

At NSLS beamline X14A are: (from left) Jianming Bai, Jason Graetz, Jiajun Chen, and Haiyan Chen.

BNL Researchers Debut New Glass Reactor to Study Battery Materials Synthesis

Path to defect-free lithium iron phosphate will improve performance

A team of Brookhaven researchers has fabricated a new transparent chemical reactor vessel that may give scientists in many fields a window into real-time chemistry. Scientists in the Lab's Energy Storage Group recently used the transparent reactor to study the synthesis of lithium iron phosphate for rechargeable batteries. The technique, described in a paper published online in the *Journal of Physical Chemistry Letters* in July, allowed them to monitor the reactions in real time and pinpoint the conditions for producing a defect-free material. The work was funded through BNL's Laboratory Directed Research and Development (LDRD) program.

Eliminating defects from materials used in lithium ion batteries is essential to making

them attractive for applications such as electric vehicles capable of driving hundreds of miles on a single charge. They are already favored compared to other rechargeables for portable electronics because they are lightweight, can store more energy for longer periods of time, and can handle more cycles of use and recharge without deteriorating.

A stumbling block for their use in larger applications like electric vehicles has been cost. A big part of that cost comes from processing the lithium iron phosphate material to produce a suitable, defect-free material using the conventional synthesis method.

"We wanted to identify the mildest conditions necessary to make defect-free lithium iron..."

See *Battery Materials* on p.3

COMING SOON ON SITE: Interdisciplinary Science Building

Amid the staccato drumming of hammers and rumbling bass of heavy machinery, the Interdisciplinary Science Building (ISB) continues to come together at the intersection of Brookhaven Avenue and Rochester Street.

The 87,701 square-foot ISB will house the movers and shakers of BNL's energy research scene. There, scientists will use cutting-edge tools and cross-disciplinary approaches in the ISB's state-of-the-art laboratories to work toward solving the nation's energy challenges — all in an environmentally sustainable building to boot.

The Lab's Modernization Project Office managed design of the ISB facility and is overseeing its construction. The building was designed by HDR Architecture, Inc., and is being built by general contractor E.W. Howell. Funding for the facility came from the DOE Office of Science.

"The project is moving along smoothly and safely, with construction about 40 percent complete," said ISB Project Manager Peggy Caradonna. "We have an exceptional partnership between our contractor, E.W. Howell, and our Lab safety and construction-oversight staff. We have made substantial progress to date and now our focus is to continue this momentum and make the structure weather-tight before the winter," she said.

More than simply a structural hub for energy research, the ISB will be home to two major new additions for BNL's research capabilities.

BNL's First Dry Room

One of the major additions at



Peggy Caradonna, project manager for the Interdisciplinary Science Building, and Alan Raphael, construction manager, in front of the future facility

the ISB is BNL's first dry room — an environment with very low and controllable humidity — essential for handling lithium safely and developing next generation energy storage materials.

"Lithium and many of the lithium-containing compounds in battery electrodes and electrolytes are extremely reactive and caustic. They react when exposed to water," explained Jason Graetz, Sustainable Energy Technologies Department. (See also story on Graetz's work at left.)

"In addition, water vapor in the air facilitates reactions among lithium and other atmospheric gasses such as nitrogen, oxygen, and carbon dioxide," Graetz said. "So the best way to ensure safe handling of lithium is to minimize the exposure to water vapor."

The new, large dry room will provide battery fabrication and

test facilities that will not only offer a greater breadth of access for researchers, but most importantly, make the most efficient use of valuable instrument time at the National Synchrotron Light Source (NSLS) and the Center for Functional Nanomaterials (CFN). With the advent of NSLS-II, BNL will likely be a prime focus of the energy-storage user community for bright source characterization. The ISB will provide the support structure necessary to make the most out of this new national resource.

The Ultra-low Vibration Laboratories

The second unique element in the new facility is two ultra-low vibration laboratories, each designed to house powerful spectroscopic imaging scanning tunneling microscopes (SI-STM).

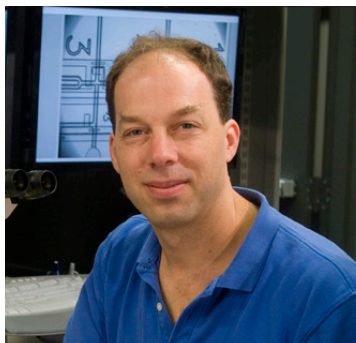
See *ISB Update* on p.3

BSA Distinguished Lecture, 11/30

Stephen Quake on 'Precision Measurements in Biology'

Stephen Quake, Professor of Bioengineering, Physics & Applied Physics at Stanford University, will give a BSA Distinguished Lecture titled "Precision Measurements in Biology" in Berkner Hall on Wednesday, November 30, at 4 p.m. BSA Distinguished Lectures are sponsored by Brookhaven Science Associates, the company that manages Brookhaven Lab, to present topics of general interest to the Laboratory community and the public. The lecture is free, and no preregistration is required. All visitors to the Laboratory age 16 and older must bring a photo ID.

In his lecture, Quake will argue that both physics and biology can be tied together by the use and consequences of precision measurement. The



elementary quanta of biology are the macromolecule and the cell. He will describe how precision measurements have been used to explore the basic properties of these quanta, and more generally, how the quest for higher precision almost inevitably leads to the development of new technologies, which in turn catalyze further

scientific discovery. According to Quake, there are no experimental barriers to biology becoming a truly quantitative and mathematical science.

