

A Nanowire With a Surprise Research may advance nanoelectronics



Scientists at BNL and their collaborators have discovered that a short, organic chain molecule with dimensions on the order of a nanometer (a billionth of a meter) conducts electrons in a surprising way: It regulates the electrons' speed erratically, without a predictable dependence on the length of the wire. Funded by the Office of Basic Energy Sciences within DOE's Office of Science and the National Science Foundation, this research may help in learning to use nanowires to create components for a new class of tiny electronic circuits.

"This is a very unexpected and unique result," said John Smalley, a guest scientist in the Chemistry Department and the lead researcher of the study, which appeared in the *Journal of the American Chemical Society* 126 (44), 14620-14630, 2004. Working with Smalley were Marshall Newton of Chemistry, Chemistry guest scientist Stephen Feldberg, and researchers at Stanford University, Clemson University, and Motorola.

The conducting chain molecule, or "nanowire," that Smalley and his collaborators studied is composed of units of phenyleneethynylene (PE), which consists of hydrogen and carbon atoms. Like the links that make up a chain, PE units join together to form a nanowire known as oligophenyleneethynylene (OPE). PE, and therefore OPE, contains single, double, and triple carbon-carbon bonds.

The double and triple carbon-carbon bonds promote strong electronic interactions along OPE such that it conducts an electric current with low electrical resistance. This property makes OPE nanowires good candidates for components in nanoelectronic circuits, very small, fast circuits expected to replace those currently used in computers and other electronics.

Unusual Behavior

Smalley and his collaborators found that as they increased the length of the OPE wire from one to four PE units, the electrons moved across the wire faster, slower, then faster again, and so on. In this way, OPE does not behave like a similar nanowire the group has also studied, called

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Brookhaven Town Honors Two BNL Scientists

Two BNL scientists — Rita Goldstein and Lisa Miller — were among 11 women honored for their accomplishments at the Brookhaven Town-sponsored Women's Recognition Night at Brookhaven Town Hall on March 22. Goldstein and Miller were recognized for their contributions to science in the Town ceremony, which celebrates National Women's History Month.

Rita Goldstein

Rita Goldstein, an associate scientist in the Medical Department, uses BNL's medical imaging technologies — positron emission tomography and magnetic resonance imaging — to study the neurobiology of drug addiction. She has found that a brain region known as the prefrontal cortex is involved with the inability of drug-addicted individuals to control their drug-taking behavior when confronted with powerful emotional stimuli. The disadvantageous behavior of a drug-addicted individual who keeps taking drugs despite extremely negative consequences can be partly attributed to this neural mechanism.

Using BNL's sophisticated imaging tools and relying on the expertise of Nelly Alia-Klein, a postdoctoral fellow at the Lab, Goldstein has extended her studies to investigate anger, aggressive behavior, violence, and their co-occurrence with drug addiction. Understanding the origins of these behaviors in the brain and particularly how certain variations in people's genes may make them more vulnerable to these behaviors under certain severe or extended environmental stressors is crucial information that is needed to develop strategies for prevention and intervention.

"I am glad that I have the tools available at Brookhaven to pursue this research," Goldstein said. "I am also gratified that the Town of Brookhaven is honoring me as a woman in science. Women have made important contributions to this

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Lisa Miller

Lisa Miller, a biophysicist in the National Synchrotron Light Source (NSLS) Department, uses infrared light and x-rays at the NSLS to study the chemical composition of bone tissue in diseases such as osteoarthritis and osteoporosis. She also investigates protein-folding diseases, such as Alzheimer's disease and scrapie, the sheep form of mad cow disease, in which specific proteins in the brain fold into incorrect shapes and cause damage to brain cells.

Miller also plays an important role in science education and the public understanding of science. She often mentors students from high school to the postgraduate level. In addition, Miller is responsible for outreach activities on behalf of the NSLS, including publications, the website and tours. For example, she organizes an annual open house at the NSLS for BNL's Summer Sundays, when the Lab's facilities are open to the public.

"I am very pleased to receive this honor from Brookhaven Town," Miller said. "I'm glad that my research is recognized, and I am happy that many of the students I've mentored have chosen to pursue scientific careers."

Miller earned a B.S. in chemistry from John Carroll University in 1989, an M.S. in chemistry from Georgetown University in 1992, and a Ph.D. in biophysics from the Albert Einstein College of Medicine in 1995. After serving as a postdoctoral fellow at Lawrence Berkeley National Laboratory

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Research at NSLS on 'Holes' May Unearth Causes of Superconductivity

Scientists at BNL have uncovered another possible clue to the causes of high-temperature superconductivity, a phenomenon in which the electrical resistance of a material disappears below a certain temperature. In a superconducting compound, they found evidence of a rarely seen arrangement of "holes"— locations where electrons are absent. The results appeared in the October 28, 2004, issue of *Nature*.

Funding for this research came from the Office of Basic Energy Sciences within DOE's Office of Science, the National Science Foundation, the Dutch Science Foundation, and the Netherlands Organization for Fundamental Research on Matter. Led by Peter Abbamonte, National Synchrotron Light Source Department, the researchers studied a compound made of strontium, copper, and oxygen (SCO) that is one of the "cuprates," a family of compounds that contain copper oxide.

In SCO, the team found evidence of a "hole crystal" — a rigid, ordered arrangement of holes. Holes are positively charged and, like electrons, may interact with each other to produce a superconducting current.

"A hole crystal is a very unusual phenomenon," said Abbamonte. "Its existence is a direct result of the correlations between holes, which are believed to produce superconductivity in other cuprates."

SCO consists of one layer of strontium atoms sandwiched by two sheets of different copper oxides. In one sheet, the copper-oxide molecules form long, parallel chains. The other copper-oxide layer, which contains the hole crystal, has a ladder structure, resembling chains that are linked horizontally.

A hole crystal is just one type of arrangement of electric charge in a material. These arrangements are important because some researchers believe that superconductivity is the result of a particular arrangement, or occurs when a superconductor approaches a boundary between two arrangements. In other cuprates, for example, scientists are studying a charge arrangement in which ribbons of holes and magnetic regions form alternating "stripes."

