

Joseph Wall (left) and Yimei Zhu

Roger Stoutenburg DT500909

Simultaneous Nanoscale Imaging of Surface And Bulk Atoms at CFN

Scientists at BNL, in collaboration with researchers from Hitachi High Technologies Corp., have

This new microscope could revolutionize imaging, improve catalysts for energy applications

demonstrated a new scanning electron microscope capable of selectively imaging single atoms on the top surface of a specimen while a second, simultaneous imaging signal shows atoms throughout the sample's depth. This new tool, located at Brookhaven Lab's Center for Functional Nanomaterials (CFN), will greatly expand scientists' ability to understand and ultimately control chemical reactions, such as those of catalysts in energy-conversion devices.

A paper describing the work was published online September 20, 2009, in *Nature Materials*, along with a commentary article highlighting the development. This research was funded by the Office of Basic Energy Sciences within the DOE Office of Science.

"Our knowledge of the role of individual atoms in nanotechnology and energy-related research is strongly influenced by our ability to visualize them, not only in bulk but also on the surface, which is where the interactions of chemical reactions take place," said the lead author of the paper, Yimei Zhu of the Condensed Matter Physics & Materials Science Department. "This new microscope and the method we developed allow us, for the first time, to directly look at atoms on the top surface and in the bulk of a sample simultaneously to reveal their atomic arrangement and bonding states. This information will help us identify the active sites and functions of materials at nanoscale dimensions for a wide range of applications, such as converting waste heat or chemical energy to electricity."

Like all scanning electron microscopes, the new tool probes a sample with an electron beam focused to a tiny spot and detects so-called secondary electrons emitted by the sample to reveal its surface structure and topography. Though this technique has been a workhorse of surface imaging in industrial and academic laboratories for decades, its resolution has left

much to be desired because of imperfect focusing due to lens aberrations.

Using a newly developed spherical aberration corrector, the new tool corrects these distortions to create a smaller probe with significantly increased brightness.

"The effect is similar to using a larger aperture lens on a camera," said Joseph Wall of the Biology Department, a longtime expert in electron microscopy at BNL and a co-author on the paper. "It allows you to gather information from a larger angle and focus on a smaller spot."

The new device also employs specialized electron optics to channel the emitted secondary electrons to the detector. The result is a fourfold improvement in resolution to below one tenth of a nanometer — and thus, the ability to image single atoms.

Additional detectors, located below the sample, detect electrons transmitted through the sample, revealing details about the entire structure at the exact instant the "shutter" snapped to record each pixel of the surface image. This simultaneous imaging allows the scientists to correlate information in the two images to understand precisely what is happening on the surface and throughout the sample at the same time.

"Having information about the surface structure and the bulk sample at the same time will allow researchers to better determine how the surface and bulk atoms work together, for example in a catalytic reaction," said Zhu. The improved resolution and combined imaging capabilities will also reveal features such as small variations in composition or the locations of impurities that could have large effects on function.

"An essential component of this study was selection of a test specimen, isolated uranium atoms on a thin carbon substrate, where the images could be interpreted quantitatively to rule out other possible interpretations," Wall commented.

See *Microscope* on pg. 2

BNL Patents New Method For Mercury Remediation

Method is 'greener,' less costly, allows mercury to be treated at its original location in the soil

Scientists at BNL have patented a new method to remove toxic mercury from soil, sediment, sludge and other industrial waste. As described in recently awarded U.S. patent number 7,589,248 and application U.S. Publication No. 20080097138, the method allows mercury to be treated *in situ* — at its original location in the ground.

Brookhaven Science Associates, the company that manages and operates BNL for DOE, holds the patent for the mercury-removal technology invented by Brookhaven researchers Paul Kalb and John Heiser, and Mark Fuhrmann, formerly of the Lab.

"When mercury contaminates a large area, it is too expensive to scoop up and transport for remediation," said Kalb, the principal investigator on the project. "This new method that we are now scaling up can remove mercury without excavating and replacing large volumes of toxic soil or other waste material, reducing both cost and environmental impact."

The U.S. Environmental Protection Agency requires that mercury-contaminated waste be treated to either remove or stabilize the toxic metal and prevent it from leaching into soil or groundwater. In cases where large areas are contaminated with levels of mercury that are not extremely high, current mercury-extraction methods are expensive and impractical for removing mercury. In contrast, the new BNL process, called "*In Situ Mercury Stabi-*



Joe Rubino DT240909

The Environmental Sciences Department's John Heiser (left) and Paul Kalb, who hold the *in situ* mercury remediation patent with former Lab employee Mark Fuhrmann (not pictured), check the functioning of the new technology in the laboratory.

lization" (ISMS), can treat and remove mercury contamination from the ground in a cost-effective manner.

In the new process, mercury is drawn to specially designed treatment rods that contain a sulfur-based reagent. When a series of rods is placed in the mercury-contaminated soil or other waste material, the mercury migrates to the rods and reacts with the sulfur reagent to form a mercury sulfide compound. The rod, which contains the stable, insoluble compound, can then be removed for safe

disposal at a hazardous waste facility without having to dig up large volumes of soil or waste material.

"Using x-ray fluorescence, we initially tested samples of mercury-contaminated sand in an area about three inches in diameter before and after exposure to the treatment rod," Kalb said. "After 50 days, the mercury concentration in the sand was 42 times lower than at the start of the test," Kalb said. "We are now in the process of scaling up our tests to cover an area that..."

See *Mercury* on pg. 2

First Structural Steel Erected for NSLS-II

Ten steel columns were incorporated into the ever-growing framework for the National Synchrotron Light Source II (NSLS-II) last week, the first structural steel erected for the future 400,000-square-foot facility.

Weighing between 2,500 and 3,200 pounds and towering 22 to 28 feet, the columns are needed to support the utility and vehicle tunnels, for which concrete already has been poured.

But the bulk of the steel work is yet to come, said Marty Fallier, NSLS-II Division Director for Conventional Facilities. The rest of the steel will start to arrive on site in December, with erection of the ring building structure starting in January. In total, the building will require about 2,500 tons (about 5.5 million pounds) of structural steel, which will take about eight months to install.

These ten columns, however, were meant to be "early risers." Once they are firmly in place,



Alex Reben

they will be encased in concrete and become part of the foundation that will help support the rest of the massive building. The NSLS-II project was able to accelerate construction this year thanks to \$150 million in Recovery Act funding.