From Galileo's time to the present, physicists have measured fundamental phenomena with increasing precision, and in the process, have discovered more and more about the way the physical world works. Quake approaches biology in the same way, and his precision measurements have enabled him and his team to develop two groundbreaking technologies — the biological equivalent of an integrated circuit, called microfluidic large scale integration, and ultra-high throughput DNA sequencing technology.

See *BSA Lecture* on p.2



Assistant Laboratory Director for Facilities & Operations Lanny Bates welcomes attendees from the International Facility Management Association and U.S. Green Building Council.

International Facility Management Association, U.S. Green Building Council Members Tour BNL

Sure, many of the buildings on site are less exciting than the spectacular science happening inside, but as 100 facility managers and other professionals from the tri-state area found last month, some buildings here are fantastic facilities.

On October 6, Brookhaven's Facilities & Operations Directorate (F&O) hosted the monthly meetings for two major organizations — the International Facility Management Association (IFMA) and U.S. Green Building Council (USGBC).

IFMA is the world's largest international association for

professional facility managers, with more than 20,000 members in 78 countries. IFMA certifies facility managers, conducts research, and provides educational programs for facility professionals. The Laboratory's facility complex managers under its Integrated Facility Management program (IFM) — a Blueprint initiative — are members and certified facility managers through the IFMA.

The USGBC is a nonprofit organization that recognizes energy-saving buildings through its Leadership in Energy and Environmental Design...

See *IFMA/USGBC* on p.2



LIVE UNITED, GIVE UNITED

BNL's United Way Campaign has begun. See p.4 and next week's Monday Memo for details.

BSA Lecture from p. 1

Quake's development of the "microfluidic chip" allowed scientists to conduct research on the unusual physics of fluids in small volumes, paving the way for new discoveries in pharmaceuticals, prenatal testing, and other genetic applications. Quake's DNA sequencing technology, which has been commercially developed, made it possible to demonstrate the first single-molecule DNA sequencing. In 2009, Quake used his own technology to sequence his genome, becoming the eighth person in the world to have his entire genome sequenced, and the first to use his own technology to do so.

Stephen Quake earned a B.S. in physics and an M.S. in mathematics, both in 1991 from Stanford University, and he received a Ph.D. in physics from Oxford University in 1994. He then returned to Stanford as a postdoctoral fellow in physics, advised by Steven Chu, who is currently the DOE Secretary. In 1996, he joined the California Institute of Technology as an assistant professor of applied physics, and he worked his way through the ranks to become Thomas E. and Doris Everhart Professor of Applied Physics and Physics in 2004. In 2006, he joined the Stanford faculty, and in 2008, he rose to his current position as Lee Otterson Professor of Bioengineering and Applied Physics and investigator at Howard Hughes Medical Institute.

A fellow of the American Physical Society and the American Institute for Medical & Biological Engineering, Quake has received many awards, including The American Physical Society's Apker Award in 1991, a National Science Foundation "Career" Award in 1997, the National Institutes of Health Director's Pioneer Award in 2004, the Royal Society of Chemistry Publishing Pioneer of Miniaturization Prize in 2010, and the Raymond and Beverly Sackler International Prize in Biophysics in 2011.

In 2002, Quake was named one of the "100 Young Innovators Who Will Create the Future" by the Massachusetts Institute of Technology's *Technology Review* and by *Forbes* magazine as one of "15 People Who Will Reinvent the Future." Also, *Popular Science* magazine chose Quake as one of the "Brilliant 10" in 2003, and he was named among the "Power 100" Most Powerful Men" in 2010 by *Men's Health* magazine in the United Kingdom.

— Diane Greenberg

Arrivals & Departures

— Arrivals —

Stephen Antonelli Photon Scis
Nicholas Brown ..Nuc Scis & Tech
Patrick Bynum C-AD
Guangwei Che Physics
Eric McAlvin.....ITD
Amy Provenzano F&O
Harry Themann Physics
Holger Witte..... Physics

— Departures —

Avraham Dilmanian Medical
Pankaj SinhaChemistry
Betsy Schwartz.....ITD
Grejory Zahra..... Medical

Buy Early! Science-Based Gifts
For Sale on Site, 12/2, 9, & 16

On three consecutive Fridays, December 2, 9, and 16, from noon to 2 p.m. come to do your holiday shopping at the Science Learning Center (formerly known as the Science Museum), Bldg. 935. You'll find unique gifts and fun toys for all ages.

In Memoriam: Norman Ramsey

Nobel Prize winner Norman Ramsey, a founder of BNL and the first Chair of the Physics Department, died at the age of 96 on Friday, November 4.

"At Brookhaven, we have a special regard for Norman Ramsey," said Doon Gibbs, Deputy Lab Director for Science & Technology. "In 1945, I.I. Rabi of Columbia University and Ramsey formulated the idea for a national laboratory in the East, and Ramsey headed the site selection committee. As BNL's first Physics chair in January 1947 he had a staff of four — now expanded to about 400. He left for Harvard in October 1947, remaining a friend of the Lab, visiting and giving talks as recently as 2001. We shall miss him."

Ramsey earned a Ph.D. from Columbia University in 1940 and a D.Sc. from Cambridge University in 1964. During World War II, he was associated with the Massachusetts Institute of Technology Radiation Laboratory, where his work on radar earned him the Presidential Order of Merit, and with Los Alamos Scientific Laboratory. As an associate professor at Columbia from 1942 to 1947, he worked with Physics Chair Rabi, 1944 Nobel Laureate in Physics.