"We believe the hole crystal and stripes may be linked," said Abbamonte. "Specifically, the hole crystal in SCO may be a

'low-dimensional' precursor to stripes, meaning it exists only along the copper-oxide ladders, rather than in an entire copper-oxide plane."

Abbamonte and his collaborators studied SCO using x-rays from NSLS beam line X1B. They placed an SCO sample in the path of an x-ray beam, varied the wavelength of the beam, and watched how the x-rays reflected away from the sample.

At a particular energy, the sample reflected back the x-rays

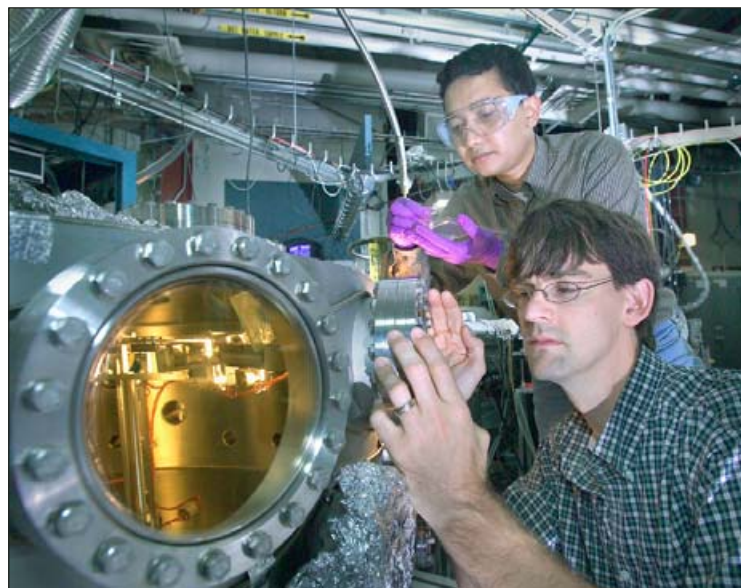
very intensely, which led the researchers to conclude that the holes formed an ordered lattice since randomly placed holes could not have produced such a strong reflection.

However, more studies were needed, such as varying the chemical composition of the SCO, and examining another cuprate, before possible links of these results to superconductivity could be better understood, Abbamonte said. (See sidebar at right.) — Laura Mgrdichian

Latest 'Hole' News

Most recently, Peter Abbamonte and his team have extended their research on "hole crystals" in superconductors (see story at left) by varying the chemical composition of the original compound of strontium, copper and oxygen (SCO). They found that the hole crystal exists in a variety of compositions and interacts in a surprising way with the periodic crystal lattice. These results may contain a clue about the interactions between holes that are believed to cause superconductivity.

Says Abbamonte, "We have gone still further in this investigation and have completed a study of a superconducting lanthanum barium copper oxide compound, which is known to contain static 'stripes' [see story at left]. We have found that the stripes and the hole crystal in SCO are closely related. From these studies, we hope to find out how such phenomena are linked to superconductivity."



Peter Abbamonte (front) and student researcher Andriwo Rusydi.

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 Recreation Bldg. and at the laundry, both 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.

Mondays: BNL Gospel Choir

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

Mondays & Wednesdays: Pilates

Mon., Noon-1 p.m. in the Rec. Hall; Wed., 5:30-6:30 p.m. in the Rec. Hall. Christine Carter, Ext. 5090.

Mon., Tues., & Thurs.: Kickboxing

\$5 per class. Mon., noon-1 p.m. in the gym; Tues., 5:15-6:15 p.m. in the gym; Thurs., noon-1 p.m. in the gym; Thurs., 5:15-6:15 p.m. in Brookhaven Ctr. North Room. Registration is required. Christine Carter, Ext. 5090.

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

Noon-1 p.m., Brookhaven Center North Room. Adam Rusek, Ext. 5830 or rusek@bnl.gov.

Tuesdays: Welcome Coffee

10-11:30 a.m., Rec. Hall. First Tuesday of every month is special for Lab newcomers and leaving guests. Cindy Ottemann, 849-2646.

Tuesdays: BNL Music Club

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

Tuesdays: Jiu Jitsu Club

6:30-7:30 p.m. in the gym. All levels, ages 6 and above. \$10 per class. Tom, Ext. 4556.

Tuesdays: 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.

Tuesdays & Thursdays: Aerobics

5:15-6:30 p.m., \$5 per class or \$40 for ten classes. Rec. Hall. Pat Flood, Ext. 7886.

Tuesdays & Thursdays: Aqua Aerobics

5:15-6:15 p.m. Eight-week session. \$20 to attend once a week; \$40 to attend twice a week. Ext. 2873 for more information.

Tuesdays & Thursdays: Jazzercise

Noon-1 p.m., Rec. Hall. Preregistration is required. Christine Carter, Ext. 5090.

Tues., Thurs., Fri.: Upton Nursery School

8:30-11:30 a.m. Rec. Hall. Two- and three-day program avail. 727-8082 or Ext. 5090, for information.

Tues., Wed. & Thurs: Rec Hall Activities

5:30-9:30 p.m. General activities, large-screen TV, ping pong, chess, games, and socializing. Christine Carter, Ext. 5090.

Wednesdays: On-Site Play Group

10 a.m.-noon. Rec. Hall. An infant/toddler drop-in event. Parents meet while children play. Kati Petreczky, 821-4131.

Wednesdays: Weight Watchers

Noon-1 p.m. Michael Thorn, Ext. 8612.

Wednesdays: Yoga

Noon-1 p.m., Brookhaven Center. Free. Ila Campbell, Ext. 2206, ila@bnl.gov.

Wednesdays: Open Chess Night

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

Wednesdays: Dance Lessons

5:15-8 p.m. Brookhaven Ctr., North Room. BNL Ballroom Dance Club hosts lessons, beginner to adv. John Millener, Ext. 3853.

Thursdays: Reiki Healing Class

Noon-1 p.m., Bldg. 211 Conference Rm. Nicole Bernholz, Ext. 2027.