The July 24 Bulletin reported on the crews' start on pouring concrete for the base of these steel columns.

To see a video on the steel work, go to www.bnl.gov/today/



Alex Reben

The concrete base for these pillars being poured in July 2009.

[story.asp?ITEM_NO=1417](http://www.bnl.gov/story.asp?ITEM_NO=1417). More about the NSLS-II project is available at www.bnl.gov/nsls2.

— Kendra Snyder

CALENDAR

OF LABORATORY EVENTS

- The BERA Store in Berkner Hall is open weekdays from 9 a.m. to 3 p.m. For more information on BERA events, contact Andrea Dehler, Ext. 3347, or Christine Carter, Ext. 2873.
- Additional information for Hospitality may be found at www.bnl.gov/hospitality/calendar.asp.
- The Recreation Building #317 (Rec. Hall) is located in the apartment area.
- Events flagged with an asterisk (*) have an accompanying story in this week's Bulletin.

— REGULARLY —

Weekdays: Free English for Speakers Of Other Languages Classes

Beginner, Intermed., Adv. classes, various times. All welcome. Learn English, make friends. See <http://www.bnl.gov/esol/schedule.asp> for schedule. Jen Lynch, Ext. 4894

Mondays: BNL Social & Cultural Club
Noon-1 p.m., Brookhaven Center, South Room, free beginners dance lessons. Rudy Alforque, Ext. 4733, alforque@bnl.gov

Mondays & Wednesdays: Pilates
Mondays, 12:15-1:15 p.m. Mondays and Wednesdays, 5:15-6:15 p.m. Rec Hall. Registration is required. Ext. 2873.

Mondays & Thursdays: Kickboxing
\$5 per class. Noon-1 p.m. in the gym. Pay as you go. Ext. 2873.

Mon., Tues., Thurs., & Fri.: Tai Chi
Noon-1 p.m., B'haven Cntr N. Rm. Adam Rusek, Ext. 5830, rusek@bnl.gov

Tuesdays: Zumba
Tuesdays, 12:15-1:15 p.m. Gym. Registration is required. Ext. 2873.

Tuesdays: Knitting Class
2-4 p.m. Rec. Hall. All levels of skill. Ext. 5090 for information.

Tuesdays: Toastmasters
3 monthly meetings: 2nd Tuesday: Noon, Berkner, Rm. D; 1st & 3rd Tuesdays, 5:30 p.m., Bldg. 463, Rm 160. Guests, visitors welcome. <http://www.bnl.gov/bera/activities/toastmasters/>

Tue., Wed., & Thurs.: Rec Hall Activities
5:30-9:30 p.m. General activities, TV, ping pong, chess, games, socializing. Christine Carter, Ext. 5090

Tuesdays & Thursdays: Jiu Jitsu
6:30-7:30 p.m. Tuesdays: Brookhaven Center, Thursdays: Gym. All levels, 6 yrs. to adult. Tom Baldwin, Ext. 4556.

Tuesday & Thursday: Aqua Aerobics
5:30-6:30 p.m., Pool. Registration is required. Ext. 2873

Wednesdays: On-Site Play Group
10 a.m.-noon. Apartment area playground. Infant/toddler drop-in event. Parents meet while children play. Ext. 2873.

Wednesdays: Ballroom Dance Class
Classes at 5:15, 6:15, and 7:15 p.m., based on experience. North Ballroom, B'haven Center. Donna Grabowski, Ext. 2720.

Wednesdays: Yoga
Noon-1 p.m., B'haven Center. Free. Ila Campbell, Ext. 2206, ila@bnl.gov

1st Wednesday of month: LabVIEW
1:30-3 p.m., Bldg. 515, 2nd fl. Seminar Rm. Free technical assistance from LabVIEW consultants. Ext. 5304, or Terry Stratoudakis, (347) 228-7379

Thursdays: BNL Cycletrons Club
Noon-1 p.m., First Thurs. of month. Toni Hoffman, Ext. 5257

Thursdays: Reiki Healing Class
Noon-1 p.m., Call for location. Nicole Bernholz, Ext. 2027

Thursdays: Craft and Cooking Club
2 p.m. Rec Hall. Free. Ext. 2873.

Fridays: BNL Social & Cultural Club
Noon-1 p.m., B'haven Center, S. Room, free beginners dance lessons. 7-11:30 p.m. N. Ballroom, Dance Social, workshops. Rudy Alforque, Ext. 4733, alforque@bnl.gov

Fridays: Family Swim Night
5-8 p.m. BNL Pool. \$5 per family. Ext. 2873.

Fridays: Family Gym Night
5-8 p.m. Family gym activities. Free. Ext. 2873.

Play Volleyball!

For its 2009-2010 season, the BERA Volleyball League resumes play on Monday, October 12. The league offers teams for players of every ability and skill level, so come and join in the fun! All players are invited to get warmed up for the season by playing open volleyball in the gym on Monday and Wednesday nights.



The Environmental Sciences Department's Larry Milian (left) and Paul Kalb examine samples to evaluate the *in situ* mercury stabilization process.

Mercury from pg. 1
...is ten times bigger. We believe we can eventually develop the technology so that one rod may be able to remediate a very large area of mercury contamination."

BNL's Technology Maturation Program and DOE's Office of Science and Technology, as well as its Office of Engineering and Technology

and Office of Biological and Environmental Research, funded the development of the ISMS method.

For information about licensing the technology, contact Dorene Price of BNL's Office of Intellectual Property and Sponsored Research at 631 344-4153, or price@bnl.gov.

— Diane Greenberg

Microscope from pg. 1

Because of its extreme sensitivity, the new microscope must be kept isolated from a range of environmental effects such as variations in temperature, mechanical vibrations, and electromagnetic fields. Even the slightest waft of air could cause distortions in the images.

Fortunately the CFN was built with these needs in mind. Temperatures are regulated to within three-hundredths of a degree Fahrenheit over a 24-

hour period; shock-absorber-like slabs isolate the room from the rumble of passing trucks and distant slamming doors; layers of heavy doors keep even subtle vibrations out; and air-cooling panels replace typical ceiling vents to eliminate airflow.

"The building is really a mechanical-engineering masterpiece," said Zhu. "This microscope wouldn't work at all without these sophisticated systems."