As Ramsey recounted in a 1966 Brookhaven Lecture that he gave on how the Lab was started, the discussions that culminated in Brookhaven Lab managed by several universities known as Associated Universities, Inc. (AUI) arose between himself and Rabi in late 1945.



9-945-87

Ramsey not only chaired the sub-committee on site selection, but also, with help from his wife, chose the name of Brookhaven Laboratory, hoping to evoke a pastoral setting to attract new recruits. He included the word "National," he said, to increase the sense of Federal participation and thus improve relations with the Federal Government. The name of Brookhaven National Laboratory was formally announced through a press release on September 28, 1946.

During 1947, when Ramsey chaired BNL Physics, he also began his long association with Harvard University, where he invented a technique to measure the frequencies of electromagnetic radiation most readily absorbed by atoms and molecules, work that led to the development of the atomic clock, and later, to the Nobel Prize. Until 1967, he spent several summers doing research at BNL. For example, he conducted an experiment in 1966 to estimate the

electric dipole moment of the neutron, with a view to exploring weak interactions. Ramsey served as an AUI Trustee from 1951 to 1954. He also became a founding Trustee of Universities Research Association (URA), which oversaw Fermi National Accelerator Laboratory, serving as URA President 1966-80.

In 1989, Ramsey was one of three physicists to win the Nobel Prize in Physics for contributions to the development of atomic precision spectroscopy. Specifically, he won one half of the prize, for his invention of the separated oscillatory fields method and its use in the hydrogen maser and other atomic clocks. Among his many other honors were the E.O. Lawrence Award from DOE in 1960, the Davisson-Germer Prize of the American Physical Society in 1974, and the IEEE Medal of Honor in 1984.

Ramsey officially retired from Harvard in 1986, but continued his work through his early 90s. In September 1987, he gave another of his witty and informative Brookhaven Lectures on the early history of the Lab, and he returned on July 26, 2001, to talk on "My Many Memories of Maurice," at the BNL celebration of the 90th birthday of eminent physicist Maurice Goldhaber, the late former BNL Director.

Norman Ramsey is survived by his wife Ellie, four daughters, two stepchildren, eight grandchildren, and nine great-grandchildren. — Liz Seubert



11-576-75

BNL Past...Still Present
BNLers' Art & Crafts Show, 11/21-23

Way back when in 1975, the BNL Art Show was already a well-known yearly event, and many art works by various employees were stacked up ready for hanging in the annual show in Berkner Hall, Room B. Among them was a sculpture in wood (see photo above) by Anne Meinhold, wife of retiree Charlie Meinhold, who is still a familiar face at the Lab.

Skip 36 years to Monday, November 21, when the Employee Art & Crafts Show sponsored by the Art Society, Camera Club, and Crafts Club will open in Berkner Hall, Room B. Three beautiful examples of sculpture in wood by Anne Meinhold will be on view, along with many other



Joseph Rubino 02341111

creations by BNL employees and their families. Paintings, photographs, woodwork, pottery, jewelry, sketches — see it all, 11:45 a.m. to 1:30 p.m., Monday through Wednesday, November 21-23. On Monday



Joseph Rubino 02341111

Above: "I've got a secret," by Anne Meinhold; both at left: "Untitled"

evening, 5-6:30 p.m., all are cordially invited to the opening reception, where refreshments will be served. Come, drink a toast to these artistically talented exhibitors! — Liz Seubert

IFMA/USGBC from p. 1

...(LEED) certification system. Several of the new buildings on site, including the Center for Functional Nanomaterials (CFN), Research Support Building, and the future Interdisciplinary Science Building (ISB) and National Synchrotron Light Source II (NSLS-II) are, or will be, LEED certified.

"These events are excellent opportunities for F&O staff to meet with their counterpart professionals in industry and elsewhere to discuss best practices in facility management and environmental sustainability," said Assistant Lab Director for F&O Lanny Bates. "By sharing our challenges and experiences, we can learn a lot from each other. That will help us improve F&O services here at Brookhaven.

"The facilities at
BNL are world
class and a great
environmental
success story
right here in our
backyard."

— John Maiolo

IFMA Long Island Program Chair

As the event began, Bates and Facility Complex Manager Leo Somma welcomed the attendees. F&O staff and attendees networked in Berkner Hall lobby discussing major projects on site, including ISB and NSLS-II construction. Participants were then shuttled to tour NSLS-II and the CFN — both of which adhere to LEED green building specifications. Marty Fallier, Photon Sciences Facilities Division Manager, gave tours of NSLS-II, and Mike Schaeffer, Manager of the Modernization Project Office, gave tours of the CFN.

"When facility managers talk shop, there are a lot of important, common elements to discuss — from healthy workstation guidelines to electrical safety, emergency access systems, and sustainable practices," said Facility Complex Manager Tom Roza, who helped organize the event.

"What an awesome tour and knowledgeable facility managers! I've been hearing from our attendees," said John Maiolo, IFMA Long Island Program Chair. "The facilities at BNL are world class and a great environmental success story right here in our backyard."

"The research at BNL is mind-boggling and inspiring. I felt a surge of pride seeing and hearing of the work being done," said Vince Capogna, Executive Director of the U.S. Green Building Council Long Island Chapter, after the event. "As well as the many comments praising the knowledge of the presenters, the most common chord heard was how passionate about their work every BNL employee was," he said.