Fridays: Family Swim Night

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

Fridays: BNL Social & Cultural Club

6-9 p.m., North Ballroom, Brookhaven Ctr., dance lessons, 9-11:30 p.m. general dancing. Rudy Alforque, Ext. 4733, rudy@bnl.gov.

— THIS WEEKEND —

Saturday, 3/26

Hospitality Easter Egg Hunt

11 a.m. Recreation Bldg. The Hospitality Committee invites children to join the annual Easter Egg Hunt. For details, see the notice on page 4. Cindy Ottemann, cjattabb@optonline.net or 849-2646.

— WEEK OF 3/28 —

Monday, 3/28

Basic Vacuum Technology Seminar

Free. 8:30 a.m.-12:30 p.m., Brookhaven Center, South Room. Varian Vacuum Technologies give basic course on vacuum science: those with minimal vacuum experience will receive a comprehensive education on high and ultrahigh vacuum. Continental breakfast and lunch provided. To register in advance, contact Jim Primm, jim.primm@varianinc.com, 516-795-3320.

Brookhaven Town Honoree

Rita Goldstein (cont'd.)



Roger Sloutenburgh 00061202

field and will continue to do so."

Goldstein earned a B.A. in psychology and French from Tel Aviv University in Israel in 1992, and a Ph.D. in psychology from the University of Miami, Florida, in 1999. She was an intern in clinical neuropsychology at Long Island Jewish Medical Center before joining the Lab in 1999 as a post-doctoral fellow of Nora Volkow, former BNL Associate Laboratory Director for Life Sciences and current Director of the National Institute on Drug Abuse. Goldstein was promoted to assistant scientist in 2002 and then to associate scientist in 2004. She is also an affiliate in Stony Brook University's Departments of Psychology & Biomedical Engineering.

— Diane Greenberg

Inside Info

SNO Paper Cited 1,000 Times

Among the most recent members of the very select "1,000 Citation Club" featured in the SPIRES-High Energy Physics (HEP) Literature Database of the Stanford Linear Accelerator Center Library is the "Measurement of the Rate of $\text{NU}/\text{E} + \text{D} \rightarrow \text{P} + \text{P} + \text{E}^-$ Interactions produced by B-8 Solar Neutrinos at the Sudbury Neutrino Observatory," published in *Physical Review Letters* 87:071301.2001, by the Sudbury Neutrino Observatory (SNO) Collaboration (Q.R. Ahmad et al.). This very first paper of SNO solar neutrino results was authored by some 175 scientists. BNL's Richard Hahn of the Chemistry Department led the BNL SNO team, which included John Boger, Keith Rowley, Minfang Yeh and Richard Lange. The BNL role in the SNO experiment focused mainly on the construction and operation of the complex system that purified the 1,000 tons of heavy water (D_2O) and 7,000 tons of light water (H_2O) that comprise the neutrino detector, and on the measurement and removal of naturally occurring radioactive contaminants, such as uranium and thorium, at extremely low levels. Hahn also serves as a member of the SNO Science Board, which sets policy for the collaboration.

SPIRES-HEP reviewer Michael Peskin (www.slac.stanford.edu/library/topcites/topcites.review.2002.html) describes this paper as the most highly cited neutrino physics paper, at position No. 7 in the SPIRES-HEP list. He explains SNO as a water Cherenkov detector with heavy water as the active medium, which allowed independent measurements of the solar neutrino flux from the charged-current and neutral-current neutrino reactions that occur with the deuteron in the D_2O , and from neutrino-electron scattering. He adds, "SNO found that the sum of these fluxes is just equal to the prediction of the electron neutrino flux from solar models. Thus, the deficit of solar neutrinos [editor: Ray Davis' "Solar Neutrino Problem"] is explained — and, indeed, completely accounted for— by the flavor oscillation of electron neutrinos to other active lepton neutrino types."

A follow-up SNO paper in 2002 presented neutrino data resulting from the addition of two tons of sodium chloride to the D_2O , where the neutral-current signal was enhanced by neutrino interactions on the chlorine. This paper, which provided strong independent confirmation of results from the 2001 SNO paper, has some 900 citations and is headed for the 1000-citation level.

Brookhaven Town Honoree

Lisa Miller (cont'd.)



Roger Sloutenburgh 004-251-01

and BNL, she joined BNL in 1999 as an assistant biophysicist, and she was promoted to biophysicist in 2003. Since 2002, she also has been an adjunct assistant professor in Stony Brook University's Department of Biomedical Engineering.

This year, Miller was invited to serve on the scientific advisory committee of the Canadian Light Source, a role served only by world-class scientists. For her work with students, Miller received DOE's Outstanding Mentor Award in 2002.

— Diane Greenberg

Nanowire (cont'd.)

oligophenylenevinylene (OPV), which contains single and double carbon-carbon bonds. When they made OPV wires longer, the electrons' speed remained the same. They observed the same result when they studied short wires made of alkanes, another group of hydrocarbon molecules that contains only single carbon-carbon bonds.

The researchers think that the unusual behavior of OPE may be due to its tendency to change its three-dimensional shape slightly. Increasing the wire's length may trigger new shapes, which may slow down or speed up the electrons as they cross the wire.

Possible Benefit

"If the odd behavior is due to the conformational variability of the OPE wires, figuring out a way to control the tendency of OPE to change its shape could be useful," said Smalley. "For example, diodes and transistors are two types of devices based on variable electrical resistance."

The scientists made another significant finding: They dramatically increased the rate at which the electrons moved across the wire by substituting a methyl hydrocarbon group onto the middle unit of a three-unit OPE wire.

"Because OPE seems sensitive to this substitution, we hope to find another hydrocarbon group that may further increase the electrons' speed, and therefore OPE's ability to conduct electrons," said Smalley.

— Laura Mgrdichian

For more information about this research, see www.bnl.gov/bnlweb/pubaf/pr/PR_display.asp?prID=04-92.