— Karen McNulty Walsh

Second Therapist for Physical Therapy

In October, a new physical therapist assistant will join the staff at the Occupational Medicine Clinic (OMC) to provide physical therapy services for lab employees. Employees with a prescription from their doctors for physical therapy services may call Ext. 3328 and make an appointment. In addition, a Biodex Isokinetic dynamometer will be installed, which is an advanced tool used to rehab and strengthen patients with many conditions that affect the musculoskeletal system. For more information on rehab system at http://www.biodex.com/rehab/system4/system4_feat.htm.

FEW Participants Enjoy Many Options

Every year, Shirley Kendall, manager of the Lab's Diversity Office, solicits a volunteer to coordinate the BNL participants who attend the Federally Employed Women's (FEW) training program. FEW is a membership organization that works toward advancing women in government by encouraging diversity, communication, leadership, career development, teamwork, and personal goals and achievement.

"Every year someone eagerly volunteers to be the BNL-FEW Coordinator," said Kendall. "This year, Susan Wong of the Information Technology Division accepted the responsibility and she did a great job. Without volunteers like Susan and the support of Lab management, BNLers would miss out on the opportunity to attend this worthwhile conference."

In mid-July, Susan Wong and 16 women from various departments headed for Orlando, Florida, to attend the FEW conference.

"The theme of this year's program was 'Keys to Success,' which I think fit the program perfectly," said Wong. "Training sessions were offered on a multitude of topics, including courses titled, 'Delegation Bootcamp' to



In July, 17 BNL women traveled to Orlando, Florida to attend the annual Federally Employed Women National Training Program. Seated, left, is BNL-FEW coordinator Susan Wong of the Information Technology Division; seated, right, Tracy Blydenburgh, Collider-Accelerator Department (C-AD); standing from left, Michell China, Staff Services; Carol Bell, Radiological Control Division (RP); Linda Sinatra, Fiscal Services Division; Joyce Moore-Harding, RP; Maryann McGrath, Human Resources & Occupational Medicine Division; Vicki Feldman, Laboratory Protection Division; Asma Saeed, NSLS-II, and Kim Hayes, RP. Missing from the photo are: Donna Rubino, Physics Department; Michelle Scaduto, NSLS-II; Letesha Smith, Nonproliferation and National Security Department; Kimberly Wehunt, RP; Nicole Kelly, Energy Sciences & Technology Department; Rosa Palmore, Diversity Office, and Hue-Anh Pham, C-AD.

'PowerPoint Multimedia,' all of which are key factors for professional and personal success. As a bonus, I met women from other departments that I otherwise may not have had the chance to



Meet Frank Dusek, Powerful Blood Donor

Frank Dusek of the Collider-Accelerator Department spends his time at BNL working on unusually large power supplies – the type that power the NASA Space Radiation Laboratory and the STAR and PHENIX detectors at the Relativistic Heavy Ion Collider. But he feels equally powerful to be able to make a difference in someone's life by donating blood.

"I've been donating blood for over 30 years," said Dusek. "I have also donated platelets and bone marrow. I consider it a simple gesture that makes a big difference."

Dusek is a member of the BERA Board and serves on the committee that arranges raffles for employees who donate blood. "Although I believe the blood

drives held at the Lab are quite successful, I think offering a small incentive, like having your name put in to a hat for a raffle, can help. We typically raffle off free BERA merchandise or a BERA-organized trip for the winners."

In addition to his participation on the BERA Board, Dusek is a motorcycle enthusiast and an active member of the Lab's motorcycle club, the Cycletrons.

Dusek said that having his blood pressure checked during routine blood donation also helps him track his own health. And, despite his busy schedule, he always finds time to donate blood. "Besides the difference I think I can make in someone's life, I also enjoy those free jelly beans," he said.

— Jane Koropsak

Please Join Dusek At the Blood Drive Next Week, 9/29

BNL will hold a Blood Drive on Tuesday, September 29, 9:30 a.m. – 3 p.m. in the Brookhaven Center. Donors must be 16 to 75 years of age, in good health and weighing over 110 lbs. Restrictions may apply to some from the UK and Europe. Donors must have a photo ID and know their social security number.

To make an appointment, log on to the Human Resources webpage, click on "Blood Drive," then "Schedule an Appointment." Or, call Liz Gilbert, Ext. 2315.

Cashier Hours, 9/28

The Cashier will open 9 a.m to 12:30 p.m. on Monday, 9/28, and resume 9:30 to 11:30 a.m. service on 9/29.

"I was happy to learn that in addition to the many courses offered on business, there were also courses that were empowering on a personal level — courses that could help you improve your life as a woman both inside and outside of the workplace."

Asma Saeed of NSLS-II agreed. "The list of training sessions offered is extensive, and the program was very personally satisfying for me. It was a good learning experience traveling and meeting women from all across the United States. I attended several classes, but my favorite was the class on communication. I found it very helpful." said Saeed.

The annual FEW training program registers over 2,000 participants every year. Next year the meeting will be held in New Orleans, Louisiana. Wong notes that early registration is important so you can select the classes most important to you. "Above all, I am grateful to the Laboratory for supporting our participation at the conference. It feels good knowing that your personal success is important to your employer," she said.

For more information, go to <http://www.few.org/>.

— Jane Koropsak

meet. I found the entire experience motivational."

Michell China of the Staff Services Division said she was pleasantly surprised to read the list of offered training sessions.

Celebrate *Body & Soul* at BNL

Body & Soul will be held during the entire month of October and all BNLeers are invited to participate in a wide range of events and activities intended to expand one's horizon and enrich one's life. Note that the kick-off activity is a fitness walk on Thursday, October 1. See you there!

Body & Soul is sponsored by Brookhaven Science Associates, chaired by Michael Thorn and Jorge Romero through the Human Resources & Occupational Medicine Division.

For more information, go to <http://intranet.bnl.gov/bodysoul/>.

October 1
Fitness Walk
2 miles
Noon – 1 p.m.
Assemble outside Bldg. 438 (Science Education Building).

October 2
Labyrinth Meditation
11 a.m. – 1:30 p.m.
Brookhaven Center

October 7
Yoga, with Ila Campbell
Noon
Brookhaven Center

October 9
Massage Day, 10-minute massage
11 a.m. – 2 p.m.
Berkner B
Pre-registration is required.
Call Michael Thorn, Ext. 8612 for an appointment.

