

BNL Honors 17 Employees for Science & Technology, Engineering, Support

At the BNL Employee Recognition Award Ceremony on January 30, 17 Lab employees were rewarded with BNL's highest honors. The Bulletin of February 14 featured the employees who won the Science & Technology Award. This week, the focus is on those who won the \$5,000 Engineering Awards, which are given to recognize distinguished contributions to engineering or computing over one or more years. A future Bulletin will report on the five Brookhaven Award winners.

At the ceremony, the Engineering Awards were presented by Mike Bebon, Associate Laboratory Director for Facilities & Operations. The six winners are: Christopher Channing, Plant Engineering Division; Jack Fried, Instrumentation Division; George Ganetis, Magnet Division; Joseph Levesque, Emergency Services Division; and Donald Lynch and George Rakowsky, National Synchrotron Light Source Department. A summary of their achievements follows. — Patrice Pages

Pictured at right with Associate Laboratory Director for Facilities & Operations Mike Bebon (back, right) are the recipients of BNL's 2002 Engineering Award: (back, from left) Donald Lynch, National Synchrotron Light Source (NSLS) Department; George Rakowsky, NSLS; Jack Fried, Instrumentation Division; (front, from left) George Ganetis, Magnet Division; Christopher Channing, Plant Engineering Division; and Joseph Levesque, Emergency Services Division.



Roger Stoulenburgh 02030203

Christopher Channing

Christopher Channing, a project engineer in the Energy Management Group of the Plant Engineering Division, who joined BNL in September 1993, was awarded for providing engineering excellence to Plant Engineering and throughout the Laboratory.

Nicknamed the "engineer's engineer" by his colleagues, Channing is known as the person others go to when in difficulty in solving a problem. Channing has been instrumental in
(continued on page 2)

Jack Fried

Jack Fried, a research engineer in the Instrumentation Division, was awarded for his contributions to the success of complex data acquisition and control electronics projects for many experiments around BNL, ranging from nuclear physics to environmental sciences.

Fried, who joined the Lab in September 1996, contributed largely to the PHENIX detector, one of the experiments at BNL's Relativistic Heavy Ion Collider, by applying his knowledge and
(continued on page 2)

George Ganetis

Since he arrived at the Lab in February 1978, George Ganetis, a senior project engineer in the Magnet Division, has provided significant contributions in the development of superconducting magnets at BNL and in the construction, commissioning and operation of the Relativistic Heavy Ion Collider (RHIC). RHIC was built to search for quark-gluon plasma, which is matter thought to have formed just after the beginning of the universe.

(continued on page 2)

Joseph Levesque

From March 1982, when he joined BNL, Joseph Levesque, a senior project engineer in the Emergency Services Division, has provided fire safety expertise to all aspects of BNL operations. Most notably and most challenging has been his contributions to fire safety in BNL's accelerators: the Alternating Gradient Synchrotron, National Synchrotron Light Source, and the Relativistic Heavy Ion Collider.

Levesque's experience was also a valuable resource for the
(continued on page 2)

Donald Lynch, George Rakowsky

Donald Lynch, a project engineer who joined BNL in September 1991, and George Rakowsky, an electrical engineer who returned to BNL in July 1993, both at the National Synchrotron Light Source (NSLS), were recognized for their sustained contributions in the development of small-gap, in-vacuum undulators, a technology now adopted at most synchrotron radiation facilities in the world.

(continued on page 3)

BNL/Canadian Space Agency Experiment Lost in Tragic Columbia Accident

Among the 80 scientific experiments lost in the recent tragic accident involving the space shuttle Columbia, one was prepared by a team of scientists who would have studied the results at BNL's National Synchrotron

Light Source (NSLS). This experiment had been designed to provide insights into developing not only new drugs against cancer, but also drought-resistant plants.

The experiment is part of the Canadian Space Agency's Protein Crystal Growth (PCG) program, a project aimed at studying how proteins grow in space. A series of different protein crystal growth experiments were conducted in the recent Columbia mission, one of which is involved in a hallmark of cancer, called cachexia, which results in emaciation and muscle wasting. Another represented a protein used by plants to defend against environmental stress, such as drought and high salinity.

"Previous crystal growth experiments conducted in space have provided evidence that, when protein crystals grow in space, they are of higher quality, that is, they have fewer defects and may be of larger size than those grown on Earth," says Robert Sweet, BNL Biology Department and a PCG project collaborator. "But we know too little about the effectiveness of having crystals grow in space, where there is nearly no gravity. So we decided to compare crystals grown on Earth and in space."

Controlled Experiment

The PCG scientists, led by Jurgen Sygusch, a biochemist at the University of

Montreal in Canada, designed a controlled experiment wherein duplicate samples of proteins in solution were taken to Kennedy Space Center (KSC), and one set of samples was taken into space on the space shuttle Columbia, one of five reusable spacecraft which had been employed by the National Aeronautics & Space Administration (NASA) since 1981.

While Columbia circled Earth from January 16 to 31, the protein samples on board were allowed to crystallize. At the same time, duplicate samples acting as controls were crystallized at KSC in the same type of crystallization hardware. If Columbia had returned to Earth, the two sets of samples were to have been compared with one another, using the intense light generated by the NSLS at BNL.

How Crystals Grow

"When crystals grow on Earth, gravity introduces disturbances that affect the way protein molecules assemble into a crystal lattice," Sygusch says. "But, in spacecraft such as Columbia, which orbit about 400 miles above Earth, crystal growth is subjected to only a millionth of Earth's gravity — called microgravity — so that the protein molecules during crystal growth are free of these disturbances, which is what we wanted to study."

In their experiment, the scientists planned to investigate two important disturbances,

called convection and sedimentation, that occur during crystal growth.

"You can imagine a growing crystal being like layers of molecules that are piling up on each other," Sygusch says. "Non-crystalline aggregations of protein molecules that form naturally under crystal-growth conditions tend to disturb the deposition of these layers."

Sygusch explains that convection in the protein solution occurs because the protein is actually at a lower concentration, and therefore lower density, immediately adjacent to the growing crystal. This causes an upwelling of the solution that causes a surprisingly vigorous mixing of proteins and their aggregates.

As for sedimentation, once small crystallites have formed, they tend to sink to the bottom of the container, out of the zone of where they grew, and often cease growth.