Arrivals & Departures

Arrivals

Shuguo Ma Chemistry
Akira Nambu Chemistry

Departures

Christian Hoth NNS
Anne Reuter C-A

Ward Melville High School Wins Science Bowl at BNL



Roger Sloutenburgh 01200105

After the Science Bowl contest, Doon Gibbs, Brookhaven's Associate Laboratory Director for Basic Energy Sciences, shakes hands with Ward Melville High School team captain Neal Wadhwa, who holds the team's trophy. Looking on (from left) are: team coach Bob Spira, team members Harley Zhang, Charles Cimeti, Shira Mitchell, and Sam Ocko; and Catherine Osiecki and Ken White from Brookhaven's Office of Educational Programs, where the event is organized.

For the second year in a row, the Ward Melville High School team was the champion of the Regional Science Bowl at BNL. Sponsored by Brookhaven Science Associates, the fast-paced question-and-answer tournament was designed to test high school students' knowledge of biology, chemistry, physics, mathematics, astronomy, earth science, and general science.

The Regional Science Bowl at BNL, along with 66 others around the country, is part of the National Science Bowl® competition coordinated by DOE's Office of Science. Since its inception in 1991, more than 100,000 high school students have participated in this "Jeopardy"-style contest. By competing in Science Bowl contests, students are encouraged to excel in science and math and to pursue careers in those fields.

Twenty schools from Long Island and the New York metropolitan area participated in the regional competition this year. As the first-place winner, the Ward Melville team received a \$500

gift certificate, and the team will get a chance to participate in the National Science Bowl®, which will be held in Chevy Chase, Maryland, from April 28 to May 2. Second-place honors went to the Half Hollow Hills West High School team, who won \$250; Horace Greeley High School placed third, winning \$150; and Longwood High School took fourth-place, winning \$100. All four winning teams received trophies.

The Brookhaven Regional Science Bowl is coordinated through the Office of Educational Programs (OEP) in BNL's Community, Education, Government & Public Affairs Directorate. Catherine Osiecki of OEP coordinated this year's Science Bowl with assistance from last year's coordinator, Susan Sears.

"A special thanks to the more than 70 BNL scientists, administrators, and other staff volunteers who gave of their time to make this competition possible with their enthusiasm and professionalism," says Osiecki. — Diane Greenberg

Meet the Candidates for the 2005 BERA Executive Board

The following four candidates are running for two four-year positions on the Executive Board of the Brookhaven Employees Recreations Association (BERA).

This contest will be decided through an election to be held March 28-April 1. All employees of BNL, BSA, DOE, and employees of permanent, on-site contractors are BERA members — and are urged to vote. The winners will be able to affect BERA recreation policies. So, read the campaign

statements below to help you make an informed choice when you cast your vote.

Voting will be from 11 a.m. to 1:30 p.m.: Monday-Wednesday, March 28-30, at Berkner Hall, and Thursday-Friday, March 31-April 1, at the Teachers Federal Credit Union. In addition, votes may be cast on the Web from the BERA homepage, which can be found if you go to the BNL homepage, then click on "BERA" in the left-hand column.

Frank Dusek



Roger Stoutenburgh

"As the current BERA Board Recording Secretary, I am interested in all the clubs and their special needs," says Frank Dusek, a technical specialist in the Collider-Accelerator Department who has been at BNL since 1970. "I've enjoyed many BERA-sponsored activities and functions over the past 35 years, and I know how many friends you can make by joining a club."

Dusek's interest in classic cars and motorcycles led him to involvement in the Antique & Classic Car Club, and he has been president of the Cycletrons Motorcycle Club for seven years.

"We've attended many local rides and have included families and friends at our annual bar-b-ques on site. BNL has clubs for every hobby and sport conceivable and provides on-site families with activities and trips. If elected, I would work with the Board to encourage employees and their families to enjoy BERA activities and facilities," he says.

Joann Giambalvo



Joann Giambalvo, a Computer Support Engineer in the Staff Services Division and the Safeguards & Security Division's Exercise Physiologist, has a Master's degree in Exercise Physiology. She is also certified by the American College of Sports Medicine and is a licensed Wellcoach. Joining BNL in 1987, she now has 23 years of combined experience as a health educator, adjunct instructor, personal trainer, coach, and as a softball, soccer, and volleyball official. She is a long-time active member of the BNL co-ed softball league and her other interests include mountain biking, hiking, camping, weight training, racquetball, bowling and skiing.

"I hope that my diverse skills and experience in evaluating physical recreational safety can be a resource for the BERA Board," says Giambalvo. "If I am elected, I would be happy to contribute my positive attitude, knowledge and organizational skills to support all the BERA clubs and encourage participation."

Benny Hooda



Benny Hooda, a project engineer with the Environmental & Waste Management Services Division, came to BNL in 2000. He is a member of BERA's Asian American Pacific Association and Indo-American Association and participates in many other BERA club activities such as yoga, ping-pong, golf, and Toastmasters.

According to Hooda, "BERA activities, whether they are social or recreational, provide a great opportunity for BNL employees and their families to improve their quality of life, stay fit, and interact with co-workers beyond the office environment. This usually translates into improved cooperation and better communication during work. BERA activities give people an opportunity to understand other points of view in a relaxed setting, which again reduces barriers between people with different attitudes or cultures."

If elected to the Board, Hooda says, "I will strive to convince people to participate in BERA activities of their interest and to stay healthy through exercise."

Jody Mitchell



Jody Mitchell is a contract specialist in BNL's Procurement & Property Management Division who joined BNL in 2001. Since her arrival, she has been an avid and enthusiastic member of the BERA Bodybuilding Club. "I enjoy the way BERA offers each employee a unique opportunity to share and explore common interests with co-workers from all levels of the workforce," she says. "BERA is a valuable source of social, cultural and recreational enrichment, which can enhance the work experience for all employees, visitors and guests of the Lab."

If elected to the BERA Board, Mitchell will strive to increase BERA's visibility and encourage others to avail themselves of the many opportunities BERA has to offer. "I would also hope to utilize my 13 years of combined private industry and BNL expertise to help BERA clubs to obtain goods and services at the best quality and lowest possible prices," she says.