October 13
Open House: Tour the Gym, Pool, Weight Room
11:30 a.m. – 1:30 p.m.

October 14
Peaceful Body, Quiet Mind, feat. Nancy Losinno, EAP Manager
Noon – 1 p.m.
Berkner Hall, Room B

October 14 (cont.)
Table Tennis Tournament
5 p.m.
Bldg. 317

October 15
Reiki
Noon – 1 p.m.
Bldg. 490, Sm. Conference Room

October 16
5k Run
1 p.m.
Meet outside Bldg. 363
Pre-registration is required.

October 19
Using Hypnosis to Relax Your Body and Mind feat. Maria Kerr, Licensed Social Worker and Hypnotherapist
Noon – 1 p.m.
Berkner Hall, pre-registration is required.

October 20
Mountain Bike Ride, 5 or 8 mile routes
Meet at the gazebo by the ball fields, helmets required.

October 21
Yoga, with Ila Campbell
Noon
Brookhaven Center

October 21 (cont.)
Adv. Table Tennis Tournament
5 p.m.
Bldg. 317
Pre-registration is required.

October 22
Body & Soul Screening Day
11 a.m. – 1:30 p.m.
Bldg. 400 Lobby

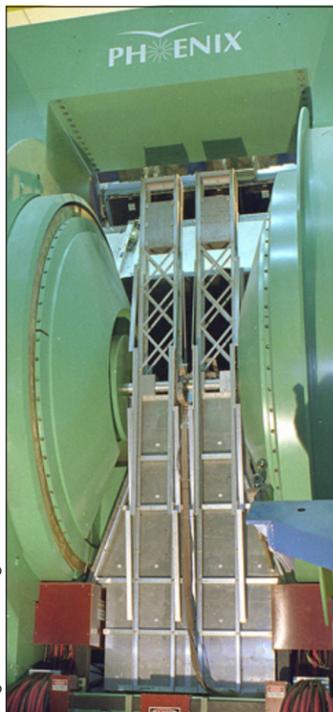
October 26 to October 30
Free Trial BERA Classes
Check <http://www.bnl.gov/bera/recreation/fitness.asp> for dates and times.

October 28
400-yard Swim
11 a.m. – 1:30 p.m.
Bldg. 478

First Women's Table Tennis Tournament
5 p.m.
Bldg. 317
Pre-registration is required

October 30
Biathlon 800-yard Swim
11 a.m. – 1:30 p.m.
Bldg. 478

Pre-register online:
<http://intranet.bnl.gov/bodysoul/>



Roger Stoutenburgh CN12-79-98

Today, 9/25 Lunchtime Tour Of PHENIX

The employee lunchtime tour group will visit the 4,000-ton PHENIX detector at the Relativistic Heavy Ion Collider (RHIC), today, Friday, September 25.

Inside the RHIC ring, two beams of particles are guided by magnets in opposing directions until they collide at predetermined points. PHENIX shows the "inside" of the hot, dense matter formed in the collision.

To learn about PHENIX and how it records the different particles emerging from RHIC collisions, join a group in Berkner Hall lobby at noon to be taken to PHENIX. No reservations are necessary. The group will return to Berkner by 1 p.m.



Joseph Rubino CN10-88-01

Annual Pine Barrens Research Forum To Be Held at BNL Next Week, 10/1-2

The 14th Annual Pine Barrens Research Forum will be held at BNL next week on Thursday and Friday, October 1 and 2. All are welcome to this event, which is sponsored by BNL, the Central Pine Barrens Commission, L.I. Groundwater Research Institute at Stony Brook, and the Foundation for Ecological Research in the Northeast. The seminars on October 1 focus on this year's theme of "Laying a Foundation for Policy Through Research." On the second day, a web conference will be held in which the Central Pine Barrens Commission will connect high school students of the Long Island central pine barrens region with students of the another pine barrens region to discuss similarities and differences of each region. A 2.5-mile hike field trip will follow (10:30 a.m.-1:30 p.m.) of the coastal plain ponds of the Peconic River headwaters, with experts available to identify birds and talk on rare species, and discuss water quality, fire ecology, and wetland management. For more information, see http://pb.state.ny.us/agendas/2009_forum.pdf.

In Memoriam

William Sassano, who joined the Plant Engineering Division on April 6, 1987, as a heavy equipment mechanical operator, and retired on April 18, 1997, died on August 13, 2009. He was 77.

Virginia Sayre, who came to the Lab as a secretary B on June 2, 1952, and retired on March 31, 1981, as a special programs coordinator in the Director's Office, died at age 88 on August 17, 2009. She had worked part-time 1956-61, returning to full-time work in the Director's Office and becoming a special programs assistant in 1962 until her promotion to coordinator in 1970.

Yoshio Shimamoto, who joined the Lab as an associate physicist on September 20, 1954, and retired as a senior physicist on October 31, 1987, died on August 27, 2009. He was 84. He had moved to the then Department of Nuclear Energy in 1955, where he was named physicist with tenure in 1962, and senior physicist in 1964. He served as Department Chair from 1964-68. After his retirement, he continued to serve as a guest senior scientist, 1987-92.

The BERA Store Has Trips in Store!

Buy tickets weekdays, 9 a.m.-3 p.m. at the BERA Store in Berkner Hall.

NASCAR, Dover Internat'l Speedway: Sun., 9/27. \$120 per person includes coach, race, picnic.

Cape Cod: October 2 – 4. Singles: \$406, doubles: \$350 each, triples: \$330 each, quadruples: \$315 each — includes transportation, lodging, and some meals. Contact Ext. 7459, giambalvo@bnl.gov.

Atlantic City: Sat., 10/3. Leave BNL at 9 a.m. and leave casino at 8 p.m. Casino to be announced.

AdoptaPlatoon Book and Bake Sale, 10/1

The Brookhaven Veterans Association's AdoptaPlatoon Committee will hold a book and bake sale in the lobby of Bldg. 400 on Thursday, October 1, 11 a.m.-3 p.m. All items, both books and baked goods, cost only one dollar each. All proceeds will go to support our troops serving in the military.

Volunteer bakers are needed for the fund raiser. Slices of cakes, breads, cup cakes, and small bunches of cookies should be pre-wrapped for the sale. Call Joanne Rula, Ext. 8481, for information and to let her know what you will bake as a contribution.

