

Changes planned in Laboratory's meal policy

Prudent cost management is goal

by Steve Sandoval

Beverages and meals at certain Laboratory-sponsored events, such as job candidate interviews or weekly office meetings, no longer will be paid for by the Laboratory under changes to its meal policy. The new policy is effective for meals served on or after February 1 at the types of events specified in the policy (see ISD 815-1.0 Allowable Cost Manual).

"The change brings the Laboratory in line with the latest Department of Energy policy, designed to ensure that 'prudent cost management is practiced' with regard to meals," said Glenn Kizer, Los Alamos's chief financial officer.

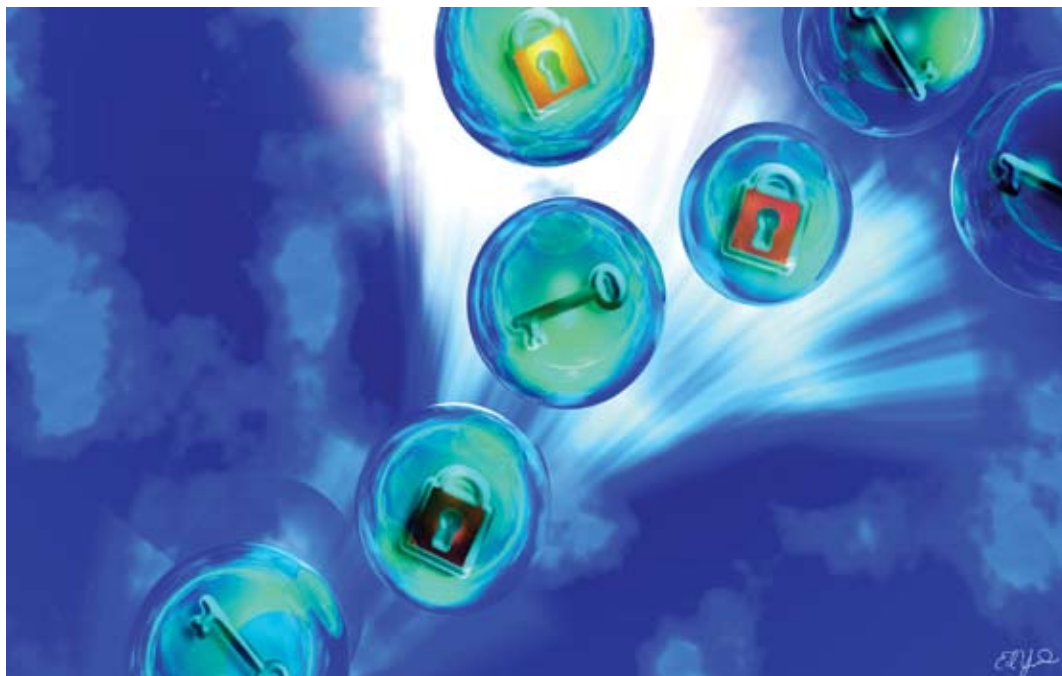
Currently, some meal expenses can be paid with Laboratory funds, such as lunch for a Laboratory employee interviewing a candidate for a job. Under the new policy, lunch for the Lab employee will no longer be paid by the Lab, unless the employee is on official travel.

Similarly, refreshments for a 90-minute educational colloquium currently can be paid for using Laboratory funds. Under the new policy, this no longer will be an allowable contract cost, nor will coffee and pastries served at weekly executive meetings. Under the new policy, weekly meetings are considered "routine events."

Conversely, refreshments for an all-day meeting will continue to be allowable. However, federal government employees, must be given the opportunity to pay for said refreshments, according to the new policy.

Another expense that no longer will be allowed after the new meal policy goes into effect February 1 is refreshments at a reception that follows an all-day Laboratory division review committee.

Detailed information on the current meal policy and the new one is available at <http://cfo.lanl.gov/compliance/costallowability/meals.shtml> online. The Chief Financial Officer (CFO) Division also is training Lab employees who order meals for Laboratory-sponsored events.



Laboratory scientists announce quantum cryptography advance

by Todd Hanson

Scientists at Los Alamos and the National Institute of Standards and Technology in Boulder have demonstrated unconditionally secure quantum key distribution (QKD) over a record-setting 107 kilometers of optical fiber. The work is a significant step towards enabling communication with an unprecedented level of security over long distances of optical fiber.