Both convection and sedimentation affect crystal growth on Earth. In microgravity, the absence of convection eliminates solution mixing and reduces incorporation of protein aggregates into the crystal lattice, while no sedimentation allows crystallites to grow into larger crystals, leading to crystals of better quality. The higher crystallinity translates into a better definition of the
(continued on page 3)



Roger Stoulenburgh 014-258-01

Bob Sweet (right) is pictured in 2001 with another participant in the annual x-ray crystallography course that Sweet designed and helps to run at the NSLS; this year's course will be held April 6-10.



Coming Up

BSA Distinguished Lecture

Scientist and Author Stephen Wolfram on "A New Kind of Science"

Thursday, March 6 4 p.m., Berkner Hall

Story inside

Update: BMRR Fuel Shipment Complete

The last nuclear fuel at BNL was shipped off site on January 28. Forty-one fuel elements from the Brookhaven Medical Research Reactor (BMRR), which shut down in December 2000, were transported by truck to DOE's Savannah River Site, in South Carolina, where they arrived on January 29.

First operated in 1959, the 5-megawatt BMRR was the nation's first reactor built for medical research. Using neutrons produced by the reactor, scientists worked on the development of boron neutron capture therapy to treat a deadly form of brain cancer, glioblastoma multiforme.

In preparation for shipment, the BMRR fuel elements, which were made of uranium-aluminum alloy, were placed in two casks owned by NAC International and licensed by the Nuclear Regulatory Commission (NRC).

(continued on page 2)

Calendar of Laboratory Events

- The BERA Sales Office is located in Berkner Hall and is open weekdays from 9 a.m. to 3 p.m. For more information on BERA events, contact Andrea Dehler, Ext. 3347; or Chris Carter, Ext. 2873.
- Additional information for Hospitality Committee events can be found at the Lollipop House and the laundry in the apartment area.
- The Recreation Building (Rec. Bldg.) is located in the apartment area.
- Contact names are provided for most events for more information.
- Calendar events flagged with an asterisk (*) have an accompanying story in this week's Bulletin.

— EACH WEEK —

Weekdays: Free English for Speakers of Other Languages Classes

Beginner, Intermediate, and Advanced classes. Various times. All are welcome. Learn English, make friends. See www.bnl.gov/esol/schedule.html for schedule. Jen Lynch, Ext. 4894.

Monday: BNL Gospel Choir

5:15-7 p.m. Berkner Hall. All faiths are welcome. www.bnl.gov/bera/activities/choir/.

Mon., Tues., & Thurs.: Kickboxing

\$5 per class. Mon. & Thurs. noon-1 p.m. in the gym; Tues., 5:15-6:15 p.m. in the gym; Thurs., 5:15-6:15 p.m. in Brookhaven Ctr. Registration is required. Mary Wood, Ext. 5923, or wood2@bnl.gov.

Mon., Thurs., & Fri.: Tai Chi

Noon-12:45 p.m., Brookhaven Center North Room. Adam Rusek, Ext. 5830 or rusek@bnl.gov.

Monday: BNL Dance Club Ballroom, Latin & Swing Practice

5:30-7 p.m. North Ballroom, Brookhaven Center, except Lab holidays. Jean Logan, jlogan@bnl.gov or Ext. 4391.

Tuesday: Welcome Coffee

10-11:30 a.m. Rec. Bldg. Hospitality event. Come and meet friends. The first Tuesday of every month is special for Lab newcomers and leaving guests. Hospitality Chair Monique de la Beij, 399-7656.

Tuesday: BNL Music Club

Noon, North Room, Brookhaven Center. Come hear live music. Joe Vignola, Ext. 3846.

Tuesday: BNL Dance Club Individual & Couples Instruction

5-11 p.m. North Ballroom, Brookhaven Center. Ron Ondrovic, ondrovic@bnl.gov or Ext. 4553.

Tuesday: Toastmasters

1st and 3rd Tuesday of each month, 5:30 p.m., Bldg. 463, room 160. Guests, visitors always welcome. www.bnl.gov/bera/activities/toastmasters/default.htm.

Tuesday & Thursday: Aerobics

5:15-6:30 p.m., \$4 per class. Rec. Bldg. Pat Flood, Ext. 7886.

Tuesday & Thursday: Aqua Aerobics

5:15-6:15 p.m. Mary Wood, Ext. 5923.

Wednesday: On-Site Play Group

10 a.m.-noon. Rec. Bldg. A infant/toddler drop-in event. Parents meet while children play. Svetlana Agafonova, 205-5065.

Wednesday: Weight Watchers

Noon-1 p.m., Brookhaven Center South Room. Mary Wood, Ext. 5923, wood2@bnl.gov.

Wednesday: Yoga Practice

Noon-1 p.m., Brookhaven Ctr. Free. Ila Campbell, Ext. 2206.

Wednesday: Open Chess Night

5-8 p.m., Rec. Hall. Christine Carter, Ext. 5090.

Wednesday: Exercise 101

5:15-6 p.m., Rec. Bldg. \$4 per class or \$35 for 10 classes. Stretching, low-impact aerobics, and other exercises. Pat Flood, Ext. 7886.

Wednesday: Dance Club Group Lessons

5-9 p.m. North Ballroom, Brookhaven Center. Marsha Belford, belford@bnl.gov or Ext. 5053.

Friday: Family Swim Night

5-8 p.m. at the BNL Pool. \$5 per family.

Friday: BNL Social & Cultural Club

8-11:30 p.m., Brookhaven Ctr., social. Rudy Alforque, Ext. 4733, rudy@bnl.gov.

Saturday: BNL Dance Club Monthly Ballroom Dance Social

8-11:30 p.m. Ballroom, Latin & swing dancing. North Ballroom, Brookhaven Center.

March Is Women's History Month

Don't miss the "Famous Women of Our Time" exhibit, which is on display this month in Berkner Hall.

THIS WEEKEND

Saturday, 3/1

Kerry Kearney Band, Guests in 'The Gathering of the Slides'

8 p.m., Berkner Hall. The BNL Music Club and the Long Island Blues Society. See notice on page 4.

— WEEK OF 3/3 —

Wednesday, 3/5

WIENER and CAEN Product Demo

10 a.m.-2 p.m., Berkner Hall. "Tools for discovery," including low- and high-voltage power supplies, modular preamps, and more, will be presented to BNLers. Andreas, (937)324-2420.