A common chord overheard among attendees was eagerness to return and learn more about BNL — at open house events such as Summer Sundays, and to see the ISB and the NSLS-II after they are completed. — Joe Gettler

Defensive Driving Course: Two Parts, 12/1 & 8

The next six-hour Defensive Driving (Point & Insurance Reduction) course will be held in two parts on consecutive Thursdays, December 1 and 8, in the Brookhaven Center South Room,

6 to 9:15 p.m. The course is open to BNL, BSA and DOE employees, BNL facility-users, contractors and other guests, and their family members. The cost is \$33 per person. Preregistration

is required. To register, call Ed Sierra, 821-1013, and leave a message. Or take a New York DMV approved course (Use code: "SAVE10" for \$10 discount) online: www.lidrivesafe.com.

BNL Commemorates Veterans' Day

Despite the steady rain last Thursday, the BNL community gathered with members of the Brookhaven Veterans Association (BVA) and the BNL Laboratory Protection Division by the flagpole at the Brookhaven Center for a ceremony honoring all veterans.

Scott Bradley, Commander of the BVA, opened the ceremony. After the recitation of the Pledge of Allegiance, Shirley Kendall of the Lab's Diversity Office and International Services Office gave a short talk. Kendall is a retired Lieutenant Colonel of the Air National Guard.

"Thank you for coming out to honor our veterans," said Kendall. "I think standing in inclement weather for a few minutes is the least we can do to honor those who have served our country and protected our freedom. If you have the opportunity today, please take the time to stop and thank a veteran."



Diversity Office Manager Shirley Kendall and Fire Chief Charles LaSalla

The memorial wreath was placed under the flagpole by Kendall and BNL Fire Chief Charles LaSalla. The ceremony concluded with a rendition of *Taps* and a moment of silence.

BNL veterans interested in

joining the Brookhaven Veterans Association should contact Scott Bradley, Ext. 5745, bradley@bnl.gov; or see the BVA homepage at <http://www.bnl.gov/bera/activities/va/>.

— Jane Koropsak

BNL Scientists Help Siemens Competition Regional Winners

Alexandra McHale, a senior at Smithtown High School East, and Ariella and Eliana Applebaum, twin sisters who are juniors at Ma'ayanot Yeshiva High School for Girls in Teaneck, New Jersey, credit BNL with providing them with the crucial expertise and facilities needed to become regional winners in the 2011-2012 Siemens Competition in Math, Science & Technology.

One of 96 regional finalists chosen from 2,436 students, McHale won \$1,000 for her

project, titled "Element Analysis of Zea Mays var. Rugosa (Sweet Corn) Plant and its Soil Using X-ray Spectroscopy." She competes in the next level of the competition on November 18-19 at Carnegie Mellon University. At the suggestion of her science teacher, Maria Zeitlin Trinkle, McHale applied for a mentor through BNL's High School Research Program, administered by BNL's Office of Educational Programs (OEP). Scott Bronson of OEP placed her in the program,

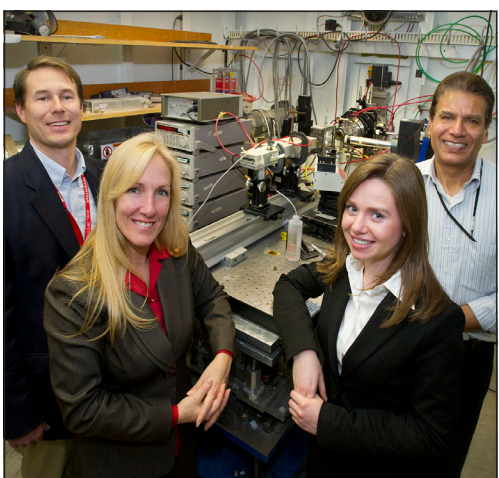
in which she worked this summer on her Siemens project at the National Synchrotron Light Source (NSLS) mentored by Syed Khalid, a scientist in Photon Sciences.

Ariella and Eliana Applebaum were among the 317 semifinalists in the competition. Their project is titled "Grow Your Own Power: Microalgae Biodiesel as a Renewable Energy Source and a Replacement in Residential Heating Oil." With technical help from Tom Butcher, head of BNL's Energy Resources Division, John Shanklin; Biology Department, and Chris Brown in Butcher's group, they also completed their project.

— Diane Greenberg

For much more on this story, and see a video: www.bnl.gov/today/story.asp?ITEM_NO=2703.

At National Synchrotron Light Source beamline X19A where she conducted research for her prize-winning project are: Siemens finalist Alexandra McHale (front right); her science research teacher, Maria Zeitlin Trinkle, Smithtown High School East; Scott Bronson, BNL educational programs administrator (back, left); and her mentor, Syed Khalid, a BNL biophysicist in Photon Sciences.



Roger Stoulenburgh 00021111



Eliana (left) and Ariella Applebaum

Battery Materials from p. 1

...phosphate," said Jason Graetz, leader of the Energy Storage Group, Sustainable Energy Technologies Department (SET).

"Generally we make battery materials in a stainless steel reactor. There's no window, no way to see the reaction — we just see what goes in and what comes out. So we designed a reactor made out of a glass capillary and, using synchrotron x-ray diffraction, we can not only probe the precursors — the initial parts of the reaction — but we can also track what happens as the reaction takes place."

The scientists started with a slurry of both solid and liquid precursors, placed them in the glass capillary reaction vessel, and placed the whole setup in beamline X14A at the National Synchrotron Light Source (NSLS), a source of extremely bright x-rays and other forms of light for probing materials' structure and properties. NSLS researchers Haiyan Chen and Jianming Bai helped to fabricate the novel reactor. As the x-rays pass through the transparent

reaction vessel, they bounce off, or get diffracted by, the atoms in the reactor, producing a pattern that reveals the atomic structure of the various materials in the reactor and how they change as the reaction takes place.