In research published in *Physical Review Letters*, a team of scientists led by Beth Nordholt of Applied Modern Physics (P-21) describes how they have implemented a decoy-state protocol that enables the creation of secure keys that are immune to certain kinds of interceptions and attacks.

According to Danna Rosenberg, also of P-21 and lead author of the PRL paper, "in theory, QKD is completely secure, but real QKD systems rely on imperfect devices that can create a security loophole. In particular, most systems use a laser pulse instead of a single photon source. For QKD, it's important that the information be encoded in a single photon, but laser sources put out a distribution of photon numbers, and there always is some probability that there will be more than one photon in the laser pulse. This makes the system vulnerable to certain kinds of attacks that could defeat the encryption system."

These multi-photon pulses could allow an eavesdropper to perform a photon-number-splitting (PNS) attack, a sophisticated type of attack that is not currently feasible but which exploits the fact that only those signals that arise from single photons are secure. One method of thwarting PNS attacks is to use very weak signals, but this limits the distance that the signal can be transmitted because of signal loss in optical fiber.

According to Jim Harrington of P-21, another researcher on the project, "When developing secure communications, it is necessary to consider the worst possible case of an adversary's actions. Conventionally, QKD with laser pulses has been insecure or infeasible at long distances. By following a decoy-state protocol, where the sender randomly varies the laser power level, users can effectively learn what happened to the single-photon versus multi-photon pulses during transmission. This allows them to bound the number of single-photon signals that were detected by the receiver, which they can then use to construct a truly secure key."

The new Los Alamos protocol uses ultra-low noise, high-efficiency transition-edge sensor photodetectors, developed at NIST, to generate a secure key by implementing a three-level decoy state protocol. This protocol is similar to one demonstrated by a group of researchers at the University of Toronto, but Los Alamos utilized a one-way QKD system instead of a two-way QKD system, which is more susceptible to an adversary's manipulation. The researchers believe they will be able to extend the system past the current range to distances of 250 kilometers, or more.

In addition to Nordholt, Rosenberg, and Harrington, other members of the team include Pat Rice, Glen Peterson, Phil Hiskett, and Richard Hughes, all of P-21; and Adriana Lita and Sae Woo Nam of the National Institute of Standards and Technology.



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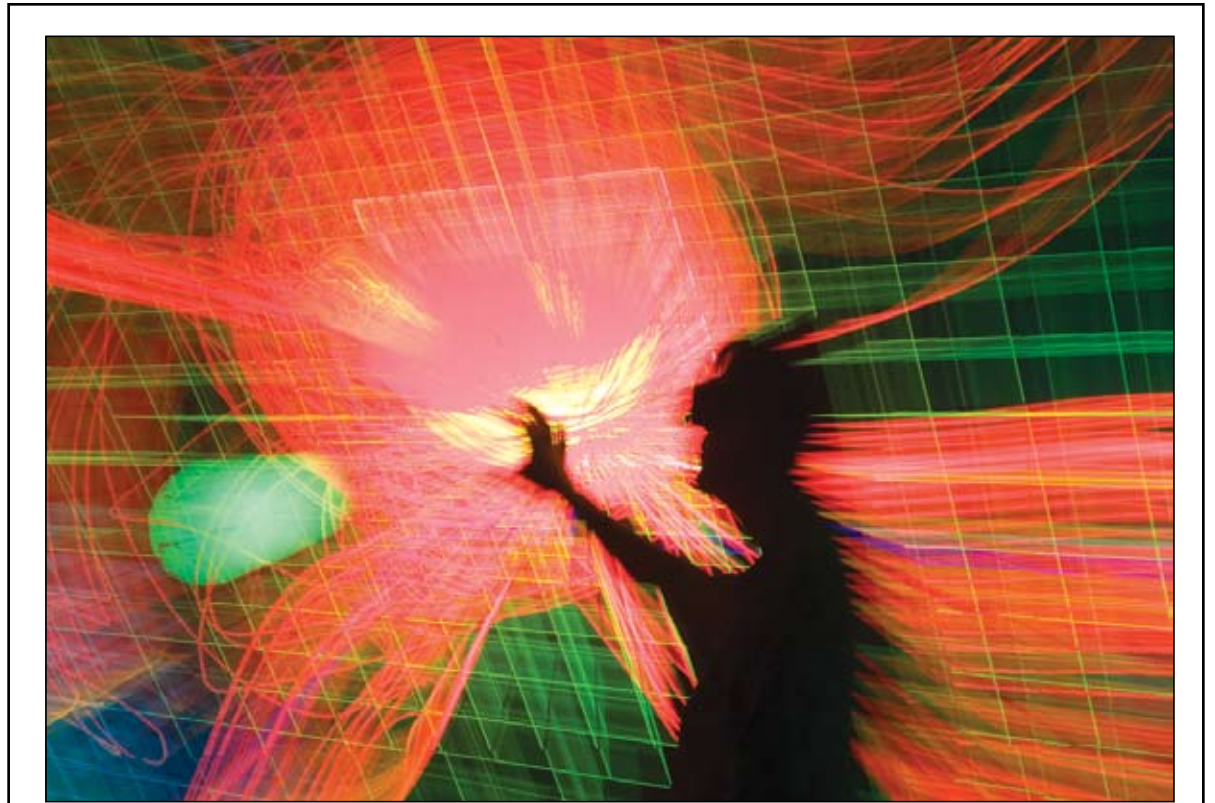
Driving in snow and ice