Asian Pacific American Association News

May is National Asian Pacific American Heritage month. However, due to the many workshops and meetings held at Berkner Hall throughout May, the BERA Asian Pacific American Association (APAA) will spread their heritage celebrations over April and May. These events will include:

- **Month-long poster display**, Berkner Hall lobby
- **Monday, April 11, noon-1 p.m.**, Hamilton Seminar Room, Bldg. 555. All are welcome to a talk and book signing by Claude Anshin Thomas, a decorated Vietnam combat soldier, Zen monk, and international peace activist who is the author of *At Hell's Gate: A Soldier's Journey from War to Peace*. This free talk is open to the public. Visitors of age 16 and over must carry a photo ID. Thomas will also speak at the Stony Brook University Wang Center, 7 p.m.



Brooklyn Botanical Garden Bus Trip, 4/30

- **Saturday, April 30, 8 a.m. - 5 p.m.** Bus Trip to the Japanese Cherry Blossom Festival at the Brooklyn Botanical Garden to celebrate "Sakura Matsuri," a range of performances and demonstrations celebrating Japanese culture. Garden admission is free. Purchase bus tickets at \$10 each at the BERA Store, Ext. 3347.
- **Saturday, May 7, 6:30-9 p.m.** Berkner Hall. Local Long Island studios and several on-site BERA organizations will perform in a "Martial Arts Expo" that will include art forms such as Kung Fu, Tai-Chi, Jiu Jitsu, Karate, Tae Kwon Do, Kendo, and Ai-ke-do. Tickets are \$10/adult, \$5/children 12 years and under, at the BERA Store, Ext. 3347, or from Beth Lin, Ext. 3372, Susan Eng Wong, Ext. 7988, or Marie Van Buren, Ext. 4727.
- Date to be announced: Tinikling Bamboo Dance, Philippines.

Women's History Month Event at BNL, 3/31

March celebrates National Women's History Month. This year's theme is "Women Change America." A Women's History Month display is in Berkner Hall lobby during March, celebrating the role of women in transforming culture, history and politics in the U.S.

Thursday, March 31, Noon-1 p.m. Berkner Hall Auditorium. Kathy Martinez, a disability management consultant who has been blind from birth, will talk on how leading-edge corporations successfully accommodate customers with disabilities and give case histories of her work in this field.

For more information, call Sol Rosario, Ext. 6253.

Coming Up: Recital, 4/13; Lecture, 4/18

A **BSA Noon Recital** is scheduled for Wednesday, April 13, when David Lawton, Music Director of the Stony Brook Opera will present staged scenes from opera favorites, including Benjamin Britten's *The Turn of the Screw*.

James Barber, Ernst Chain Professor of Biochemistry at Imperial College, London, will give a **BSA Distinguished Lecture** in Berkner Hall on Monday, April 18, on how photosynthesis might provide a key to future energy needs.

All are welcome to attend these free public events. Visitors to the Lab of 16 and older must carry a photo ID.

One-on-One Retirement Counseling

A TIAA-CREF consultant will visit BNL on Monday, April 4; Thursday, April 7; Thursday, April 14; and Tuesday, April 19; to answer employees' questions about financial matters such as understanding the importance of protecting assets against inflation, finding the right funding allocation mix, learning about TIAA-CREF retirement income flexibility, and comparing lifetime income vs. cash withdrawal options. For an appointment, call Kathy Murphy, 866-842-2053, Ext. 4625 (not the on-site Ext. 4625).

Calendar

Monday, 3/28 (cont.)

IBEW Meeting

6 p.m., Centereach Knights of Columbus Hall, 41 Horseblock Rd., Centereach. A meeting for shift workers will be held at 3 p.m. in the Union Office. The agenda includes regular business, committee reports, and the president's report.

Tuesday, 3/29

Advanced Vacuum Technology Seminar

Free. 8:30 a.m.-12:30 p.m., Brookhaven Center, South Room, sponsored by Varian Vacuum Technologies. This seminar is for anyone with a basic understanding of vacuum technology who is interested in learning more about the detailed concepts of vacuum systems. Continental breakfast and lunch will be provided. Register in advance by contacting Jim Primm, jim.primm@varianinc.com, 516-795-3320.

Exphil Calibration Labs Tech Demo

Berkner Hall, 10 a.m.-2 p.m. Exphil Calibration Labs will host a new technology product show. Representatives from Tektronix and Rohde & Schwarz will be available to answer questions. Products from Fluke, Instek, AEMC and others will also be available. For more information, call 563-3520.

Thursday, 3/31

Women's History Month Event

Noon, Berkner Hall. Kathy Martinez will talk on corporations who accommodate customers with disabilities. See notice at left.

Friday, 4/1

*Jack's Waterfall in Concert

8 p.m. Berkner Hall. Jack's Waterfall band, with Leslie Mendelson to open the show, will play blues, pop, jazz, folk and gospel music. See notice, page 4. Buy ticket in advance at the BERA Store in Berkner Hall at \$10 or for \$15 at the door.

— WEEK OF 4/4 —

Tuesday, 4/5

Radisson Hotel Demo

10:15 a.m.-2 p.m., Berkner Hall. Radisson Hotel of Holtsville will offer BNL travelers with a special rate of \$105, which includes complimentary high speed internet access and hot buffet breakfast. For more information, call Nick Wilson, 961-8292.

Thursday, 4/7

Cycletrons Motorcycle Club Meeting

5 p.m., Brookhaven Center. BNL's Motorcycle Club meets on the first Thursday of each month. All are welcome. For more information, contact Frank Dusek, Ext. 2022, dusek@bnl.gov.

Friday, 4/8

*BREA Talk on Retirement Investment

11 a.m., Berkner Hall. Sponsored by the Brookhaven Retired Employees Association (BREA), BNL retiree Frank Federman will speak on "Investment Strategies During Retirement." All are welcome. See also page 4.

— WEEK OF 4/11 —

Monday, 4/11

Research Library Open House

Mon.-Fri., 4/11-15. Celebrate National Library all this week at the Research Library Open House. Library orientation, database demos and training. All are welcome.

Asian Pacific American Heritage Event

Noon-1 p.m. Hamilton Seminar Room, Bldg. 555. Claude Anshin, peace activist, gives talk, signs his books. See notice, left.