Science Education Forum

Noon-1 p.m., Bldg. 438. All are welcome to join a discussion on interesting and timely issues in science education. Refreshments will be provided. Bring your own lunch. Brian Murfin, Ext. 7171.

BSA Distinguished Lecture

Scientist Stephen Wolfram Talks on New Science, 3/6

Widely regarded as one of the world's most original scientists and, as the creator of *Mathematica*, an important innovator in computing and software technology, the next BSA Distinguished Lecturer, Stephen Wolfram, will give a talk on "A New Kind of Science," on Thursday, March 6, at 4 p.m. in Berkner Hall. All are welcome to attend this free public lecture.

Born in London in 1959, Wolfram went to Oxford University, then earned his Ph.D. in theoretical physics from the California Institute of Technology (Caltech) by the time he was 20. His early work in high-energy physics, quantum field theory and cosmology, and his leadership in the emerging field of scientific computing won him recognition in 1981 as the youngest recipient of a MacArthur Fellowship Prize.

In the 1980s Wolfram's discoveries about the origins of complexity and complex systems led to his inventing such concepts as computational irreducibility and providing scientific foundations for complexity theory and artificial life. He used his ideas to



develop a new randomness generation system and new approach to computational fluid dynamics, both now in widespread use.

After a successful academic career at first Caltech, then the Institute for Advanced Study at Princeton University, then the University of Illinois, in 1986, Wolfram founded the first research center and journal in the field of complex systems research. He also launched Wolfram Research, Inc., and began to develop *Mathematica*.

The first version of this software for technical and scientific computing was hailed as a major advance. Following the release of *Mathematica* version 2 in 1991, Wolfram began using *Mathematica* as a tool for scientific research, which, after ten years of work, he described in his 1,200-page best-seller book, *A New Kind of Science*, released in May 2002.

While continuing to lead his research company, Wolfram is now also developing research and educational initiatives in the science he has created.

Brookhaven Medical Research Reactor Fuel Shipment Complete

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The casks were then loaded onto a tractor-trailer truck owned by Tri-State Motor Transit Company, which is licensed by the Department of Transportation. NAC has completed thousands of shipments of spent nuclear fuel, and Tri-State has been transporting radiological and hazardous materials since 1946.

New York State Police inspected the truck and its load for compliance with a Level VI Commercial Vehicle Safety Alliance (CVSA) standard, the highest level of inspection for commercial vehicle shipping. The CVSA standard is recognized by other states and allows the shipment to proceed to its

destination without further inspection.

In accordance with federal regulations, DOE notified the governor designees of each transit state of the pending shipment. Mindful of the safety of nuclear material shipments in today's environment, DOE also informed state and local law enforcement personnel along the shipping route.

Throughout the shipping process, from placing the fuel elements into the casks to unloading the casks at Savannah River Site, radiation-control specialists checked radiation levels to make sure that they were safe.

According to Mark Parsons, Project Manager at the DOE

Brookhaven Area Office, this successful fuel shipment was the work of many organizations on site, including the BMRR operations staff, the Safeguards & Security Division, the Isotopes & Special Materials Group within that division, the Radiological Control Division, Plant Engineering, and the DOE Area Office.

"These groups worked under very difficult conditions, including subzero temperatures, snow, and wind," said Parsons. "In spite of these hardships, the task was completed on time and in a safe manner."

Now that the reactor contains no nuclear fuel, maintenance requirements for the

BMRR will be downgraded over the next several months. The facility will then be prepared for long-term surveillance and maintenance until its disposition is determined. This is similar to the process that took place at the High Flux Beam Reactor (HFBR), which is currently in a surveillance and maintenance condition while decommissioning planning is in progress.

Also, as an update, the Brookhaven Graphite Research Reactor (BGRR) continues to undergo decontamination and decommissioning. More information about the HFBR and the BGRR is available at <http://www.bnl.gov/bnlweb/envind/ex.html>. — Mona S. Rowe

Channing

(cont'd.)



solving operational problems of the second supercomputer installed at the RIKEN BNL Research Center (RBRC) at BNL.

Channing has also provided invaluable assistance for the yttrium-aluminum garnet (YAG) laser clean room at BNL's Accelerator Test Facility; the cooling systems of the PHENIX detector, one of the experiments at BNL's Relativistic Heavy Ion Collider; the Positron Emission Tomography (PETT) scanner; the heating, ventilation, and air conditioning systems at BNL's Inhalation Toxicology Facility (ITF); and the heating and cooling systems at BNL's National Synchrotron Light Source.

In October 1997, Channing and his colleagues received DOE's energy-management award for helping to reduce energy consumption at BNL by more than 20 percent per square foot compared to fiscal year 1985. This reduction exceeded the requirements set forth in the amended National Energy Conservation Policy Act, which stated that all federal buildings must reduce energy consumption by 20 percent by the year 2000.

Channing also provides expert professional engineering and project management in a wide variety of areas, ranging from the central utility plants to the cooling systems for RHIC experiments. His efforts directly and indirectly helped save the Lab millions of dollars in operational and construction costs.

Fried

(cont'd.)



skills in electrical and software engineering.

Fried developed a control system for PHENIX called the GAB, Generic ARCNET Board, used to control and monitor all electronic subsystems located in the PHENIX interaction region, which is inaccessible while RHIC is running such as the TEC, drift chamber, muon tracker, MVD, and RICH. He also helped develop the PHENIX data-collection system which channels all data collected to a final storage facility for future analysis.

Another major contribution was to the PHENIX muon tracker: Fried developed the digital signal processing algorithm and data-collection system using programmable gate arrays. This system is an integral component in the PHENIX spin-physics program.

Fried also worked with Environmental Sciences Department scientists to develop the electronics for a device called the Single Particle Laser Ablation Time-of-flight Mass Spectrometer (SPLAT-MS), used to measure the chemical composition of atmospheric particles known as aerosols. SPLAT-MS will help make more accurate predictions of climate change.

In both the PHENIX and SPLAT-MS projects, Fried showed extraordinary skill in the application of large, complex programmable devices and gate arrays, implementing complex control systems with embedded, special-purpose algorithms.

Fried was also recognized for demonstrating careful attention

to detail, and a high level of professionalism in all his work, including work he did with high school students to help in their educational robotics activities.