The best advice for driving in bad winter weather is not to drive at all, if possible. Don't go out until snow plows and sanding trucks have had a chance to do their work and allow extra time to reach your destination.

If you must drive in snowy conditions, make sure the car is prepared and that you know how to handle road conditions. It's helpful to practice winter driving techniques in a snowy, open parking lot to become familiar with how a car handles.

Driving safely on icy roads

- Decrease speed and leave plenty of room to stop.
- Brake gently to avoid skidding. If the wheels start to lock up, ease off the brake.
- Turn on lights to increase visibility to other motorists.
- Keep the lights and windshield clean.
- Use low gears to keep traction, especially on hills.
- Don't use cruise control or overdrive on icy roads.
- Be especially careful on bridges, overpasses and infrequently traveled roads, which will freeze first.
- Don't pass snow plows and sanding trucks.
- Don't assume a vehicle can handle all conditions. Even four-wheel and front-wheel drive vehicles can encounter trouble on winter roads.



Milky Way's stellar winds

Powerwall gives scientists modeling capabilities

Robert Coker of Predictive Capability is silhouetted in front of the Powerwall as he discusses his models of stellar wind accretion onto the Milky Way's central black hole. The stellar wind (green blob) is a source of streamlined particles (red streaks), which are either captured by the black hole to form an accretion disk or ejected. The Powerwall is in the Nicholas Metropolis Center for Modeling and Simulation at Technical Area 3. Photo by LeRoy N. Sanchez, Records Management/Media Services and Operations

Employee comment sought on changes to Lab policies

Laboratory employees can comment through February 5 on revised policies dealing with substance abuse, discipline, and the Lab's complaint-resolution program.

All three draft policies are available on the Policy Center Web page. Lab employees can send comments to policy@lanl.gov by electronic mail.

An all-employee memo from Doris Heim, associate director for business services (ADBS), provides more detail about all three policies.

Laboratory Director Mike Anastasio, at a meeting last month, told employees that an expanded substance abuse policy to include testing for the use of illegal drugs would be implemented. The expanded program includes

1. Pre-employment screening — all employees who will work for the Lab on a regular basis, including contractors
2. Random testing of Laboratory employees

3. Testing in response to reasonable suspicion of illegal drug use

4. Testing after serious incidents and accidents.

Anastasio also noted that there would be a window of time for employees to comment on the policy.

Additionally, employees can comment on changes to the Lab's discipline policy and the complaint-resolution program.

The draft policies are at <http://policy.lanl.gov/pods/home.nsf/Pages/DAPP-6WMQDL> online.

Additional information and resources are available to employees and managers online at the Employee Relations (HR-ER) Web site at <http://int.lanl.gov/orgs/hr/relations>. Comments will be reviewed and information regarding implementation will be provided through the standard Laboratory policy notification system.

To read the all-employee memo, go to http://int.lanl.gov/memos/2007/01/LANL_ALL2089.PDF online.

For Laboratory closures, delays, or early dismissal information, call UPDATE at 667-6622 or 1-877-723-4101 (toll free).



Los Alamos National Laboratory NewsLetter

The Los Alamos Newsletter, the Laboratory bi-weekly publication for employees and retirees, is published by the Communications Office in Communications and Government Affairs (CGA). The staff is located at 135 B Central Park Square and can be reached by e-mail at newsbulletin@lanl.gov, by fax at 5-3910, by regular Lab mail at Mail Stop C177 or by calling the individual telephone numbers listed below. For change of address, call 7-3565. To adjust the number of copies received, call the mailroom at 7-4166.