Presentation Skills Development Workshops For Non-Native English Speakers, 10/28, 10/30

The English for Speakers of Other Languages (ESOL) Program Coordinator is offering a Presentation Practice workshop for non-native English speakers who give scientific presentations. Two workshops will be held, one on Wednesday, October 28, 12:30-1:30 p.m., and the other on Friday, October 30, 12:30-1:30 p.m. Both will be held in Building 400, Conference Room RSB 2 (just behind the Starbucks stand).

Assistance includes working on pronunciation, developing the stress and intonation of English, and preparing the presentation in an audience-friendly way. Participants will have the opportunity to give a speech and get feedback. To register or for more information, contact Jennifer Lynch, ESOL Program Coordinator, jlynch@bnl.gov or Ext. 4894.

Ocean Watch Headed for New York Harbor Expedition "Around the Americas" Arrives in NY September 29

BNL staff living on Long Island's North Shore might keep an eye out next week for a 65-foot, single mast, steel-hulled yacht carrying Brookhaven retiree Mike Reynolds and fellow crew members on an epic, yearlong voyage around the Americas. The Ocean Watch is expected to arrive in New York harbor on September 29 and will head down the east coast on October 5.

Reynolds is serving as a scientist on the expedition, which began in Seattle around Memorial Day and will take the yacht and its crew around North America — down the east coast of the Americas, around Cape Horn, up the west coast of the Americas, and back to Seattle sometime next year.

The mission of the expedition is to bring awareness to people about the conditions of the oceans, and one of the jobs for the expedition scientist is to meet with local people along the way to discuss the scientific program. You can follow their progress and read about this great adventure on their daily blog with pictures at www.aroundtheamericas.org.

CALENDAR

Friday, 9/25

*Employee Lunchtime Tour: PHENIX
Noon-1 p.m. Berkner Hall lobby. See notice, left.

Saturday, 9/26

*Spanish & Flamenco Concert
7 p.m. Berkner Hall. Spanish and Flamenco music and dance in celebration of the guitar. Tickets are \$12 in advance at the BERA Store. To benefit the BHHC's scholarship fund for high school students. See pg. 4.

— WEEK OF 9/28 —

Monday, 9/28

Apple Picking Trip
10 a.m. Recreation Hall. Come apple picking with the Hospitality Committee and the English for Speakers of Other Languages. Children are welcome. Some drivers are needed. Contact Jennifer Lynch, 344-4894 or jlynch@bnl.gov for more information.

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, 9/29

*Give Life at the Blood Drive
9:30 a.m.-3 p.m. Brookhaven Center. As always, blood is desperately needed. See story, pg. 2.

Thursday, 10/1

*AdoptaPlatoon Book & Bake Sale
11 a.m.-3 p.m. Bldg. 400 lobby. Books & baked goods sold for \$1 apiece to support troops serving in the military. See notice at left.

*Body & Soul Health Month Starts With Fitness Walk
Noon-1 p.m. Science Education Bldg. 438. Meet for 2-mile walk. Details on month's activities at left and at <http://intranet.bnl.gov/bodysoul/>.

— WEEK OF 10/5 —

Thursday, 10/8

Costco Membership Drive
9:30 a.m.-2 p.m. Berkner Hall lobby. Representatives from Costco wholesalers will hold a membership drive. Free gift with renewals. For new members, \$20 cash card for Executive option, \$10 for Standard.

— WEEK OF 10/12 —

Tuesday, 10/13

Talk by Cole on Frank Oppenheimer
4 p.m. Berkner Hall. Science writer K.C. Cole will give a free talk based on her book on Frank Oppenheimer. Sponsored by Brookhaven Women in Science. All are welcome. Visitors to the Lab of 16 and over must carry a photo ID.

Walk to Help Fight Breast Cancer

The annual "Making Strides Against Breast Cancer Walk" will take place on Sunday, October 18, at Jones Beach State Park, starting in parking field 5. You may register between the hours of 8 a.m. and 11 a.m. and then begin the walk. Pick up a registration form at the BERA Sales Office or start your own on-line fund raising team at: makingstrides.acsevents.org/longisland.

Arrivals & Departures

— Arrivals —

Jiajun Chen.....En.Scis.&Tech.
Michael K. Cross.....C-AD
Jian Hong.....En.Scis.&Tech.
Chongai Kuang.....Env. Scis.
Xin Liu.....Comp. Sci Ctr.
Sophia Marnaris.....Fiscal

— Departures —

Edward Diaz.....Maint./Fab.

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 benefits-eligible employees within the department/division and/or appropriate bargaining unit, with preference for those within the immediate work group; (2) present benefits-eligible 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. Access current job openings on the World Wide Web at www.bnl.gov/HR/jobs/.

To apply for a position, go to www.bnl.gov. Select "Job Opportunities," then "Search Job List."

OPEN RECRUITMENT – Opportunities for Lab employees and outside candidates.

ASSISTANT SCIENTIST (Macromolecular Single-crystal Spectroscopy, X-ray Diffraction, Macromolecular Crystallography, Optical Spectroscopy) – Requires a Ph.D. in biochemistry, chemistry, biology, biophysics, or related areas, and should have some postdoctoral training in Raman spectroscopy applied to biological samples. A working knowledge of synchrotron-based, macromolecular x-ray crystallography is desirable, but not essential. We seek an individual with a strong publication record, a commitment to research and development, who must also display the capability to assist a diverse user population. A conditional two-year term position is open for a full-time staff scientist to assist with the development and operation of the new single crystal spectroscopy facility at beamline X26-C of the National Synchrotron Light Source (NSLS). The PXRR group (www.px.nsls.bnl.gov) is developing this facility for concurrent x-ray diffraction and spectroscopic analysis of biological macromolecules. This will include at least three types of mutually complementary data – x-ray diffraction to high resolution, optical absorption spectroscopy, and Raman spectroscopy – from the same crystal held at 100K. The dedicated capabilities of the beamline are available to the general user community at the NSLS. Under the direction of A. Orville, Biology Department. Apply for Job ID #15038.