Ganetis

(cont'd.)



The superconducting magnets that Ganetis helped to develop are used to steer

gold ions traveling in opposite directions in the RHIC circular collider. The main advantages of superconducting magnets over more conventional, resistive coil magnets are low running costs and a more homogeneous and more intense magnetic field.

Ganetis is recognized by his colleagues as the BNL leader in the electrical performance of magnets, magnet instrumentation, magnet-testing hardware, and magnet systems design, where he has made numerous technical innovations.

For example, he developed magnetic field measurement systems used in producing superconducting accelerator magnets and in ensuring the highest magnetic field quality in RHIC's 1,740 superconducting magnets. He also developed instrumentation for measuring a quenched superconducting magnet, that is, a superconducting magnet that suddenly becomes resistive, providing information to diagnose and correct magnet quench performance.

Ganetis is also the architect of the RHIC power supply and magnet-quench protection systems. He led the team of engineers, programmers, and technicians who designed, implemented, and commissioned these systems for

RHIC, and he developed an innovative approach to RHIC's interaction regions, which resulted in a less expensive yet cryogenically efficient system.

Levesque

(cont'd.)



Spallation Neutron Source (SNS), an accelerator-based source of neutrons which

will provide the most intense pulsed neutron beams in the world and is being built in Oak Ridge, Tennessee, by a team of DOE national labs. Levesque helped reduce overall construction costs by more than a million dollars by reconfiguring fire exits and fire walls while at the same time improving the level of fire safety for the facility.

As BNL's only fire protection engineer, Levesque reviews experiments and performs hazard analyses. He spearheads the wildland fire-management program which protects BNL facilities from direct fire damage from the site's large forested area, and the heat detector-failure recovery program. For example, Plant Engineering Division staff discovered a problem with the response temperature of heat detectors used across the country as well as at BNL. Levesque is coordinating the investigation and pressing the issue with the vendor. Levesque is also responsible for the sprinkler recall program and the site fire-alarm-system replacement program.

Levesque's integrated management of the Lab's fire-risk program has resulted in fire losses which are even lower than DOE's targets.

(continued on page 3)

ITD's Deon Lee Displays His Artistic Talent

While Deon Lee spends most of his time configuring and installing software at BNL, in his personal life, his passion is drawing.

He started drawing at the age of five, inspired by his artistic aunts and uncles. Lee has created numerous artworks, but has avoided public exhibits. However, he recently sold two paintings and been commissioned for another. Says Lee, "I am interested in all types of subject matter, but I have concentrated on figures so far."

Lee loves art and painting, but he knew that a career in computer science would be more realistic. He pursued a degree in computer science at SUNY-Old Westbury, with a minor in visual arts.

In September 2002, Lee was hired part-time as a student assistant to work in BNL's Information Technology Division (ITD) through a program called C-STEP (Computing, Science & Technology Education Program). Through C-STEP, BNL and the University share funding to support the employment

of college students. After graduating with a B.S. in computer science last December, Lee was hired as a customer support analyst on a one-year professional associate internship in ITD.

Now, in addition to his work at the Lab, Lee also does freelance graphics designing and website development. "I feel

lucky that I can incorporate my love of art with my interest in computing," says Lee.

— Jane Koropsak

Note: Several other students have become BNL employees through the ongoing C-STEP program. For more information, call Rosa Palmore, Diversity Office, Ext. 2703.



Deon Lee and his paintings (right and upper right)



Roger Stoutenburgh 0202/0203

BSA Colloquium: Advances in Cancer Therapy

All are welcome when J. Carl Barrett, Director of the Center for Cancer Research, National Cancer Institute, talks on "Molecular Oncology — Translating New Advances to Cancer Therapies," at 4 p.m. on Monday, March 10, in Berkner Hall.

BNLers Give 183 Units

At BNL's Valentine's Day blood drive held at the Lab on February 14, 183 units of blood were collected.

Those who volunteered to donate are warmly thanked by Blood Drive Chair Susan Foster, Human Resources Division, for taking time out of their busy work day to help meet this vital community need.

Levesque (cont'd.)

Over the years Levesque has provided many fire safety guidelines for facilities not covered by conventional fire codes and building codes. He has enabled many experimental groups to establish a level of fire safety appropriate for their operations, and he has also saved BNL millions of dollars by achieving required safety levels while obtaining exemptions from requirements that did not add safety to the Lab.

Lynch, Rakowsky (cont'd.)



The NSLS operates two electron storage rings: the 2.8-giga electron volt (GeV) x-ray ring and a 0.8-GeV vacuum ultraviolet ring, which contain periodic magnetic structures called wigglers and undulators, collectively known as insertion devices. Electrons are sent racing around the rings at nearly the speed of light. When they cross an insertion device, they emit a very intense, narrow beam of synchrotron radiation.

Earlier generations of undulators in medium-energy machines such as the NSLS x-ray ring are able to generate only "soft" x-rays, up to about 1 kilo electron volt (keV) of photon energy. The small-gap undulators generate tunable "hard" x-rays in the range of 3 to 20 keV, which are essential for decoding the structure of complex biological molecules in the rapidly expanding field of structural biology. Previously, tunable hard

x-ray beams were available only at the very high energy storage rings, such as the 7-GeV Advanced Photon Source at Argonne National Laboratory.

The idea of introducing a small-gap, short-period undulator in the NSLS x-ray ring was originated in the late 1980s by Sam Krinsky, then NSLS Deputy Chair. Peter Stefan, then NSLS physicist, did the first proof-of-principle tests and developed the conceptual design of the small-gap undulator. Lynch worked with Stefan on the mechanical, structural, thermal, and vacuum design of the first two generations and on the latest version of the device.

Rakowsky proposed the magnetic design in 1991 and built a demonstration model, followed by the full-scale magnet arrays of the Prototype Small-Gap Undulator (PSGU) under contract for the NSLS, while he was employed at Rocketdyne, now part of Boeing, in California. After returning to BNL in 1993, Rakowsky worked with Lynch, Stefan and other collaborators at SPring8 in Japan, to develop the breakthrough In-Vacuum Undulator (IVUN).

Lynch and Rakowsky then developed the third-generation, higher-performance Mini-Gap Undulator (MGU), which has operated in the x-ray ring since January 2002. The MGU's compact size will allow the installation of two more MGUs, resulting in two new undulator beam lines. The next MGU will be installed in May to serve a new beam line funded by the National Institutes of Health and dedicated to structural biology.