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Los Alamos National Laboratory is a multidisciplinary research institution engaged in strategic science on behalf of national security. The Laboratory is operated by a team composed of Bechtel National, the University of California, BWX Technologies and Washington Group International for the Department of Energy's National Nuclear Security Administration.

Los Alamos enhances national security by ensuring the safety and reliability of the U.S. nuclear stockpile, developing technologies to reduce threats from weapons of mass destruction, and solving problems related to energy, environment, infrastructure, health and global security concerns.



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So... what do you think?

Q: What are the two things you plan to do differently on the job in 2007?



Tammy Maestas, Disbursements (CFO-DISB)

I plan on increasing my focus on safety, especially when it comes to driving and trying to find parking in the Otowi parking structure.



Bob Romero, KSL Services

On winter days, spend more effort on the streets when it snows — keeping them clear and safe.



Charles Brownrigg, Office of Equal Opportunity and Diversity (HR-OEOD)

I am going to concentrate on making 2007 a safe year. I also will try my best to do more with less — work more efficiently.

Correction: In the week of Dec. 4, 2006, issue of the Los Alamos NewsLetter's "So ... what do you think?" feedback feature, the photos of Jane Martinez of Space Instrumentation Systems (ISR-4) and Sandra Rodriguez of the Prototype Fabrication (PF) Division were inadvertently switched.

PEOPLE

Three named AAAS Fellows

by Todd Hanson

Three Los Alamos researchers are new Fellows of the American Association for the Advancement of Science. The new AAAS Fellows are **Alan Bishop** of Theory, Simulation, and Computation (ADTSC), **Alan Perelson** of Theoretical Biology and Biophysics (T-10), and **Toni Taylor** of the Center for Integrated Nanotechnologies (MPA-CINT).



Alan Bishop

Bishop was named Fellow of the Section on Physics for his distinguished contributions to the field of condensed matter theory and for his outstanding scientific leadership worldwide. He received his doctorate from Cambridge University in 1973 for work in solid state physics at the Cavendish Laboratory. After postdoctoral positions at Oxford and Cornell universities and teaching at the University of London, he came to Los Alamos in 1979. Since that time, he has served the Laboratory in various leadership positions, including director of the Theoretical (T) Division, before being named associate director for theory, simulation, and computation in June 2006. Bishop

is a Fellow of the American Physical Society, a Los Alamos National Laboratory Fellow, and recipient of the E.O. Lawrence Award in Materials Science. In 2000, he received the prestigious Humboldt Research Award from the Alexander von Humboldt Foundation.



Alan Perelson

Perelson was named AAAS Fellow to the Section on Mathematics for his contributions to the field of mathematical immunology, particularly for studies of the dynamics of HIV infection and its transition to AIDS. Perelson received his doctorate in biophysics from the University of California, Berkeley, in 1972. He was a staff member in T-10 from 1974 until being named group leader in 1995. Perelson was named a Laboratory Fellow in 1991. He holds adjunct professorships in bioinformatics at Boston University, in biostatistics and computational biology at Rochester University, and in biology at the University of New Mexico. Perelson currently is a Los Alamos National Laboratory Senior Fellow, a Fellow of the American Academy of Arts and Sciences, and an external professor at the Santa Fe Institute.



Toni Taylor

Also named as a Fellow to the AAAS Section on Physics, Taylor was recognized for her pioneering developments of ultrafast optical and terahertz laser technologies and their application to a wide range of problems in strongly correlated and nanostructured materials, as well as for her leadership in the

Photos by Sandra Valdez, Records Management/ Media Services and Operations

fields of material physics, optical science, and nanotechnology. Taylor came to Los Alamos in 1986 after earning her doctoral degree from Stanford University and has devoted her career to developing novel ultrafast laser and other optical techniques to understand dynamical processes in a wide range of systems. Taylor is a Fellow of the American Physical Society and the Optical Society of America and currently serves as the associate director of the Los Alamos/Sandia Center for Integrated Nanotechnologies.

Bishop, Perelson, and Taylor are three of 449 AAAS members who have been awarded the honor this year. The new Fellows will be recognized at the AAAS annual meeting in San Francisco in February.