POSTDOCTORAL RESEARCH ASSOCIATE (Plant Physiology, Chemical Ecology) – Requires a Ph.D. in plant physiology or chemical ecology. Will participate in DOE sponsored research focusing on signaling networks in plants, and between plants and their surrounding rhizobia related to biomass and feedstock optimization for biofuel. Will also contribute to plant biology studies on improved biomass, plant feedstock optimization, plant C/N cycling and plant-microbe interactions to work within an integrated group using radioactive and stable isotopes for *in vivo* imaging and *ex vivo* metabolomics to study signaling networks in plants and between plants and their surrounding rhizobia. Ideally, should have hands-on experience using radioactive and/or stable isotopes and a strong background in environmental instrumentation (including LICOR photosynthetic systems and analytical instrumentation including GCMS, LCMS). Experience with molecular techniques is a plus. Will have the opportunity to develop his or her own research ideas provided they align with the Center's missions in energy and the environment. The Center for Radiochemistry and Biological Imaging conducts research in plants using *in vivo* imaging and *ex vivo* radiometabolomics. Research is focused on developing new technology using short-lived radiotracers to interrogate induced sink strength in plants at cellular and whole-plant levels. Fundamental research geared to understanding how plant metabolism is regulated across scales from cellular metabolism to whole-plant physiology is key to DOE's success in areas such as improved carbon sequestration below-ground by plants, improved plant feedstock for biofuel, and improved bioremediation. Employment is contingent upon the successful completion of a DEA background check. Under the direction of R. Ferrieri, Medical Department. BNL policy states that Research Associate appointments may be made to those who have received their doctoral degrees within the past five years. Apply for Job ID #15039.

POSTDOCTORAL RESEARCH ASSOCIATE (RA-1) – The National Synchrotron Light Source seeks a Research Associate who will participate in a number of projects, including time-resolved measurements and magnetization dynamics stimulated by novel sources of impulsive fields. The position requires a PhD in physics or related field with experience in the following disciplines: nanofabrication (optical and e-beam lithography), x-ray microscopy and micromagnetic simulation. BNL policy states that Research Associate appointments may be made to

those who have received their doctoral degrees within the past five years. Under the direction of Dario Arena. National Synchrotron Light Source. Apply for Job ID #15037.

POSTDOCTORAL RESEARCH ASSOCIATE (RA-1) – Light and X-ray Scattering – Under the direction of the NSLS-II Project Director, will carry out scientific and technical research needed to develop light scattering (Raman, Brillouin, and Quasi-elastic) and X-ray Photon Correlation Spectroscopy instrumentation and apply these to studies of a variety of problems in correlated electron systems under extreme conditions of temperature, pressure, and magnetic field. Qualifications Required: PhD in physics or related discipline; excellent problem-solving and communication skills; ability to interact effectively with scientific and technical staff. Qualifications Preferred: Knowledge of and experience with Raman scattering, Brillouin scattering, quasi-elastic light scattering, x-ray scattering, low temperature and high-pressure techniques. BNL policy states that research associate appointments may be made to those who have received their doctoral degrees within the past five years. National Synchrotron Light Source II. Apply for Job ID #15043.

DEPUTY GENERAL COUNSEL (M-3) – Serves as the second highest position in the Office of the General Counsel and assists the General Counsel in managing the legal function of the Laboratory. The Office of the General Counsel represents the Laboratory in all litigation, advises Laboratory management and staff concerning their legal rights, obligations, and privileges in the areas of *inter alia*, regulatory enforcement, employee benefits, labor, contracts and procurement, lobbying and political activities, the responsible conduct of scientific research, tax and insurance issues, and prime and subcontract administration. Relies on statutes, previous decisions, ordinances, and decisions issued by judicial and quasi-judicial bodies, including federal and state enforcement agencies. Acts as agent of the Laboratory and prepares and presents cases as necessary. Requires a J.D. degree from an accredited law school, 15 years' experience, and membership, or the ability to obtain membership, in the New York State Bar. Extensive knowledge and experience in the areas of federal procurement law and business law is necessary. Experience pertaining to not-for-profit scientific research, as well as experience with the U.S. Department of Energy (DOE) or a DOE contractor is preferred. Brookhaven is situated on 5,000 acres on Eastern Long Island, a region with a strong base of academic and industrial research. Visit our website www.bnl.gov/hr/jobs and apply for Job ID #15040 listed under the Management category.

STAFF ENGINEER (P-5, reposting) – Main responsibilities include working with others on the specification, design, analysis, fabrication/procurement, installation, and commissioning of x-ray beamline mechanical subsystems for the NSLS-II Project. Will report to the Beamlines Manager within the Experimental Facilities Division at NSLS-II. Requires a BS degree in mechanical engineering or closely related field and three-plus years of relevant experience. Knowledge of mechanical design, materials selection and advanced manufacturing processes for vacuum systems is required. Must have experience in using 3-D CAD (Inventor or Pro-E), drawing standards and engineering codes. Strong communication and interpersonal skills are required for interaction with a diverse group of scientists and technical staff, and candidates will be required to show evidence of having successfully worked within a project team. Will be capable of producing written reports and should be competent in the use of MS Word and Excel. Knowledge of precision mechanical systems operating in-vacuum is highly desirable. ERAP eligible: \$1000. Apply to Job ID #14915.

Motor Vehicles

08 MAZDA MIATA MX5 – 9K mi. mint, immaculate, new, silver, 6 speed, satellite radio, leather seats, 100,000 miles full warranty. \$20,000 neg. Dejan, Ext. 3078.

05 CHRYSLER TOURING 300 – 82K mi. black pearl, mint cond, 6 cyl w/many, many extras. \$8,700 neg. Jared, Ext. 4705, 929-4978 or mjulian@bnl.gov.

04 TOYOTA COROLA LE – 81K mi. 4 cyl, a/t, am/fm, cd a/c, all pwr c/c, dual air bgs, fwd tilt steerg, trip odom, excel, orig owner. \$7,000 neg. Ext. 2828, syoung@bnl.gov.

02 NISSAN QUEST GXE – 86.1K mi. Tan, new brakes. Gd cond, but minor dent on drv side, avail now. \$5,300 neg. Ext. 2172.

99 NISSAN ALTIMA GXE – 86K mi. \$3,200 neg. Ext. 2485 or glogveno@bnl.gov.

98 HARLEY-DAVIDSON FXD – 9.1K mi. Runs well, looks great. Many extras. John, Ext. 2790. \$9,000 neg. 456-9526.

97 MERCURY GRAND MARQUIS GS 4D – 170K mi. a/t, V8, a/c, cass, am/fm, c/c, p/l, p/w, L, pwr seats, r/rck for 2 bikes, in vg cond, small dent. \$1,750 neg. Ext. 2570.