In developing these devices, still record-breakers as the

smallest in their field, Rakowsky led the way in magnetic design and measurement, while Lynch provided the mechanical solutions to meet each challenge. Their success has established the NSLS as the leader in small-gap undulator technology. This innovation has dramatically changed light-source development worldwide to favor medium-energy machines of around 3-GeV over the more costly 6-to-8-GeV machines previously constructed as hard x-ray sources. The small-gap concept also serves as the basis for the NSLS 3-GeV upgrade proposal.

Arrivals & Departures

Arrivals

Lu Ping Qian Biology
Christina Sanfilippo HR

Departures

William Birkholz C-A
Robert Fitzpatrick ES&T
Elizabeth McBreen Physics
Richard Muller SSD
Jeffrey Sells Rad. Ctrl.

U.S. Fish & Wildlife Lunch Seminar, 3/11

Did you know that local high-school students are conducting a survey on gypsy-moth egg mass that will help predict BNL's gypsy-moth population? Learn about this and much more at a brown-bag lunch seminar at noon on Tuesday, March 11, in Berkner Hall, Room B, when the on-site U.S. Fish & Wildlife Service staff will talk about their work at the Upton Ecological Research Reserve.

Space Shuttle (cont'd.)

atomic detail that can be obtained from synchrotron diffraction experiments.

"To get our results," Sweet says, "we had not only prepared two identical experiments, one on Earth and the other in space, but we had also decided that the data collected from both experiments would be analyzed in a double-blind fashion. After crystals had been recovered from Columbia, they would have been combined with the crystals grown on Earth in such a way that we could measure results without knowing until afterwards from which source the crystals came."

Next Step

The PCG team is now waiting to know when they will be able to send new experiments in space, perhaps in an unmanned spacecraft. "Our experiment could easily be activated automatically," comments Sweet.

"Some perturbations, such as astronaut movements and orbit corrections, could be avoided if this experiment were performed in a free flyer or unmanned spacecraft," agrees Sygusch, who is confident that more chances to conduct experiments in space will arise in the near future.

"The latest Columbia mission was a tragic human disaster and a scientific catastrophe," Sygusch says. "But, once we understand what happened, we must continue. We will be able to investigate something never achieved before in the history of humankind: a glimpse of what life might look like in a world with a different level of gravity." — Patrice Pages

Calendar

(continued)

Thursday, 3/6

*Camp Expo: One-Stop Camp Shopping

11 a.m.-1:30 p.m., Berkner Hall. Local Long Island summer camps will provide BNLers with information about summer camp opportunities, facilities, and registration information. See also page 4. Liz Gilbert, Ext. 2315.

*BSA Distinguished Lecture

4 p.m., Berkner Hall. Scientist Stephen Wolfram will talk on "A New Kind of Science." See story on page 2 for more information.

— WEEK OF 3/10 —

Monday, 3/10

BSA Colloquium

4 p.m., Berkner Hall. J. Carl Barrett, Director of the Center for Cancer Research, National Cancer Institute, will present "Molecular Oncology: Translating New Advances to Cancer Therapies." See next Friday's Bulletin for more information.

Wednesday, 3/12

One-Day Vacuum Seminar

8:30 a.m.-12:30 p.m., Berkner Hall, Room B. Sponsored by Varian Vacuum Technologies, presented by Johan de Rijke, an expert in vacuum technology. Limited seating is available. Register in advance by e-mail, jim.primm@variainc.com, or by phone at (516) 795-3320.

Thursday, 3/13

One-Day Vacuum Seminar

8:30 a.m.-12:30 p.m., Berkner Hall, Room B. See notice above for details and registration information.

Saturday, 3/15

Hospitality Bus Trip to Manhattan

Tickets cost of \$10 per adult and \$5 per child age 2-12. The bus will depart from the BNL Recreation Hall at 9 a.m. and will return to the Lab at about 6 p.m. To reserve seats, contact Natalia Zelenski, 345-0913 or zelen ski@optonline.net. Buy tickets at Berkner Hall on Wednesday, March 5, 11 a.m.-noon; and at the Recreation Hall on Tuesday, March 11, 10 a.m.-noon.

— WEEK OF 3/17 —

Wednesday, 3/19

WelcoCGI and Concoa Demo

11 a.m.-2 p.m., Berkner Hall. All BNLers are welcome to attend a seminar/demonstration of compressed gas equipment. Gerry Eisenberger, (973)589-7895, Ext. 326.

Science Education Forum

Noon-1 p.m., Bldg. 438. All are welcome to join a discussion on interesting and timely issues in science education. Refreshments will be provided. Bring your own lunch. Brian Murfin, Ext. 7171.

Brookhaven Lecture

4 p.m., Berkner Hall. Niels van der Lelie of the Biology Department will give the 381st Brookhaven Lecture, title to be announced.

Friday, 3/21

Women's History Month Talk

Noon, Berkner Hall. Marlene Chism, a participant of the 2002 National Training Program for Federally Employed Women, will present "Dance With Authority." All are welcome. For more information, contact Lesliam Quirós, Ext. 4772, or lquiros@bnl.gov.

— WEEK OF 3/24 —

Sunday, 3/30

BERA Museum Trip to NYC

Some seats remain on the BERA trip to the American Museum of Natural History to see the Space Show and the Einstein Exhibit. Price including museum admission is \$38 for adults, \$30 for children. Tickets and more information are available at the BERA Sales Office, Berkner Hall, Ext. 4894.

Note: This calendar is updated continuously and will appear in the Bulletin whenever space permits. Submissions must be received by the preceding Friday at noon to appear in the following week's Bulletin. Enter information for each event in the order listed above (date, event name, description, and cost) and send it to bulletin@bnl.gov. Write "Bulletin Calendar" in the subject line.

Recital

Konevets Quartet, 3/5

All are welcome to the free noon recital on Wednesday, March 5, when the Konevets Quartet, an ensemble of male virtuoso vocalists, will perform works from their repertoire of Russian classical, national, and folk songs, plus Russian sacred music, including works by Stravinsky and Tchaikovsky.