Wednesday, 4/13

*BSA Noon Recital, Opera Scenes

Noon, Berkner Hall. Opera scenes from Benjamin Britten's *The Turn of the Screw* will be staged by David Lawton, Music Director of the Stony Brook Opera. All are welcome.

— WEEK OF 4/18 —

Monday, 4/18

*BSA Distinguished Lecture

4 p.m. Berkner Hall. James Barber, Imperial College, London, U.K., will talk about "The Structure and Function of Photosystem II."

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.

2004 Environmental Stewardship Awards Wanted: Nominees

As part of BNL's commitment to environmental stewardship, three BNL employees who have demonstrated an outstanding effort in pollution prevention, waste minimization, or resource conservation will be chosen to win the 2004 Environmental Stewardship Award. Awards will be presented at the upcoming Annual Earth Day Ceremony to be held on April 22.

If you believe that you or someone you know should be recognized for their environmental stewardship efforts, forward the following information to Karen Ratel, Bldg. 120, by April 15:

- Your name, extension, division, and bldg. number
- Nominee name, extension, division, and bldg. number
- A brief overview of employee contribution with any supporting documentation.

For more information, contact Ratel, Ext. 3711 or ratel@bnl.gov.

Jack's Waterfall in Concert, 4/1 Leslie Mendelson Opens Show

Jack's Waterfall, a local band that plays a mixture of blues, pop, jazz, folk, gospel and global music, will appear in concert at Berkner Hall on Friday, April 1, at 8 p.m. Singer/songwriter Leslie Mendelson, who blends R&B with country, folk, and soul music, will open the show. Sponsored by the BNL Music Club, the concert is open to the public. All visitors to the Lab age 16 and over must bring a photo ID.

Jack's Waterfall has appeared at the B.B. King Blues Festival, the New Jersey Folk Festival and the Riverhead Blues Festival. Lictra has toured the U.S. as a member of the Kerry Kearney Band, opening for such acts as the Allman Brothers and the Dickie Betts Band. The current edition of Jack's Waterfall includes Lictra on keyboards, Joe Lostritto on guitars, Jerry McDonald on upright bass, Fred Golik on drums, and Cindy Lopez on backing vocals.

A native Long Islander and a one-time member of the R&B ensemble Mother Freedom, Leslie Mendelson now, as a Manhattan resident, plays the city scene singing about everyday life. A prolific songwriter who gains inspiration from the Greenwich Village Songwriter Exchange, Mendelson regularly performs her playful compositions on guitar and piano.

Tickets for the concert cost \$10 each in advance and \$15 each at the door on the day of the show. They may be purchased at the BERA Sales Office, weekdays, 9 a.m.-3 p.m., cash or check only, or via credit card through Ticketweb.com.

Brookhaven Retired Employees Association (BREA) News Talk on Retirement Investment Strategies, 4/8

BNL retiree Frank Federman, a Brookhaven Retired Employees Association (BREA) member and a registered financial advisor, will speak on "Investment Strategies During Retirement" at Berkner Hall on Friday, April 8, at 11 a.m. All are welcome to attend.

Federman notes that "Retirement for many people marks the end of a journey; I will discuss the financial journey beyond the point of retirement. This discussion will focus on the retiree's new goals and the choices available to enable their realization."

Help Others at Response Hotline: Train, 4/5

Response of Suffolk County, Inc. is a non-profit organization that offers a 24-hour crisis intervention/suicide prevention hotline. Several BNLers and retirees volunteer with Response, and more volunteers are needed.

"Be there for someone who needs a caring voice, and meet some terrific people," say those who already give their time for this cause.

The next training session starts on Tuesday, April 5, 6:30 - 9:30 p.m. at Temple Isaiah, 1404 Stony Brook Road, Stony Brook. For more information, call Response (631) 751-7500.



This notice is sponsored by the Lab's Volunteers in Partnership (VIP) program. BNLers who volunteer at a service agency or promote community interests and think that others at the Lab might join in their efforts may contact Barbara Blenn, VIP Coordinator, Ext. 4486, to discuss specific needs.

Upton Nursery School Celebrates 40 Years of Helping Children Shine

Parents of children of three- to five years old — you are invited to visit the Upton Nursery School on Open House days: April 5, 12, and 19, from 9 to 11:30 a.m. at the Recreation Building in the apartment area.

The school offers:

- certified and caring teachers
- Social and language development
- Academic readiness
- Multinational student body



Classes are forming now for the fall, Pre-K (three- to five-year olds). Two- and three-day morning schedules are available. Drop in to visit or call 727-8082 for information.

Easter Egg Hunt, 3/26

All children are invited to the Hospitality Committee's annual Easter Egg Hunt on Saturday, March 26, at 11 a.m. in the Recreation Bldg. Children should bring 15 plastic eggs filled with soft candy or small toys, and their own Easter basket. Parents are asked to bring a healthy snack to share. For more information, contact Cindy Ottemann, 849-2646.



FreshDirect Service Discontinued at BNL

FreshDirect, the grocery order and delivery service that has delivered on site, has been discontinued at BNL. FreshDirect's current delivery service to over 4,000 customers in New York City is going to expand to other boroughs. As a result, FreshDirect can no longer provide a delivery truck for the Lab's 25-35 weekly customers.

BERA representatives regret any inconvenience that this may cause and asks that any FreshDirect posters that may be hanging in Lab buildings be removed as soon as possible.

On-Site Service Station Tip of the Month

The new, mandatory New York State motor vehicle inspection (OBD II) that was implemented this month is performed by computer. If you have a 1996 or newer vehicle and would like to know more about this procedure, then stop by the on-site service station and pick up descriptive literature or go to the Office of Transportation and Air Quality website at www.epa.gov/otaq/obd.htm. Vehicles from 1995 or earlier will continue to be inspected on the dynamometer.