93 BMW 325IS – 143K mi. 2 dr coupe, 5spd manual, sn/roof, new tires, brakes, clutch, a/c, water pump. \$2,100 neg. Glenn, Ext. 7320, 379-0117.

86 HARLEY DVDSON 883 SPORTSTER – 25K mi. Excel cond. Stock-no modifications. E-mail pics. 300-8667 for more details. \$2,500 neg. Ext. 4238 or scaffidi@bnl.gov.

Furnishings & Appliances

AIR CONDITIONER – Amana portable ac/dehumidifier/fan, 3 cooling spds, 7000 BTU. Used one season, pd \$350, asking \$200. 224-1023.

FULL SIZE ELECTRIC RANGE – Frigidaire, w/Self-Cleang Oven. Programmable cooking. Bisque colr. Excel Cond. \$165. 744-5344. Joseph, Ext. 2567, jsullivan@bnl.gov.

GLIDER ROCKER & OTTOMAN SET – oak wood w/hunter green cshions, barely used, pd \$200 - ask \$100 or best offer. Pics avail. 236-2315 or skiss@bnl.gov.

MICROWAVE CABINET – w/wheels, wood, 52.5hx 17.5dx24" w, towel rack, drawer, shelf for m/wave, 20.5wx18h, photos avail, \$35. 591-1183 or lysik@bnl.gov.

PORTABLE OVEN – Contemporary bake, broil, toast oven. 6 cubic Ft. Excel cond, in orig packg. Ask \$25. Ext. 3663, 413-5318.

RATTAN SET – white couch, chair, ottoman - beige cshions. vg cond. pics avail. \$75. Toni, Ext. 5257 or hoffman1@bnl.gov.

Audio, Video & Computers

4GB IPOD SHUFFLE – new, unused, orig packaging w/all contents, ask/\$50. Melanie, Ext. 3906 or mschwartz@bnl.gov.

COMPUTER MONITOR – Dell 17" Flat LCD monitor. \$35. Steve, Ext. 2897.

JL AUDIO SUBWOOFER – 2x10", like new, \$100; TV – 19" RCA, cable-ready w/ remote/\$20. Stephen, giordano@bnl.gov.

Sports, Hobbies & Pets

BICYCLE DOG TRAILER – rugged polyester, waterpr flrboard, zipper drs w mesh screen/vinyl wind cover, Easy fold. Univ bike hitch, 115 lbs.max. Unused. 344-5537.

BMX "HOFFMAN CIRRUS" – less than a yr old. V. minor scratches/as new, v. light, pd \$270 plus tax. Asking \$200 - pic avail. 758-9875 or ciufu@bnl.gov.

GIANTS TICKETS (2) – NY Giants vs. Phil.Eagles@Giants Stadium! 2 Tkts. 12/13/09 - 8:20 PM Mezz. Sideline Sect. 208, Rw 7, Seats 20, 21. \$500 for both. sold together. 921-4019.

JET TICKETS – 4 Tickets, Sept 27, vs Tennessee Titans \$80/ea & \$10/parking pass. Patrick, Ext. 4638.

JET TICKETS – Jets vs Jacksonville, 11/15/09, 2 tickets, \$115 per ticket (face value), sect 237 row 6. John, Ext. 4028.

STATIONARY EXERCISE BIKE – Edge 480. Programmable for all training levels & incline courses, heart & calorie burner sensors \$100, or trade for elliptical. Ext. 4901.

TANDEM 5-SPD BIKE – gear shift bike. Includes hand pump & ceiling mount (you dismantle). \$125. 974-6689. 751-3408.

Tools, House & Garden

RIDER LAWN MOWER – Murry 8hp riding mower eng runs but needs belt \$150/obo. 516-779-3116 or riagattolla@bnl.gov.

MTD LAWN TRACTOR – Gd cond, 18 HP, 42" cut, double bag grass collector, new front tires \$350 neg. Sharon, 821-1999.

Community Involvement

GUITAR & FLAMENCO CONCERT – 7 p.m. tomorrow, Sat. 9/29, Berkner Hall. Tickets, \$12, at BERA Store, \$15 at door of show, to benefit high-school scholarships given annually by Lab's Hispanic Heritage Club. See notice above, right.

Miscellaneous

CHILD SAFETY GATE – brand new, still in box, \$40. Stephen, giordano@bnl.gov.

CHRISTMAS LIGHTS – Old fashioned w/ large bulbs, in box, never used. Four 25 light sets. \$5 ea. Ext. 5551, 772-4751 or pheilig@bnl.gov.

CONCERT TICKETS – Two tickets to Bruce Springsteen, Giants Stadium, Oct. 3. Section 114. \$50 each. Joe, Ext. 7043.

DIAMOND ENGAGEMENT RING – Solitaire SI-2 WHITE, .65ct, 14K gold, photo avail, \$850/obo . 516-817-0999 or Lillady007@optonline.net.

ENTERTAINMENT 2010 – 2010 book of discounts & coupons, for Sachem North senior class, \$19. tax incl. Ext. 4901.

FISH TANK – Modern Acrylic 55 gal. by Clarity Plus. Oblong w/hinged black top.25"hx51"lx81"d. Coral base, 7-8 coral pieces in tank, \$150, 974-6689. 751-3408.

GEORGE FORMAN BBQ GRILL – full size w/cover; Bassinett, Tonka 2/wheel bike w/ training whls, Toddler motorized Go-Kart, all like-new cond. Ext. 7007, 849-3411.

NEW DGB CD AT BERA STORE! – The Doug Gordon Band's new CD "SPIN" is avail. for \$10.dgbdoug@gmail.com.

SHED – Kaulford, 8x10 beautiful, 4 yrs old, email for pics, orig/\$2,000, sell/\$900. aschroed@bnl.gov.

Happenings

DGB - CD RELEASE PARTY! – 9/26, Mulcahy's, Centereach. 7-11:30. Attendees get new Doug Gordon Band CD FREE!! \$10 admiss. 18+ over. dgbdoug@gmail.com.

NORDIC LODGE LOBSTER FEAST – 2hr feast, seafood menu at www.nordiclodge.com 6hr stay at Foxwood Casino, \$125. Call for info 16 seats left. 905-1656.