The ensemble performs benefits for restoration work at Konevets Island and Monastery in Russia, and for pilgrims and the destitute who seek shelter there. The group has toured extensively across Europe, released six CDs, and featured in British ITV's "Crossing St. Petersburg." For details, see <http://music.bnl.gov/Spring 2003/>.



CIGNA Dental PPO

CIGNA Dental Preferred Provider Organization has changed its claims address to CIGNA HealthCare Service Center, P.O. Box 188036, Chattanooga, TN 37422-8036. Obtain new claim forms from the Benefits Office, Bldg. 185 or download from www.bnl.gov/HR/PDF/Forms/dentalCignaPPO.pdf. For more information, call the Benefits Office, Ext. 2877 or 5126.

Motor Vehicles & Supplies

- 01 HYUNDAI TIBRON - black, loaded w/ extras, spoiler, 19K mi. trans. warr., \$13,000 firm. Barbara, 732-7186.
- 01 MITSUBISHI MONTERO XLS - all power, 38.5 K mi., must sell ASAP due to wife's medical cond., vehicle well maint., 7 yr./70K mi. warr., \$19,500. Dwight, Ext. 2982.
- 99 FORD TAURUS SE - all power, excel. cond., 35K mi., \$8,550. Brian, 821-4234.
- 98 DODGE CARAVAN SE - V6, all power, 7-8 pass., left & right sliding doors, excel. cond., 69K mi., \$8,000. Ken, 281-5565.
- 98 TOYOTA COROLLA VE - 5-sp., a/c, p/s, p/b, 58K mi., dual airbags, radio, new tires, one owner, \$5,500. 718-596-5269.
- 96 PONTIAC GRAND AM - black, p/w, 2-dr., ABS, 10,800 mi., \$3,300. Hangil, Ext. 2251.
- 95 VOLKSWAGON GOLF GL - green, all power, alarm, 93K mi., \$4,500. Rich, Ext. 7013 or 698-5294.
- 94 TAURUS FORD - all power, 143K mi., good running cond., \$1,500 obo, must sell. Donna, Ext. 6044.
- 93 SPORTSTER - 883/1200 by HD, SE heads, cams, ignition, air cleaner, exhaust, extras, immac., \$6,800. Mark, Ext. 2599.
- 92 LINCOLN TOWN CAR - silver, all power, all available options, new air suspension, cloth top, 92K mi., excel. cond., \$3,900. Ben, Ext. 7732 or 698-0057.
- 92 NISSAN SENTRA - black coupe/gray int., 5-sp., a/c, p/s, p/b, spoiler, moonroof, 135K mi., \$1,500. Barbara, Ext. 4458 or 979-1767.
- 91 OLDSMOBILE ROYALE 88 - new tires, new trans., excel. cond., \$4,500. Peter, 473-1406.
- 91 PONTIAC FIREBIRD - red w/black int., good cond., 125K mi., \$1,795. 736-2618.
- 91 TOYOTA TERCEL - stick shift, new tires & batt., excel., 125K mi., \$1,000; 87 VW Vanagon Camper van, sleeps 4, stove, fridge, sink, rebilt. eng., new trans., \$3,500. Peter, 765-1137.
- 87 CHEVY SILVERADO BLAZER - black, new tranny, rear end & throttle body, \$4,500. John, 929-6403.

- 86 FORD MUSTANG - a/t, p/s, 4-cyl., 91K mi., good cond., \$1,000. Joe, Ext. 5353 or 475-8183.
- 85 HONDA ACCORD - 5-sp., high mi., runs well, \$450. Vasily, Ext. 7821 or 1022.
- STEEL CROSS BED TOOL BOX - Weather Guard, sliding tray inside, w/2 wing-type locking doors, for stepside & mini pickups, good cond., \$100. Arlene, Ext. 3827.

Boat & Marine Supplies

- 24' CAPE COD SHIP BUILDING - Raven w/trailer, v.g. cond., recently raced, 2 very good suits of sails, spinnaker & all gear included, \$2,500. Sam, 689-8685.
- HYDRAULIC STEERING CYLINDER - side mount, instructions, parts list, \$50; outboard bracket, alum., 23 in., for i/o or seadrive conversions, \$150, or \$175/both. 878-8302.
- OUTBOARD MOTOR - Seagull, long shaft, 5 hp, model #WSPOL, 20 yrs. old but works well, well taken care of, \$500. 286-5897.

Furnishings & Appliances

- CHAIRS - Lay-Z-Boy rocker/recliner, slate blue, good cond., \$30; white nursery glider/rocker, Dutilleul, excel., \$75. Alan, 696-4366.
- COMPUTER DESK - dark reddish wood veneer, approx. 30" deep x 20" long, 2 file drawers, 2 stationery drawers, contemp. style, \$150. Kelly, Ext. 7746 or 580-2940.
- COMPUTER DESK - Compact, on wheels, oak color, great cond., \$30. Ext. 2457.
- FREEZER - Kenmore, 3 yrs. old, 11.7 cu. ft., excel. cond., \$150. 369-2716.

Sports, Hobbies & Pets

- BAG - heavy, great cond., \$35. Ext. 2457.
- NIKON CAMERA N90S - w/verticlegrip battery pack, mint cond., rarely used, orig. boxes, \$575. Joe, Ext. 2384.
- SNOWBOARD - Oxygen, w/Salomon bindings, \$200 firm. Mike, 345-0676.
- STAIR CLIMBER - Life Fitness 5500, gym quality, excel. cond., 4 yrs. old, hardly used, cost \$2,700, ask \$500. Ext. 2431 or 929-1683.
- WEIGHT BENCH - Marcy Pro 826i w/butterfly & leg attach., excel. cond., \$30; Weider weights, 110 lbs., \$25. Peter, Ext. 2913.

Audio, Video & Computers

- HOME THEATRE RECEIVER - Marantz SR8000, 2 yrs. old, barely used, incl. RC200MK remote, cost \$1,200, ask \$800. Alan, Ext. 4707.
- TVs - (2) 19" color RCA Colortrac, \$25/ea.; (2) 13" color, (1) Panasonic & (1) G.E., all work well. Tirre, Ext. 3288 or 281-0360.