"Because we're getting the diffraction pattern, we can learn something about the structure," Graetz said. "By analyzing these diffraction patterns, we can also learn about the defect concentration in the material and can track the defects in real time as a function of temperature or time in the reaction."

By doing a series of experiments at different temperatures and different lengths of time, the scientists can identify where the defects are and where they start to disappear, allowing them to pinpoint the lowest temperature and the simplest reaction to produce a defect-free material.

"This method has proven to be a cost-effective and industrial viable method for manufacturing battery materials," said Jiajun Chen of SET, lead (corresponding) author on the paper. "We're trying to find the

relationship between the synthesis conditions — pressure, temperature, time, concentration of solution — and how that relates to the material morphology, the defect concentration, and the structure. Establishing those relationships can often take a very long time. But with this type of technique we can establish those very quickly."

By identifying the ideal conditions for producing defect-free lithium iron phosphate, this research should eliminate the need for further processing, thus reducing the cost of the most expensive part of lithium-ion batteries.

This battery research is just one example of a problem that can be tackled with the new transparent reactor. Other candidate materials for batteries as well as for other applications can be made and tested more quickly than by conventional methods. When reactions can be observed in real time, researchers can save both time and money while developing needed 21st century technologies in energy and other important fields. — Kay Cordtz

Michael Marx Tribute

A memorial tribute to physicist Michael Marx, Stony Brook University's (SBU) former Associate Vice President for BNL Affairs, will be held at 3 p.m. on Monday, November 21, in the Charles B. Wang Center Theater, SBU, with a reception to follow. All are welcome. (Parking map: www.bnl.gov/today/story.asp?ITEM_NO=2714).

United Way Volunteer Days Program Begins

Many BNLers volunteer in their communities in a variety of ways, as blood donors, firefighters, scout leaders, and more. In addition, during the United Way Campaign, numerous employees volunteer their time to ensure the fundraising events are successful, encapsulating the theme of "Live United - Give United."

BSA will donate \$20 to BNL's United Way Campaign for each hour an employee volunteers between October 1 and December 31 through the Volunteer Days Program. Last year, 275 BNL volunteers worked 1,377 hours to meet the Lab's goal.

To encourage participation in the program, BNLers may submit a one-time request to their supervisor for an hour's worktime off to perform volunteer work. A minimum of two hours is necessary: one work hour and at least one hour from your own time. Personal volunteer hours are not limited. BSA will contribute up to \$10,000 for this year's campaign.

To keep track of volunteer hours, fill out and submit a volunteer work receipt form, found online at <http://intranet.bnl.gov/unitedway/VolunteerProgram.asp>.

For more information, contact Volunteer Days Program Coordinator Rosa Palmore, Ext. 2703 or palmore@bnl.gov.

ISB Update from p. 1

...These laboratories are structurally decoupled from the rest of the ISB building structure and built 30 feet below ground to minimize vibration and ensure that nothing disturbs the ultrasensitive microscopes.

"These microscopes can visualize the movement of the electrons through a material, allowing researchers to study the fundamental electronic structure of a sample at the atomic level," said J.C. Seamus Davis, a physicist at Cornell University and Director of the Center for Emergent Superconductivity in BNL's energy programs.

"BNL currently has one SI-STM in operation in Building 480 mainly to study high-temperature superconductivity," Davis explained. "The new 'MIRAGE' SI-STM under development for the Interdisciplinary Science Building will be connected to a system that allows us to grow single crystals for study in a vacuum. The samples will be directly transported into the microscope without breaking the vacuum seal — a unique feature of this new lab. Further shielded within the lab by sound-proof and radio noise-proof double enclosures, the new microscopes are expected to yield key new insights into artificially created electronic matter."

Smart, Sustainable Design

Sustainable design has also been an important focus for the ISB, says Project Manager Caradonna, and the building is on target

CALENDAR

— WEEK OF 11/21 —

Monday, 11/21

*BNL Art & Crafts Show
11:45 a.m.-1:30 p.m.; 5-6:60 p.m. Berkner, Room B. See p.4.

Thursday, 11/24

Thanksgiving Holiday, Lab Closed
Happy Thanksgiving!

Friday, 11/25

Lab Holiday
No Bulletin this week.

— WEEK OF 11/28 —

Monday, 11/28

Talk: Veterans Benefits & Advocacy
Noon. Berkner Hall, Room B. Suffolk County Veterans Services Agency member talks on "Update on Veterans Benefits & Advocacy." All the Lab community is welcome.

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.

Wednesday, 11/30

*BSA Distinguished Lecture

4 p.m. Berkner Hall. Stephen Quake, Stanford University, on "Precision Measurements in Biology." Free, open to public. Visitors of 16 and older must carry photo ID. See story, p.1.

Friday, 12/2

Concert: Songs of 50s -60s

5-7:30 p.m. Featuring Tommy Sullivan of original Brooklyn Bridge group. \$5 ticket proceeds for the United Way. See p.4.

— WEEK OF 12/5 —

Monday, 12/5

1-1-1 Fundraiser for Homeless Vets

11 a.m.-2 p.m. Bring \$1, one can of food, and one piece of gently used clothing for men, to benefit the Suffolk County Homeless Vets Shelters. Thanks.

to be certified LEED (Leadership in Energy and Environmental Design) Gold by the U.S. Green Building Council. Heat recovery systems, use of low-water-flow toilets and faucets, and high-efficiency fume hoods with sensors and automatic sash closers are some of the ISB features that will be considered in achieving LEED certification and reducing overall energy consumption. If successful, the ISB will be BNL's first building to earn LEED Gold certification.