In Memoriam

Verna Gardiner

Laboratory retiree Verna Gardiner died September 23, 2006. She was 75.

Gardiner began working at the Laboratory in 1952 in the Theoretical (T) Division as a computer programmer on one of the earliest computers, MANIAC I. During her time at the Lab, she had the opportunity to work on some of the most advanced computers of the era. She continued in various positions in the Laboratory until she retired in 1987.

Gardiner received a bachelor's degree in mathematics from Cornell College in Iowa.

She is survived by her husband, Thomas, of Los Alamos.

Richard Hicks

Laboratory retiree Richard Hicks died October 9, 2006. He was 84.

Hicks joined the Laboratory in 1957 as a technician in the Physics (P) Division. At the time of his retirement in 1982, he worked in the former Controlled Thermonuclear Research (CTR) Division. He returned as a Laboratory associate in 1983 and remained until 1995.

Hicks served on the USS Whale during World War II.

He is survived by his wife, Betty; daughters Suanna Adam of Austin, Texas, and Nancy Anderson of Los Alamos; three grandchildren; four great-grandchildren, and numerous other relatives.

Lewis Robeson

Laboratory retiree Lewis Robeson died October 20, 2006. He was 71.

Robeson joined the Laboratory in 1977 as a draftsman in the former Electronics and Instrumentation (E) Division. He retired in 1991 while working in the former Mechanical and Electronic Engineering (MEE) Division.

He is survived by his wife, Susan; daughters Stephanie and Pamela; son Eric; and two grandchildren.

Peter Petersen

Laboratory retiree Peter Milton Petersen died November 30, 2006, at the age of 94.

Petersen began working at the Lab in September 1948 in the former Supply and Property (S-1) Group as a procurement supervisor. He retired from the Lab in March 1978 from the former Supply and Property Division Office (SP-DO).

A World War II veteran, Petersen served in the Army and was a member of the Special Engineering Detachment assigned to the Manhattan District.

Petersen is survived by his wife, Phyllis; daughters Rose Ann, Dorothy, and Pamela; and four grandchildren.

Nine Lab scientists named APS Fellows

Highest number from Los Alamos recognized in a single year

by Hildi T. Kelsey

Nine Laboratory scientists are new Fellows of the American Physical Society for their extraordinary efforts in physics. **Brenda Dingus** of Neutron Science and Technology (P-23), **Michael Fitzsimmons** of Los Alamos Neutron Science Center — Lujan Center (LANSCE-LC), **George “Rusty” Gray** of Structure and Property Relations (MST-8), **Neil Harrison** of the National High Magnetic Field Laboratory (MPA-NHMFL), **Robert Hixson** of Shock and Detonation Physics (DX-9), **Philipp Kronberg** of the Institute of Geophysics and Planetary Physics (EES-IGPP), **Michael Nastasi** of the Center for Integrated Nanotechnologies (MPA-CINT), **Eddy Timmermans** of Atomic and Optical Theory (T-4), and **Arthur Voter** of Theoretical Chemistry and Molecular Physics (T-12) were named Fellows.

The figure is the largest number of Los Alamos physicists selected APS Fellows in a single year.

The APS Fellowship Program was created to acknowledge society members who have made advances in knowledge through original research and publication, or offered significant and innovative contributions in the application of physics to science and technology. APS Fellow recognition is a prestigious honor since each year no more than 1/2 of 1 percent of the total American Physical Society membership is elected to the status of Fellow.

“The science at Los Alamos is outstanding,” said Terry Wallace, acting principal associate director for the science, technology, and engineering directorate. “Since its very beginning, the Laboratory has brought the best scientific talent to work on complex problems of national importance.

“Many of the individual scientists at the Lab are leaders in their fields, and it is great that they are recognized, especially by the American Physical Society. To have not one, but nine Lab physicists named as APS Fellows speaks to the high level of ground-breaking research and scientific progression taking place at this Laboratory.”



Brenda Dingus

Dingus was selected for “her pioneering work on understanding the highest energy gamma-ray emission from gamma-ray bursts.” Dingus came to Los Alamos in 1983 to conduct doctoral research and became a technical staff member in 2002. She earned a

Brenda Dingus

bachelor’s degree from Harvey Mudd College and a doctorate from the University of Maryland.