Classified Advertisements

Placement Notices

The Lab's placement policy is to select the best-qualified candidate for an available position. Candidates are considered in the following order: (1) present employees within the department/division and/or appropriate bargaining unit, with preference for those within the immediate work group; (2) present employees within the Laboratory; and (3) outside applicants. In keeping with the Affirmative Action Plan, selections are made without regard to age, race, color, religion, national origin, sex, disability or veteran status. Each week, the Human Resources Division lists new placement notices, first, so employees may request consideration for themselves, and, second, for open recruitment. Because of the priority policy stated above, each listing does not necessarily represent an opportunity for all people. Except when operational needs require otherwise, positions will be open for one week after publication. For more information, contact the Employment Manager, Ext. 2882; call the JOBLINE, Ext. 7744 (344-7744), for a list of all job openings; use a TDD system to access job information by calling (631) 344-6018; or access current job openings on the World Wide Web at www.bnl.gov/HR/jobs/default.htm.

The Deputy Director has exempted the following position from the hiring freeze.

LABORATORY RECRUITMENT - Opportunities for Laboratory Employees

NS4118. SR. BUDGET SPECIALIST (A-8) - Requires a bachelor's degree in accounting, business administration, or equivalent, and extensive pertinent experience. Extensive experience should include financial performance and analysis, accounting procedures and policies, coordination of program funding, budget and proposal preparation and financial reporting for DOE and WFO funding. Excellent written and oral communication skills, proficiency in Excel and PeopleSoft Financials, Personnel Forecasting, Queries and Reports required. Must be able to prioritize work and respond to tight deadlines in a fast-paced environment. Will be required to exercise a very high degree of initiative and judgment, and review and coordinate budgetary matters with Department/Division heads. Responsibilities will include the overall financial performance of the Environmental Sciences Department within the

EENS Directorate. Will be responsible for developing and reviewing data to establish budgets and standard rates for the EENS directorate. Will prepare and interpret departmental and project budgets and related financial reports. Will assist in the overall planning, evaluation, and recommendation to improve budget procedures and practices. Will assist in the overall management of administrative business activities in support of DOE and Work for Others Programs. Energy, Environment and National Security Directorate/Business Operations Office.

Motor Vehicles & Supplies

04 TOYOTA COROLLA - 4-cyl., a/t, p/s, 4-dr, a/c, am/fm, cass., cd, excel., warr., 7000 mi. \$13,000/neg. Yury, Ext. 3272 or 744-5762.

04 YAMAHA V-STAR 1100 - new cond., windshield, saddle bags. 4000 mi. \$6,500/neg. Joe, Ext. 2868.

00 STARCRAFT VENTURE 2107 - pop-up trailer, sleeps 6, furnace, 3-way fridge, awning, more, \$4,400. Gary, Ext. 5355.

98 SUBARU LEG - Blue, excel. cond., maint. recs. economic car, runs like new. 50K mi. \$6,235. Mike, 516-983-6874.

98 OLDSMOBILE CUTLASS - new transmission & radiator, good condition. 97K mi. \$2,900/neg. 428-7958.

97 BMW 328i - Excel., lthr, am/fm cd, 6-cyl, a/t, c/c, 4-dr, new tires. Must sell. 120K mi. \$6,700/neg. Luis, Ext. 2078 or 607-432-4449.

97 NISSAN QUEST - Mini van. Very good condition, reliable, recent major tune-up. 127K mi. \$2,900. Bob, 486-2772.

97 FORD MUSTANG - a/t, V6, convt, p/seat, p/w/p/m, p/l, a/c, am/fm/cass, alloy, new tires, full maint. 89K mi. \$3,200/neg. Ext. 3280.

96 JEEP ORVIS - 4-wd, new brakes & rotors, new front drive axles, recently tuned & serviced. 88K mi. \$7,000. Ext. 7647.

96 CHEVROLET TAHOE - 4-wd, all pwr., tow pkg., elec. brake, CD, p/seats, new tires. 96K mi. \$7,500. Carl, Ext. 3084 or 369-3730.

95 NISSAN PATHFINDER - 6-cyl, a/t, new tranny. 130K mi. \$4,000/neg. Alan, 474-9428.

94 NISSAN MAXIMA - 6-cyl., auto, loaded, new tires, struts, CV shafts. 134K mi. \$2,800/neg. Ken, Ext. 4514 or 289-8212.

94 GMC SIERRA 1500 SLE - V6, 4.3L, 2wd, a/t, a/c, p/w, p/l, am/fm/cass., fg cap, bd lnr, kayak rack, hitch. 216K mi. \$3,600/neg. 662-2239.

94 FORD EDDIE BAUER - p/l, p/s, p/w, tilt wheel, ABS, c/c, running brds., excel. cond., runs like new. 5.8L. \$3,860. 516-983-6874.

94 VIKING DELUXE 270 - pop-up trailer. Tandem axle, rfrg., htr., awng., battery, 2Q beds, slps. 6, dlr. maint., \$3100/obo. Ext. 2228.

89 LINCOLN TOWN CAR - 8-cyl, 4dr, all pw, am/fm cd awia, runs well. 150K mi. \$650/neg. Daniel, Ext. 3172.

88 VOLVO 240DL - a/t, a/c, p/l, Alpine am/fm/cd, very reliable & in excel. cond. for its age, must sell, make offer. John, Ext. 3505.

Boats & Marine Supplies

23' PEARSON 23 - '79, 4 ft. draft, well maint., equipped, info at: <http://pearsoninfo.net/23/23.htm>. \$4,700/neg. John, Ext. 2788.

15' BOSTON WHALER - '78, 30 hp Yamaha outboard, 1992, low hrs., trailer, 1992, new cond., full canvas, \$4,000. James, 286-3962.

Miscellaneous

HARLEY DAVIDSON JACKET - Women's size L, very nice cond., reinforced elbows, slightly fitted. Paid \$350, ask \$100. 834-4728.

Furnishings & Appliances

ANTIQUE STOVE - Gas cooking Glenwood model. Excel. cond., currently in use. E-mail pic. avail. \$1500/obo. Donna, Ext. 2826.

BED - Captain's platform twin bed w/drawer below, mattress, oak workbench, good cond. \$100 neg. Ext. 3822 or 929-6527.

BED - 3 months old, full size w/box springs & frame, non-smoker. Paid \$450, sell for \$300. Must sell by 3/31. 831-8036.

HUTCH - JC Penney, mission, oak, glass drs./shlvs., 3 dwr/2 cab base, lighted, vg cond., pic. avail. \$400/neg. Ext. 5090 or 821-2558.