Miscellaneous

- CAMP SITE CREDIT - Strawberry Park campground credit, \$200 face value, obo, must sell. Nancy, Ext. 4303 or 878-5449.
- CELIAC/WHEAT FREE LUNCH GROUP MEETING - weekly for sharing info., support, recipes, area events & gluten free food. Michael, Ext. 8612 or 395-5071.
- DOUBLE STROLLER - Fisher Price, brand new, bought one month ago for \$95, best offer. Christine, 821-7297.
- SUEDE WINTER COAT - woman's, Jones of New York, size M (10/12), dark brown suede w/plush cuff, collar & lining, worn once, \$40. Karen, Ext. 4262.
- FUR JACKET - white fox jacket, John Pappas, size med., \$350. David, 395-3484.
- TICKETS - 2, concert at Nassau Coliseum, 3/5, 7:00 p.m., Scorpions, Whitesnake & Dokken, \$110/pair, sect. B-1, row 15, seats on floor level. Frances, 874-4067.
- TICKETS - 1 for Parsifal at MET, Saturday matinee, 4/12, \$33. Ext. 2455 or 331-1432.
- TROMBONE - Yamaha, best offer. Julian, Ext. 4705 or 929-4978.

Free

- APPLIANCES - GE dishwasher, 18 CF fridge, washer, electric dryer, Tappan 30" gas cooktop, old but work. Ext. 4211 or 286-3681.
- COUCH & BUREAU - fair cond. 286-7085.
- CHINA - service for 8 or more, excel. cond. a must, please ref. pattern #, reasonable. Doreen, Ext. 2457 or Donna, Ext. 6044.
- CRAFT SUPPLIES/ GIFTS - for non-profit adult day-care facility: markers, glue, yarn, buttons, ribbon, fabric, etc. & small gifts (soap, perfume, figurines, costume jewelry, wallets) for game prizes. Karen, Ext. 4262.
- DAYSAILER - 14 - 16 foot daysailer as tax deductible donation to youth sailing program. Steve, Ext. 4846.
- HOUSE CLEANING - occasional, for small, 2 bdrm, Rocky Point home, salary, hours neg. Christine, 821-7297.
- OLD DECOYS - old guns & hunting-related items, Paul, Ext. 5829 or 289-9152.
- RESEARCH VOLUNTEERS - healthy non-smoking men and women, ages 18 and over, are needed for MRI study. Strictly confidential, fee provided. 344-2773.
- ROOMMATE - to share apt., close to BNL. Ahmed, Ext. 7421.
- SKIERS - to ski Hunter, 3/5, \$51 for bus & lift. Send payment to Augie Hoffmann, Bldg. 510A. For additional information contact Augie, Ext. 3884.
- TICKETS - to Dave Matthews/Tim Reynolds concert at Radio City Music Hall, 3/22. Vera, Ext. 5843.

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WOOD SPLITTER - reasonable, working cond. Mike, Ext. 7861 or 821-4064.

Happenings

CONCERT - Sat., March 1, 4 p.m., Southampton College, Sam Carr, Physics Department, will play the Beethoven Choral Fantasy with the Peconic Youth Symphony Orchestra. Tickets are by donation.

In Appreciation

I thank all our friends for all the comfort & support after the loss of my father.
—Fred Maier & family.

For Rent

- BROOKHAVEN HAMLET - room in charming house on quiet acre of land, 15 mins. to Lab., cable TV in room, use of house, incl. washer/dryer, \$425/mo. 286-4028.
- CATSKILLS - 3 bdrm chalet w/sleeping loft, near Windham & Hunter Mts., great for skiing. Kay, Ext. 4501.
- CENTER MORICHES - 1 room in shared house, priv. bath, full kitch., lg. l/rm, laundry room, walk to marina, 10 mi. to Lab., avail. April. Thomas, Ext. 8335 or 804-2959.
- CENTER MORICHES - 1 bdrm, l/rm, eik, private ent. by water. 874-3498.
- CORAM - 2 bdrm, full bath, small kitch., l/rm, laundry, driveway & lg. backyard, lightly furnished, no smoking/pets, \$975/mo., incl. cable, heat, h/w & utilities. Ken, 922-7555.
- CORAM - 3 bdrm house w/fenced yard, pool, in-ground sprinklers, 2 fireplaces, brand new kitch., 2.5 baths, quiet neighborhood, \$1,900/mo. 331-4521.
- EAST ISLIP - 2 bdrm apt., l/rm, d/rm, kitch. & bath, heat & hot water incl., gas & electric sep., \$1,200/mo. Joseph, Ext. 5409 or 516-903-2013.
- EAST MEADOW - 2 bdrm, l/rm, d/rm, util. incl., 50 mi. west of BNL, \$1,200/mo; 1-car gar. avail. for \$150/mo. Stephen, Ext. 4211.
- EAST MORICHES - 4-5 bdrm house, park-like prop., 8 mi. to Lab., excel. schools, short/long term, nonsmokers, refs., sec., \$2,000/mo. Anna, 878-3352 Ext. 103, Nick, Ext. 4979.
- EAST SETAUKET - 5-bdrm, 3 baths, 3-level house, sliding door onto deck, cul-de-sac, all-hw floor, 2 1/2 car garage, 3 VSD, \$2,300/mo. Meihan, Ext. 4360 or 689-6495.
- MIDDLE ISLAND - sublet 2 bdrm, heat & water incl., Longwood SD, 2-mo. sec. & first month's rent required, avail. 3/1. \$1,250/mo. Tameka, Ext. 5582 or 848-0988.
- MIDDLE ISLAND - Apt. in Artist Lake condo., 1 bdrm, l/rm, small kitch, utilities incl., 10-min to BNL, avail. 3/1, \$875/mo., Victor, Ext. 7894 or perev@bnl.gov.
- MILLER PLACE - spotless, spacious 3-bdrm ranch, 2 bath, all appli., screened porch, energy efficient, fenced, no smoking/pets, avail. 3/1, \$1,725. 473-3349.
- NORTH PATCHOGUE - share elegant house, spacious bdrms, parking avail., close to Lab & shopping area. 447-6899.
- NORTH SELDEN - 3 bdrms., l/rm, d/rm, eik, full bath, hw floors, deck, private prop., diamond cond., S.D. 11, 15 min. to Lab., \$1,700. Cos, Ext. 6235 or 928-7107.
- NORTH SELDEN - 1 bdrm, full bath, new kitch., w/d, no smoking/pets, \$850/mo. plus util., sec., refs. Helen, Ext. 6235 or 928-7107.
- PORT JEFFERSON STATION - 3 bdrm, den, eik, 1 bath, garage, fresh paint, \$1,750 all. 821-6403.
- RIDGE - mint, private, 1 bdrm cottage, eik, l/rm, 1 bath, furnished, w/w carpet, parking, 1.5 mi. from BNL, no pets/smoking, \$735/mo. Casper, Ext. 3469 or 244-6317.
- ROCKY POINT - share house w/4 USB grad students — 2 male, 2 female, cable, high speed internet, wireless LAN, w/d, walk to beach, no smoking/pets, \$340/mo.+\$40-60 util. Mike, 744-8525.
- SHIRLEY - lg., clean, 2-bdrm apt., close to BNL & LIE, rent depends on number of people, incl. heat & elect. Tomasz, Ext. 7448.
- SOUND BEACH - 3 bdrm, eik, l/rm, bsmt, w/d, Miller Place S.D., newly renovated int., yard in quiet neighborhood, \$1,750/mo., plus util. & 3 mo. sec. deposit. Brian, Ext. 3370.
- SOUTH SETAUKET - house for rent, 4 bdrm, 2 1/2 bath, 2-car garage, l/rm, d/rm, den, avail. 3/1, 3-Vill. SD., \$2,100/mo. plus util. Peter, 765-1137.
- PUNTA GORDA, FL - house, Florida W. Coast, part furn., priv. community, all incl., avail. until 3/31, \$3,500. Ellen, Ext. 2816 or 878-0480 eves.
- ST. CROIX, VI - timeshare, Divi Carina Bay, 1 bdrm, sleeps 4, 5/10 to 5/17, new upper unit overlooking ocean, private pool, casino, top rated, \$700. Bill, 732-9102.
- WILLIAMSBURG, VI - 6/28-7/5, 2 bdrm, sleeps 6, full kitchen, d/rm, l/rm, pool, by hist. W-burg, Busch Gardens, water country, Washington D.C., www.kingscreekplantation.com, \$900. Maryann, Ext. 5124.