What's Next?

After approximately 7,000 cubic yards of concrete have been poured since work began at the ISB construction site in September 2010, E.W. Howell is on track to begin installing structural steel. This part of the project will conclude when the final piece of the structural steel framework for the third-floor mechanical penthouse is set in place. After that, work will shift from assembling the facility's structural framework to building the roof and facades to create a weather-tight structure. Work on the interior of the building also continues to progress rapidly with mechanical, electrical, and plumbing systems under way.

Construction of the ISB is currently on schedule with beneficial occupancy, which is the time when researchers can begin moving in and setting up, planned for October 2012.

— Kenrick Vezina & Joe Gettler



Brookhaven Lab's Campaign Has Begun

Goal for 2011: \$145k or more

"Live United — Give United," is the theme of this year's BNL United Way Fund Drive, which is chaired by Chief Human Resource Officer Bob Lincoln, with Liz Gilbert and Starr Munson, both of the Human Resources & Occupational Medicine Division, as Co-chairs. The goal for this year is to raise over \$145,000.

Look for a message about Brookhaven's 2011 United Way Campaign from Lincoln in the upcoming Monday Memo, November 21. Also, more information is available at: <http://intranet.bnl.gov/unitedway/>.

Some ways in which BNLers can contribute to the total fund are:

Pledge Forms: Donations can be taken directly from employees' paychecks, either spread out through the year or made in a one-time donation — your choice. Last year, about 10 percent of the Lab made a donation through their paychecks. This year, the Campaign Chair and Co-chairs hope very much that at least 15 percent of BNLers will give to the United Way cause by paycheck, which is convenient both for the donors and for the agencies being supported by the United Way. You can choose which agency or cause will receive your gift, and 88 cents in each dollar goes straight to the people needing help.

Songs of the 50s-60s! 12/2: Open to public. See ad at right.

Pet Photo Contest: \$5 per entry, for the United Way! Send your best photo of your pet, with your name, extension, and pet's name to nlosinno@bnl.gov. Send the \$5 entry fee, made out to United Way of Long Island, to Gail O'Hern, Bldg. 400B, by December 1. For prints, bring or send the photo (with your name, extension, pet's name on the back) to O'Hern to have it scanned. The winner will be declared on December 9, and all entries will be displayed in a slide show.

Holiday Auction, Yard Sale, Shoe Boutique, 12/7 & 8: Come to Berkner Hall lobby on Wednesday and Thursday, December 7 and 8, between 11 a.m. and 2 p.m. to win holiday baskets of all kinds, and to find amazing bargains in a magnificent yard sale and a shoe boutique.

To Yard Sale Donors: Last year we sold tools, toys, sporting equipment, holiday items, car accessories, electronics, DVDs, collectibles, dishes, and more — anything that you consider has resale value. No books or magazines. Contact Jason Remien, Ext. 3477, remien@bnl.gov; or Bob Lee, Ext. 3148, blee@bnl.gov.

To Shoe-a-holics: If you have new or slightly worn shoes that you would like to donate to the boutique, please contact Adirenne Jerry, Ext. 7525 or ajerry@bnl.gov.

For more information and to keep up with new fundraising efforts in the departments and divisions, see <http://intranet.bnl.gov/unitedway/>.

Classified Advertisements

Current job openings and a statement of job placement policy at BNL are available on the homepage at www.bnl.gov/HR/careers/. To apply for a position, go to www.bnl.gov and select "Search Job List." For more information, call Ext. 2882.

Motor Vehicles & Supplies

07 VOLKSWAGEN GTI — 48.8K mi. 4/dr, blk, great cond, fully loaded, new tires, clear title. \$14,500. Pat, 922-1664.

06 CHEVY COBALT LT — 107K mi. 2.2l eng, a/t, abs, am/fm/cd, p/s, p/l, p/w, a/c, 4dr, new tires, \$6,500 neg. 495-5770.

05 CADILLAC CTS — 94K mi. blk w/blk int, a/t, V6, rem start, never been smkd in or had pets, like new. \$8,900 neg. 767-5205.

02 BUICK LESABRE CUSTOM — 94K mi. V6, a/t, a/c, c/c, p/l, p/w, am/fm/cd, ABS, fwd, new tires, leather, \$3,900. 816-0723.

01 CHEVY IMPALA LS — 117K mi. 60k on new motor w/new brakes/tires, really nice! \$3,650. Charlie, 331-6651.

01 HONDA ACCORD EX V6 — 112K mi. a/t, 4 whl disk brakes, ABS, TC, leather, dual p/s, 6CD, s/roof. \$5,400 neg. aabeykoon@bnl.gov.

99 FORD EXPLORER — 83K mi. 4 dr, 4 wheel dr, great shape. \$4,000. 331-6651.

95 BUICK LESABRE — 91K mi. grt cond, new parts, struts, water pump, eng mounts, \$3,750 neg. Ext. 3932, wilke@bnl.gov.

88 CHEVY K5 BLAZER — 146K mi. 350TBI new tranny, fr/r rear brks & top end, runs well, 33" m. thompsons. \$1,350 neg. 484-9888.

CHROME RIMS — 20" universal w/gd tires, gd cond/\$575 neg. 445-4027.

