racing for results

by Karen Kippen of the Materials
Science and Technology (MST) Division

Yuntian Zhu of the Laboratory's Superconductivity Technology Center (MST-STC) may have started late in the race to develop ultra-long carbon nanotubes, but he is now on the fast track to success.

Scientists have been chasing the fabrication of long carbon nanotubes for more than a decade — far longer than the two years Zhu has devoted to the project. But he is not deterred by his colleagues' extensive knowledge and wealth of experience in the field. Instead, Zhu confidently confirmed he and his teammates "are catching up quick."

Last year, Zhu announced the invention of a world record-length, four-centimeter-long carbon nanotube. Based on the promise of that invention, in April the Laboratory signed a \$2 million research partnership with Carbon Designs Inc., with the goal of bringing novel, super-strong materials to market by late 2006. A winner in Nanotech Briefs magazine's first-ever Nano 50 competition, in May, the invention was recognized as one of the top 50 technologies moving nanotechnology into mainstream markets.

Thrill of the challenge

Zhu got to the head of the pack not by following the lead of others, but by going in his own direction. "I tend to think 'Can I solve this issue with a new approach instead of approaches others have tried, but failed?' I don't want to follow anyone," Zhu said.

Beginning with nothing but his desire to understand the challenge of growing long nanotubes, Zhu, who came to Los Alamos in 1994 as a Director's Postdoctoral Fellow, developed his own theory of nanotube development. Then, he read all he could find on the topic to ensure his wasn't just a crazy idea. He also held brainstorming sessions with his fellow researchers and secured funding to pay for his work.

MST-STC Leader Dean Peterson said carbon nanotubes' superconducting potential coupled with Zhu's proven experience as an "innovative researcher who can synthesize novel materials and successfully lead a research team," convinced him to back Zhu's research.