The Sol y Sombra Dance Company will perform a concert of classical Spanish and Flamenco music and dance tomorrow evening, Saturday, September 26, at 7 p.m. in Berkner Hall. Sponsored by the Lab's Hispanic Heritage Club (BHHC), the event is open to the public. All visitors to the Lab age 16 and over must bring a photo ID.

Entitled "La Guitarra," the concert will celebrate 500 years of Spanish guitar and the music, song and dance that it has inspired. In addition to live guitarists, singers, and dancers, visual works will be featured from Latina artist Pura Cruz's "Broken Guitar" series.

This concert is made possible in part by grants from the New York State Arts Council's Decentralization Program, the Suffolk County Office of Cultural Affairs, and a community grant from Suffolk County Legislator Vivian Vilorio-Fisher.

Tickets are \$12 in advance and \$15 at the door on the day of the performance. Buy tickets at the BERA Store in Berkner Hall or through www.ticketweb.com. Proceeds will benefit the BHHC's scholarship fund for high school students.

Wanted

15 INCH VIOLA – for 9 yr old, willing to buy/rent. Ext. 3138 or larosa@bnl.gov.

ADOPT-A-PLATOON – Monetary donations gratefully accepted towards mailing shipments to military overseas. Thank you. Joanne, Ext. 8481.

BABY FOOD JARS – Looking for empty baby food jars of various sizes with their lids. Sonya, 236-2315 or skiss@bnl.gov.

BLOOD DONORS – for BNL Blood Drive on Tues., Sept. 29, 9:30 a.m.-3 p.m., Brookhaven Center. Blood is urgently needed. See story and notice on pg. 2. Schedule an appointment from Human Resources webpage or call Liz Gilbert, Ext. 2315.

BNL FAMILY MEMBERS IN MILITARY – If you have a family member that has been deployed overseas, please contact Adopt-a-Platoon. Joanne, Ext. 8481.

NEW/GENTLY USED OR \$ DONATION – To help mom & son moving from shelter to small house rental. Everything needed: dishes, vacuum, twin beds, linens, TV, etc. All they have is clothing, nothing else. Kathleen, Ext. 3161 or kratto@bnl.gov.

VOLUNTEER BAKERS – Bakers needed for Adopt-a-Platoon fundraiser on 10/1 (everything must be pre-wrapped). Please contact Joanne, Ext. 8481.

For Rent

KISSIMMEE, FL – 3 bdrm condo, 2 baths, fully furn, 4 mi from DisneyWorld. \$700/wk. Beatrice, Ext. 3642.

WEEKI WACHI, FL – Gulf Coast Ranch, 70" Orlando, 50" Tampa, fly SW direct. /ig pool, trees, 3BRM, 2BTH, DR, fireplace, 2x gar -photos. \$400/wk. 344-5537.

MIDDLE ISLAND – Newly redecorated furn studio apt., clean and bright for one person. All utilities incl., close to Lab, No smkg. no pets. \$750/mo. 516-205-6712.

MIDDLE ISLAND – Lge 1 bdrm bsmt apt, pvt ent, tel., cable/int/heat/elect all incl, strictly no smkg/pets, nr Lab, BNL or SUNYSB only. \$800/mo. 672-2451, dioszegi@bnl.gov.

MILLER PLACE – Furn. one bdrm. apart. w/full kitch. in prof. residential area for one. Full bath. tv/internet/heat. Incl. all. 8 mi. to BNL. Responsible non-smoker. \$875/mo. 744-1609.

MILLER PLACE – Furn. Col. house in prof. res. area. tv/cac/int, full kit. Own bdrm. 8 mi.-BNL, 10 mi.-Stony Brk U. Incl. all. Resp'ible non-smkr. \$675/mo. 744-8386.

PT JEFF STATION – Col., 3 bdrm, 1 1/2 bath, l/r, d/r, EIK, fin bsmt, poss 4th bdrm, w/d, d/w, fenced yrd, no smkg, Conswogue SD. Avail 11/1. \$1,800/mo. 413-5012.

ROCKY POINT – 1 bdrm upper unit, kit, bath, l/r, balcy, quiet co-op comm, nr stores, Indry rm on prem, prkg spot, no smkg/pets, CAC, incl. gas/water. \$1,150/mo. 806-5965.

SOUND BEACH – Lge 4 bdrm Col. house Miller Pl. SD, 2 baths., d/w, w/d, basement, summer kitch, dd-end st, 5 min to beach, 20 min to BNL. \$2,100/mo neg. 849-3572.

SUFFOLK – 1 bdrm std own drway, 8 min to Lab, sing. pers. only; 2 mo sec, 1 mo rent, no smkg/pets, incl util. 566-1521. \$850/mo. CASPER, mariasingleton1@gmail.com.

For Sale

FLANDERS – tranquil, S/hampton town-ship, waterfront, 30ft. dock, 3 lge bdrms, 2 bath, Jacuzzi, newly renov., 2-zone a/c, nat gas heat, sandy beach, rent-buy poss. \$549,000 neg. Dejan, Ext. 3078.

MANORVILLE – 4 bdm, 3 bath, Gourm. kit, lg deck, part furn, bsmt, 0.92 acre, oil heat w/cac, 6 mi to Lab, ML#: 2154623, \$2900/rent/buy. \$399,000 neg. 566-5252 or williamspt5@gmail.com.

MASTIC – 3 bdrm, 2 bath ranch, eik, bsmt., .6 acre, park-like setting w/estate drive, 2 car det. gar., low taxes, nr. LIRR and Town boat ramp. \$240,000. 905-9617.

RIVERHEAD – Saddle Lakes 55+Gated Comm. w/clubhse, in/out dr pools, tennis, theatre, more, 2-3 bdrm, 2 bth, cac/gas, fin bsmt, cedar closet, gar, w/vrview, low tax/maint. \$360,000. 905-9617.

SHOREHAM – 4 bdrm., 2.5 bath Col., fml l/r & d/r, den w/fp, fin. bsmt, 12 x 20 deck, igs, new granite counters, SWRS, more, 7 mi to Lab. \$489,000 neg. Don, Ext. 2253.

In Appreciation

To my friends – I'm joining my family in a new State and moving on to a new stage of my life. My grandson beckons my heart and I must answer the call. My time at BNL...15 years. My work at BNL...rewarding. My taking your friendship along with me...priceless. – Ed Diaz