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Music Club Music Tomorrow!

Tomorrow, March 1, 8 p.m.

Kerry Kearney Band, Guests



The BNL Music Club and the Long Island Blues Society will present Kerry Kearney's Band in "The Gathering of the Slides." Michael Falzarano, Kane Daly, Little Toby Walker, and Amy Helm will be featured as special guests.



Kerry Kearney Little Toby Walker

Showstopper Kearney is known as a master of open-tuning slide guitar, and he will perform with his four-piece band: Eileen "Little Steamroller" Murphy on drums, Frank Celenza on bass, Tony Campo on keyboards, and Charlie Wolf on harp. Admission: \$10 in advance, \$12 at the door. For more information, go to www.bnl.gov/bera/activities/music/.

Calling BNL's Singers, Musicians

A one-performance choir is being set up to sing for 30 minutes on Friday, March 28, at 3 p.m. in Berkner Hall, at the upcoming 60th Joint Annual Meeting of Beta Kappa Chi Scientific Honor Society, National Institute of Science, and Brookhaven Semester Program. The first of three 1-hour rehearsals will be held on Monday, March 10, around 5:30 p.m., the time to be confirmed later. Singers and musicians are urgently asked to participate; contact Frances Ligon, Ext. 3709 or ligon@bnl.gov.

Wanted: BERA Board Nominees

All employees, facility users, visitors, and guests who wish to propose a nominee for the upcoming 2003 BERA Board election must contact a nomination committee member by Friday, March 7. Make sure that the person being proposed will agree to accept the nomination if selected by the committee. Committee members are: James Alduino, Ext. 4696, Bldg. 911; Michael Buckley, Ext. 8097, Bldg. 725; Frank Dusek, Ext. 7947, Bldg. 912; Samantha Lin, Ext. 7387, Bldg. 527; Patrick Moylan, Ext. 5262, Bldg. 726; Alejandro Sonzogni, Ext. 5334, Bldg. 197; Kenneth Sutter, Ext. 4514, Bldg. 480; and Susan Wells, Ext. 7427, Bldg. 459.

Aqua Aerobics Sign Up

Tuesdays and Thursdays will be aqua aerobics days again, starting on March 4 and March 6 for eight weeks. To register, send checks in advance, made out to BERA, for \$20 per person to attend once a week, and \$40 per person to attend twice a week, indicating your choice of day or days. Send the checks to Mary Wood, Bldg. 490.

Defensive Driving

A six-hour defensive driving course will be held on Saturday, March 22, 9 a.m.-3:30 p.m., in Berkner Hall, Room B. Send a check for \$26 per person, made out to Empire Safety Council, in care of Scott Zambelli, P.O. Box 670, Mount Sinai, NY 11766. Include your telephone number. No checks will be refunded after March 14.

Bus Trip to NYC

The BNL Hospitality Committee invites participants on a bus trip to New York City on Saturday, March 15, at \$10 per adult and \$5 per child age 2-12. The bus will depart from the Recreation Hall at 9 a.m., returning to the Lab at about 6 p.m. Buy tickets at Berkner Hall on Wednesday, March 5, 11 a.m.-noon or at the Recreation Hall on Tuesday, March 11, 10 a.m.-noon, or contact Natalia Zelenski, 345-0913 or zelenski@online.net.

Weight Watchers

The next Weight Watchers at Work session will begin on Wednesday, March 5, noon-1 p.m., at the Brookhaven Center. The cost will be \$99 for 10 or more weeks depending on the number of participants. Contact Mary Wood, Ext. 5923 or wood2@bnl.gov.

BNL Summer Camp

This summer, BNL's general arts, crafts, and recreational sports summer camp for children who live on site will also be open for 45 additional children from the BNL employee, facility user, and guest community who do not live on site. More information is available at the BERA Sales Office in Berkner Hall, the BERA Office, Bldg. 179, or see www.bnl.gov/bera.

Summer Camp Expo

On Thursday, March 6, 11 a.m.-1:30 p.m., in Berkner Hall, 16 Long Island summer camps will provide facility and registration information to BNLers. Camps will include the Brookhaven Country Day Camp, Camp DeWolf, Ivy League Day Camp, Kiddie Academy, Suffolk County Farm, Summer Camp at Stony Brook, and the BNL Summer Camp. For more information, contact Liz Gilbert, Ext. 2315.