DINING TABLE - Solid oak dining table, 2 leaves, 4 upholstered arm chairs, table protector pads, \$500. Thomas, 909-1498.

FUTON - \$75, baby crib, \$50, 5 pc q-bdrm. set, landscaping & dump truck equip., 2 hospital beds, make offer. 375-2980.

LOVE SEAT - beige leather; wall unit 7'L x 7'H; beveled mirror, fits 38" TV, excel cond., \$2,000/all. 836-0770.

PIANO - Baldwin Acrosonic, console, fair cond., excel. student model. \$950 neg. Henry, Ext. 3413.

REFRIGERATOR - GE 11.7 cu. ft., used for 6 mo. Adj. shelves, temp. contr., top-freezer. Ask \$350. Craig, Ext. 4154 or 764-3353.

SOFA - love seat, 7' long wall unit, beveled mirror fits 36" TV. 836-0770.

WALL UNIT/ENTERTAINMENT CENTER - Bleached Oak. 2 pc. unit. 70W/80H/20D. New, \$2,400. Ask \$650. Ian, Ext. 7589.

WOOD CHAIRS - Four solid wood chairs from Vermont. Need refinishing. \$30. John, Ext. 4028.

Audio, Video & Computer

CASIO CZ-1000 - Prof. synthzr. keybrd., \$130; zip dr., \$15; pro recdg. gear, \$55; synthzr, Korg M3R, \$100. Maxim, Ext. 3621.

G3 PWR MAC, SCANNER - Apple 17" disp, 384 MB, 6GB HD, e'net, SCSI, Microtek X6 sonr., more, \$300/obo. Ext. 4575 or 987-4511.

STEREO - Fisher 100W rack system. Amplifier, cassette deck, AM/FM tuner, turntable. 2lg. floor speakers. \$150/obo. Jim, Ext. 6222.

YAMAHA AN1X - Virt. analog synthzr. keybrd., in box, manuals, \$390. Maxim, Ext. 3621.

Sports, Hobbies & Pets

BUTTONS - Matching buttons, different colors, shapes and sizes in small packages. Approx 15 bags, \$5. Barbara, Ext. 3431.

CANON EOS ELAN II FILM SLR - Body w/ strap, cap, manual. Almost new cond. \$175. Micheal, Ext. 4575 or 987-4511.

CROSSBOW EXERCISER - Like-new condition, 400 lbs of powerods, ready to go. Bowflex look alike, \$350. Ken, Ext. 3124.

GYM - Gold's universal, Comp. Series, multi statns., \$300; ProForm 740CS trdmill., all digital, \$200. Richard, Ext. 4241 or 874-3822.

Wanted

CHILD CARE - Seeking a care giver for new born around end of May this year. Must speak Chinese. YingXia or ChengPu, 689-0360.

HOUSE FURNITURE - needed for new home for mentally handicapped people. Will pick up. George, Ext. 3868/5214.

RV RENTAL - 7/2 to 7/9 family camping trip to Hither Hills, for use by tent-hating mom & young daughter. Call with offer. 874-2183.

TURNTABLE - In good working condition for teenager who wants to listen to his parents' record albums. Nancy, Ext. 7996.

For Rent

CENTER MORICHES - 1-bdrm apt., full bath, eik, sep. building, and parking. \$750/mo. George, 325-2549.

EAST PATCHOGUE - 3-bdrm. house, 2 bath, kit., d/r, l/r, cac, finished bsmt., gar., deck, like new, avail. immed., util. extra. \$2,200/mo. 475-2068.

HICKSVILLE - new kitchen and baths, 4 bedrooms, extras. No pets/smoking. Rent + util. and security. \$2,200/mo. 516-938-8344.

MANORVILLE - pvt. studio on 3 quiet acres, includes utilities & satellite TV, pvt. ent., 5 min to BNL. \$765/mo. Ext. 3005.

MEDFORD - 1 bdrm. apt. - l/r, eik, tile bath, sep. ent., no smoking/pets. 1 mo. sec. 15 min to BNL. \$800/mo. incl. all util. Betty, Ext. 3562 or 758-2653.

RIDGE - mint, 2 bdrms, l/r, eik, 1st fl, a/c, 3 miles north of BNL. No smokers/pets, w/utilities. \$1,275/mo./neg. 678-6456.

SHOREHAM - new 1 bdrm. bsmt. apt., furn., new appl., l/r, d/r, bath, priv. ent. dr/way pkg. No pets/smkg. 1 mo sec + 1 mo rent. Util incl. \$1,100/mo. Judy, Ext. 5263 or 744-2545.

SOUND BEACH - Cute & cozy 1 bdrm house for rent. New paint & carpets. Pets okay. 15 min to Lab. \$1,125/mo. John, Ext. 4028.

ALEXANDRIA, NH - Newfound Lake view from all rooms. priv. beach w/swim raft + pool, tennis, etc. Sleeps 6, pics. avail. Wkly. rental. \$1,000/wk. Ed., Ext. 4188 or 806-3598.

MYRTLE BEACH, SC - 2-bdrm. (4 beds), 2.5-bath Townhouse on golf course in Little River, SC, community pool. \$491-\$813/week or \$700-\$1,200/mo. Chris, 472-4994.

VICTORIA-BY-THE-SEA, CANADA - spacious 4-bdrm. historic farmhouse in Prince Edward Island village. Ctr. location, sleeps 8. \$1,200/wk. Joe, Ext. 2912 or 765-4397.

Free

COUCH - Castro convertible, queen-sized. Good cond. Gold color. John 475-5543.

Community Involvement

BIG BROTHERS/SISTERS - Big Brothers/Big Sisters is looking for male volunteers, especially on the south shore. 516-731-7880. Celeste, Ext. 2551.

In Appreciation

I send a special thanks to my friends for a great retirement party and gifts. I will miss you all. Thank you so very much.

— Jay Bartolomy

Farewell

Doan Hansen passed away suddenly on March 12 from a heart attack. For sympathy card and donation information, contact Carrie Sauter, sauter@bnl.gov.