TOOL BOX — Weather Guard Steel Tool Box for truck bed, black, used, pd/\$700, ask/\$300/neg, pics avail. Caitlin, Ext. 7432.

Tools, House & Garden

MITER SAW — 7 1/4" Craftsman compound w/laser guide, in perf shape, v/light alum constr, great for trim molding, used only on 1/project, \$50. shrey@bnl.gov.

Free

KING SIZE POWER RECLINING BED — w/ massage, sep controls for ea side, firm mattresses, u-pic-up, E.Setauket. Razvan, Ext. 5806 or popescu@bnl.gov.

SHORTHAIK CAT — Well behaved Adult Cat needs a home, she prefers to stay inside, fixed, see picture at "http://tinyurl.com/c7mebo6". Warren, Ext. 2080 or wejappe@gmail.com.

Furnishings & Appliances

BEDS & MORE — 2/twin, 6/drawer high-boy, nite stand, clean matt, excel cond, \$500; l/r, end tables/\$55/ea. 928-5185.

DINING ROOM — extra lg w/china cabinet, 2/leaves, cust. table pads, opens/109", 2 arm chrs, 6 side chrs, cbinet w/glass upper/lighting, \$2k. May split up. 767-5205.

FREEZER — Imperial Heavy Duty Commercial, 20.8 cu ft, excel cond/\$1000. 678-3299 or dgbDoug@gmail.com.

KITCHEN CART W/BUTCHER BLOCK — folding island rectangle cart w/parquet top, oak, 5 sq ft of working space, 36" h x 34" w, folded 5-1/2" w, 2/shelves, \$60. Ext. 8772.

KITCHEN TABLE SET — IKEA table w/h 4 chairs, 2 yrs new, pics avail, \$45. yuliducn@gmail.com.

KITCHEN TABLE SET — goldish color w/ glass table top and 4 high chairs/\$125, in great cond, moving, must sell. 445-4027.

MAHOGANY POOL TABLE — beautiful 8" w/leather pockets, w/wall rack/2 bar chairs w/arms/bar table, orig/5k, sacrifice/\$1900, may split up set. 767-5205.

MEDICAL EQUIPMENT — Clinitek Status@ Analyzer, new cond, Urinalysis machine to detect early stages of many disease states, eg diabetes, \$400. Nina, Ext. 5894.

MEDICAL EXAM TABLES — Midmark Rittler 204 high-end, new cond, pics avail, \$1075/ea or 3/\$3150 C:240-350-0174, drcjharrischin@gmail.com.

RUG — 8'x10' rug, greens, burgundy, beige color scheme, rug only 9 mos old, mint cond, orig/\$500, ask/\$250. 721-8440.

SHADOWBOX — 16 compartments for collectibles, 2 dr light wood, 17"x 17" x 3"d, \$20. Kathy, 821-2586.

SOFA — brown leather, good cond, 86 inches, seats 3, photo avail, u pick up, \$50. Diane, Ext. 2347 or greenb@bnl.gov.

Audio, Video & Computers

2 TVS — 19" tube TVs w/internal DVD player, excel cond, have controls, \$25. Mary, Ext. 3927 or maryc@bnl.gov.

SUBWOOFER/AMP/SPEAKERS — Sony 1000W Xplod 12" Sub Woofer in box, 1600 Watt 2 Chnrl Mosfet Pyle Gear Amp & 2 Pyramid 600W Speakers. \$300. 375-6991.

TVs — 36" Magnavox/\$35; 26" esa/\$25; 15" Sharp/\$20. Lynda, Ext. 7235, 949-4292 or fitz@bnl.gov.

Sports, Hobbies & Pets

FISH TANK — 55 gal w/oak cabinet stand/\$125, pics avail. Caitlin, Ext. 7432.

MINI STEPPER — Sportline walk/run, counts steps & strides, auto scanning resistance levels, LCD display, hydraulic cylinders, new in box, \$30. 821-2586.

Community Involvement

HELLO DOLLY! MUSICAL SHOW — Annual show at Riverhead High School to benefit scholarships for seniors. Nov. 18 & 19, 8 p.m. Glenn's 19th show in a row. Call for advance sale tickets. Glenn Abramowitz, 344-7477.

Happenings

HOLIDAY RECESSION PARTY, DEC 9 — Join us @ The Flaming Hearth, 756 Horseblock Rd, Farmingville, 6 p.m.; DJ, appetizers, cash bar, 50/50 raffle, door prizes, \$10 in adv, \$15 at door. Kevin Hester, 796-9166; Charles Gardner, 219-2884.

SHEN YUN PERFORMING ARTS — Reviving 5,000 Years of Civilization, Experience world's premier classical Chinese dance and music January 11-15, Lincoln Center, shenyunperformingarts.org. George, Ext. 4033.

Miscellaneous

CAMERA — Antique 100yr old, No.2 Folding Pocket Brownie Model A, v/gd, \$25. Robert, Ext. 4637.

Concert to Benefit the United Way



Songs of the 50's-60's

From The Beatles to Sinatra and more!

**Featuring
Tommy Sullivan**

*Founding member of the
original group Brooklyn Bridge
and Long Island Music Hall of Famer*



**Friday, December 2, 2011
5 – 7:30 PM (doors open at 4:45)
Berkner Hall**

Wear Some Blue Suede Shoes and Do the Twist

Prizes awarded for best 1950s/1960s costumes, and the best dancing

\$5 per ticket

All proceeds from tickets and 50% of food and drink sales will go to BNL's 2011 United Way Campaign.