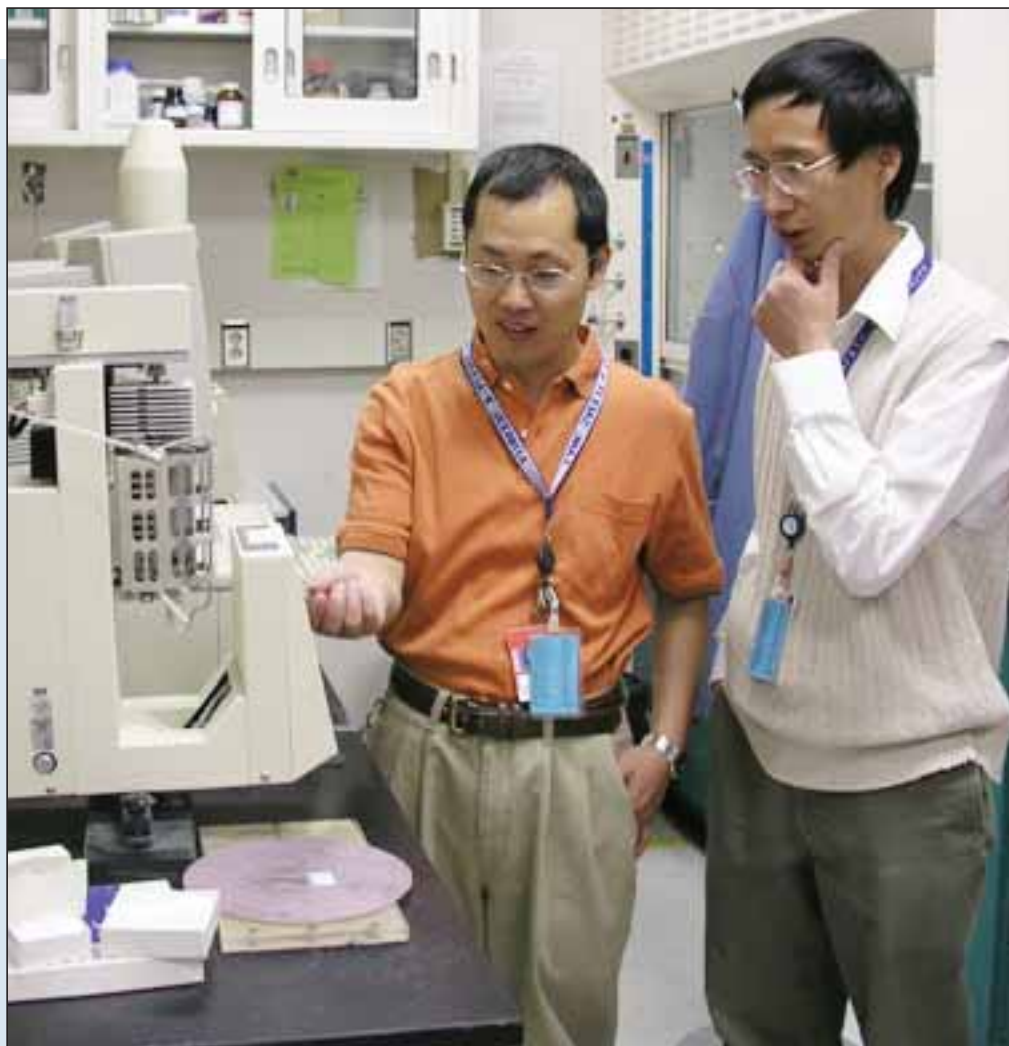
Independent approach

Belian Zhou, a professor at the Institute of Metal Research at the Chinese Academy of Sciences in Shenyang, China, where Zhu was a graduate student, trained him in this independent approach, encouraging Zhu to work autonomously and to look at problems from a variety of perspectives, according to Zhu.

This creative thinking may be the secret to Zhu's success, said Lianxi Zheng, a postdoctoral researcher who works for Zhu. "He always intends to do something new, something that nobody has done before, but [something that] will have a huge impact."

Yet, Zheng said this approach can be a challenge for postdoctoral students, as "the projects he assigns to us are the most difficult — of course, the most important — ones."

And Zhu expects his postdoctoral students to be just as self-motivated and independent as he was as a student. "If they have a problem, I want them to come back with a solution," Zhu said. "They work in [their research field] everyday. They are the experts. If they are not better than me in their area, then it's not working. I learn from them."



Yuntian Zhu, right, of the Superconductivity Technology Center (MST-STC) and Lianxi Zheng, one of Zhu's postdoctoral researchers, share some thoughts at MST's Material Synthesis Laboratory. Photo by Karen Kippen, MST Division

But this may be just tough talk, as Zheng, who Zhu credits with manufacturing the record-length nanotube, said his teacher is generous with his time and support, sets a positive tone in the lab, and respects his postdoctoral researchers for their own contributions.

For example, although Zhu shared with Zheng the carbon nanotube program's goals and objectives, he trusted the young researcher to meet them. As they worked on several different approaches, unsure which would work, Zhu "showed great flexibility and excellent ability in supervising," Zheng said. "He gave me full trust to make the choice. 'Try any approach you can think of, just make it work' is the frequent encouragement from him."

"Yuntian's enthusiasm and dedication to science is contagious to anyone who works with him," said Peterson, who described Zhu as a fine example of someone whose knowledge bridges fundamental science and applied technology and who is able to pass that knowledge on to his researchers-in-training.

Results, not pedigree, matter most

Zhu maintains his method works, because he is confident of his researchers' abilities even before they begin working at the Laboratory. Before hiring postdoctoral students, he subjects them to a rigorous review, assessing their level of self-reliance and ability to produce results.

He also is not impressed if a postdoctoral student holds a degree from a prestigious university. "I don't care where they come from, but ... what they have accomplished," Zhu said. An impressive list of publications and an independent spirit win his respect.

"I don't think I'm hard on them," he said. "If they are motivated, they can do great work. I have a lot of ideas for them to work on, but once they get a sense of direction, it's up to them."