Michael Nastasi

Nastasi earned this honor for “seminal contributions to the fields of ion-solid interactions, including ion enhanced and plasma synthesis of novel materials with applications to energy, manufacturing, nanotechnology, and advanced micro-

Michael Nastasi

electronics.” Nastasi, a nanomechanics thrust leader in the Center for Integrated Nanotechnologies, earned his bachelor’s and doctoral degrees in materials science and engineering from Cornell University. He received the Laboratory Fellow’s Prize in Research in 1995 and was named a Laboratory Fellow in 2000.



Michael Fitzsimmons

Fitzsimmons was honored for “his work in elucidating the magnetization reversal processes in exchange bias systems using polarized neutron reflectometry.” Fitzsimmons came to the Laboratory as a Director’s Funded post-doctoral researcher in

Michael Fitzsimmons

1990 and became a technical staff member in 1993.

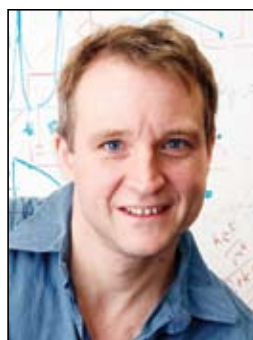


George “Rusty” Gray

Gray was selected for “important contributions to the understanding of defect generation and storage in materials subjected to shock loading and for advancing the state-of-the-art of shock recovery techniques to benefit shock physics.” Gray earned

George “Rusty” Gray

his bachelor’s and master’s degrees in metallurgical engineering from South Dakota School of Mines and Technology and his doctorate in metallurgical engineering from Carnegie Mellon University. He received the Los Alamos National Laboratory Fellow’s Prize for Research in 1996 and was named a Laboratory Fellow in 2002.



Neil Harrison

Harrison was honored for “pioneering experimentation on the electronic structure and magnetism of strongly correlated electron systems in strong magnetic fields.” He came to the Los Alamos Pulsed Field Facility as a postdoctoral researcher in 1996.

Neil Harrison

Harrison earned his bachelor’s and doctoral degrees in physics from the University of Bristol and received the Laboratory Fellow’s Prize for Research in 2005.



Philipp Kronberg

Kronberg was honored for “leading the growing appreciation of the importance of astrophysical magnetic fields. His work has helped to define this area of astrophysics and plasma astrophysics.” He was the Orson Anderson scholar at the Institute

Philipp Kronberg

of Geophysics and Planetary Physics from 2002 to 2003, and has remained at the Lab as a limited term technical staff member. He earned his bachelor’s and master’s degrees from Queens University, Toronto, and doctorate in philosophy and science from the University of Manchester.

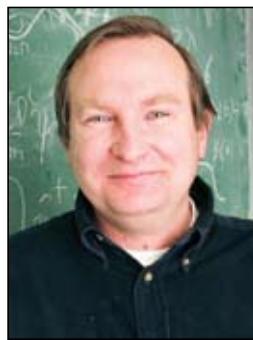


Robert Hixson

Hixson was selected for “sustained technical contributions towards dynamic properties measurements on materials of broad scientific importance and vital interest to national defense needs, and for leadership in the field of shock physics.”

Robert Hixson

He has a bachelor’s degree in physics from California State University at Hayward, a master’s degree in physics from the College of William and Mary, and a doctorate in physics from Washington State University. He received the Laboratory’s Fellow’s Prize for research in 2003 and was named a Lab Fellow in 2003.



Eddy Timmermans

Timmermans was selected for “theoretical insights into trapped ultracold atoms, including novel superfluids in bosonic and fermionic systems, Feshbach resonances and atom-molecule coherence, and resonant light scattering.”

Eddy Timmermans

He came to the Lab as a Director’s Postdoctoral Fellow in 1998, was made an Oppenheimer Fellow in 2000, and became a technical staff member in 2003. He earned his kandidatur (candidacy) in physics from the University of Ghent, Belgium, and his doctorate in physics from Rice University.



Arthur Voter

Voter is being honored for “original contributions to the theory of chemical and surface dynamics, especially through the pioneering development of accelerated molecular dynamics.” He came to Los

Arthur Voter

Alamos as a postdoctoral researcher in 1983. Voter earned his bachelor’s degree at Pennsylvania State University and his doctoral degree at the California Institute of Technology — both in chemistry. He was named a Los Alamos National Laboratory Fellow in 2003.

Photos by LeRoy N. Sanchez and Presley Salaz of Records Management/ Media Services and Operations