This event is open to the Lab community, family, and friends!
All visitors age 16 and older must bring photo ID.

Tickets are available through the United Way Campaign Captain for your department/division: <http://intranet.bnl.gov/unitedway/captains.asp>.

DEPT 56 DICKENS VILLAGE, HO TRAINS — more than 65 major houses, many accessories, also Ho Train sets; reasonable prices, 871-3533.

FUNDRAISER — Pampered Chef Cookbooks, Only \$10/ea, 7 to choose from, great grab bag, teacher, or host gifts! \$2.50 from ea book will be donated to The United Way. Dawn, Ext. 2463 or schick@bnl.gov.

SAT & COLL GUIDE BOOKS — SAT 11 Practice Tests 2011; Barrons Profiles of Amer Colls; College Prowler The Big Book of Colls 2010, half off orig price. 516-241-4598.

SCIENCE/MATH REVIEW BOOKS — Barrons Review: Earth Science, Integrated Algebra; cliff Notes: Earth Science, HS English: Barrons Julius Caesar, SparkNotes: The Good Earth, half off orig price. 516-241-4598.

Wanted

ADOPT-A-PLATOON — Monetary donations gratefully accepted towards mailing shipments to our platoon stationed overseas and to send goodie packages to BNL family members. Also, please give peanut butter & jelly in plastic jars, cup-a-soups, candy. Bldg. 400 lobby, & elsewhere. Thank you. Joanne, Ext. 8481.

BNL FAMILY MEMBERS IN MILITARY — If you have a family member that has been deployed overseas, please contact Adopt-a-Platoon so we may send them a goodie package. Joanne, Ext. 8481.

CHILD/PET GATE — free, for a new puppy. Maria, Ext. 4961.

HISPANIC BONE MARROW DONORS — looking for Cuban or Puerto Rican potential donors for NYPD officer diag w/ lymphoma post 9-11; mouth-swab kits are mailed in, call for more info. Nancy, Ext. 4567.

HUMIDIFIERS — rm or home sized. Richard, Ext. 7443 or porqueddu@bnl.gov.

LAWN MAINTENANCE — reg scheduled yrd care needed, reasonable prices please, maryc@bnl.gov. Mary, Ext. 3927.

WEIGHT EQUIPMENT — used, free weights, bench, squat rack/cage, must be sturdy. Steve, steve191418@gmail.com.

For Rent

CENTEREACH — 2nd flr apt, share w/2 other female phd students from SBU, female preferred, utils not incld. \$550/mo. Rita Sung, itsung@ic.sunysb.edu.

E. PATCHOGUE — 1 bdrm apt, on 1st flr, l/rm/kit combo suitable for 1 person, util, cable/int incl, 15 min from Lab, 1 mo sec, no smkg/pets. \$950/mo. Carol, 286-2210.

E. PATCHOGUE — New one bedroom apt. great area, suit for one, ceramic tile, new appliances, OSE, great closets. Available now. includes all. \$1,100/mo. 312-4982.

MIDDLE ISLAND — lg 1-bdrm bsmt apt, pvt ent, phone, cable/int/strictly no smkg/pet, quiet, all incl, nr Lab, BNL employee/student only, 1 mo sec. \$850/mo. 672-2451.

MIDDLE ISLAND — co-op, oversized br w/ wic, balcony, new cac, igp/tennis courts. \$1,100/mo. 516-297-1588.

RIDGE — 1br, full bath, kitchenette, l/r, sep entrance/parking, no smoking/pets in apt. includes all, minutes fr lab. \$975/mo. Lynne, 924-0002.

ROCKY POINT — 2 bdrm ranch, full kit, 1 ba, partial storage bsmt, lg outdr storage shed, 1/mo sec/1 mo rent deposits, avail 12/1. \$1,325/mo. 516-443-3857.

SHOREHAM — Nr beach, lg 1 bdrm w/office area, ktch/lr combo, lg closets, pvt ent, drway prkg, incld cac, heat, elect, cable tv, int, mins to Lab. \$900/mo. 849-6121.

SHOREHAM — share house w/professional. Lge, furnishd bdrm, cable TV, intnet, no smkg/pets, 8 mi to Lab, \$625/mo. 744-3543 or gg19582003@gmail.com.

YAPHANK — fully furn spacious studio apt for one, hi spd int/all utils incl, quiet area, 5 min to BNL, no smkg/pets. \$850/mo. Irene, 516-205-6712.

For Sale

MANORVILLE — Condo/Twnhouse 55+ community, 2 bdrms, 2.5 ba, den, eik, skylights, patio, bsmt, a/c, low HOA fee, \$249,900 neg. Linda, 801-2168.

MIDDLE ISLAND — Co-op just reduced, oversized b/r w/wic, balcony, new cac, igp/tennis courts, or rent/\$1100/mo. \$79,990. 516-297-1588.

ROCKY PT — Grand Colonial in The Tides, 3,100+ sq ft, 4 beds, cust kit w/granite, bridal staircase, gunite pool, pond w/waterfall, beach rights, huge gar. \$439,000. Ext. 5894.

SHOREHAM — 3 bdr, 1 1/2 ba Colon cul de sac, updated kit & ba, den w/ fireplace, basement, wood shed, deck, SWR schools. \$359,000. Andrea, Ext. 3347.

In Appreciation

Thank you everyone for all of your thoughts, prayers, and support during the loss of my sister Susan. It made a tough time a little easier. Thank you.
— Dan Galligan and family