

BNL's Oil-Heat Research Displayed for DC VIPs Wins New Tech-Transfer Grant



At a DOE ceremony in Washington, D.C., to mark the one-year anniversary of President Bush's National Energy Policy, Tom Butcher (far left) of BNL's Energy Sciences & Technology Department highlights the Lab's oil-heat research for Energy Secretary Spencer Abraham (right), U.S. Environmental Protection Agency Administrator Christine Todd Whitman (center), and Secretary of the Interior Gale Norton (left).

The BNL exhibit featured a working model of BNL's Flame Quality Indicator (FQI), a patented, BNL-developed device, which won an 1994 R&D 100 award. The FQI allows oil and gas companies to monitor flame quality in an oil or gas burner remotely via the Internet or through a modem to detect when a burner works inefficiently and needs servicing.

This summer, BNL, and Honeywell and Insight Technologies, which licensed the FQI, are finishing a DOE-sponsored 100-home field study of the device.

BNL oil-heat research has also just been awarded a Small Business Tech-Transfer Research grant to work with a Long Island company on commercializing a low-emission oil burner. This concept, developed at BNL, was patented in 2000. — Peter Genzer

How Do Proteins Talk to Each Other? BNL, Norwegian U. Physicists Look for Clues

Proteins perform distinct and very well-defined tasks, but little is known about how interactions among them are structured at the cellular level.

Now, two physicists reveal that — at least in yeast cells — these interactions are not random, but well organized.

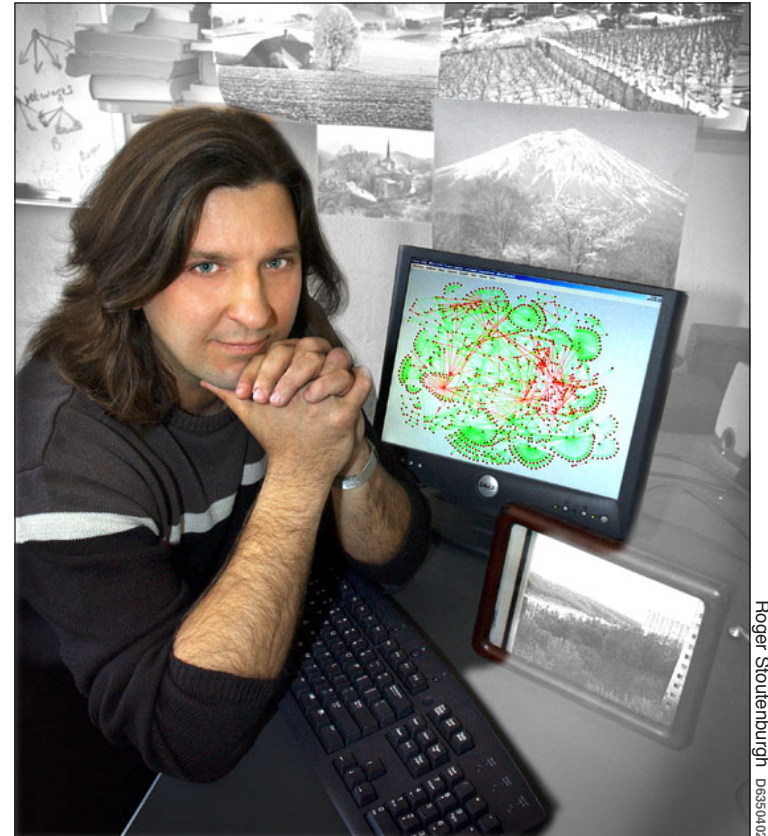
“Although scientists understand how a given protein interacts with other proteins, the way they connect with each other as a whole remains mysterious,” says Sergei Maslov, Physics Department, one of the two authors of the study published in the May 3, 2002, issue of *Science*.

Funded by the Division of Material Science in DOE's Office of Science, Maslov, an expert in statistical physics, has for the last ten years been studying complex systems, such as collections of particles, proteins, and networked computers. In the new study, Maslov and physicist Kim Sneppen of the Norwegian University of Science & Technology used computer modeling to look at how proteins interact with each other.

Although scientists know that some proteins are very busy “talking” to many other proteins, Maslov and Sneppen discovered that such highly connected proteins are unlikely to “talk” to each other. To illustrate this intriguing phenomenon, Maslov uses the analogy of airline hubs.

“Each airline company has a network of flights connecting different cities,” he says. “But when a city serves as a hub for one airline, the neighboring cities are mostly served by this company. Also, the hub is served mainly by this airline, but not by another big company. So the two big airlines rarely ‘talk’ to each other.”

The scientists think that proteins interact in this way to



On his computer screen, Sergei Maslov, Physics Department, displays the network of proteins regulating each other in yeast. The network reveals that certain proteins are very “talkative,” with many interactions, and that such talkative hubs are unlikely to interact with each other.

duce interference among the messages of proteins that criss-cross each other in the cell. The other possible advantage of this protein-interaction pattern is to make the protein network inside the cell more stable.

“Proteins with many connections seem not to want to be disturbed by wrong messages or anything that could be harmful to these proteins,” Maslov says.

To determine which among the 6,000 yeast proteins interact with each other, Maslov and Sneppen collected data on protein interactions in yeast cells from a public database. They then compared the resulting network of interactions to a simulated pattern — produced by a computer-modeling pro-

gram — in which proteins interact randomly.

“If you took a given number of proteins and distributed interactions among them randomly, you would hardly find any particular protein that would have a lot of interactions,” Maslov says. “All proteins would talk randomly with each other in such a network. So, hubs of highly-interacting proteins are not something that you would expect to happen by pure chance.”

But the scientists did observe hubs of interacting proteins in the yeast cells. The connections between hub proteins reveal what Maslov and Sneppen call an emergent property that acts

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Producing Electrodes With Nanoscale Materials



BNL researchers, seen above, have developed a new method for producing electrodes using nanoscale materials. The researchers are: (from left) James McBreen, Materials Science Department (MSD); Gordana Adzic, MSD; Thomas Vogt, Physics Department; James Reilly, MSD; and John Johnson, MSD. Not pictured is Yimei Zhu, MSD. The lithium cell Reilly displays contains an electrode produced via the new method.

Using nanoscale materials, researchers from the Materials Science and Physics Departments have developed a method to make electrodes that are suitable for use in rechargeable lithium ion batteries and other electronic devices. Because so many new and different materials can be made with this versatile method, it should be capable of producing electrodes that are more efficient and durable than those in use today.

An advantage of the new method as it applies to lithium ion batteries is that lithium alloys can be produced *ex situ* rather than by an initial activa-

tion process inside the battery. Battery production is therefore simpler and less time-consuming. Most important, the method allows great flexibility in choice of materials and makes possible the production of novel alloy compositions.

“Since unique alloys can be created using this method, the opportunity exists for making new types of electrodes with superior properties,” said Reilly, the principal researcher on the project. “Also, the method could likely be used in a number of other applications, including the preparation of nanocomposite catalysts.”

(continued on page 2)

Five Female Students Receive 2002 Battelle-BWIS Awards

In a June ceremony at Berkner Hall, five local female high school students who excel in science or mathematics were each given a \$1,000 award to encourage their pursuit of careers in those fields. The award was established in 1999 by Battelle, the not-for-profit corporation that partners with Stony Brook Uni-

versity to manage BNL through Brookhaven Science Associates (BSA), and by Brookhaven Women in Science (BWIS), a not-for-profit group at BNL. Each year, five school districts around the Lab are each asked to select a female student for the award. The school also displays a plaque on which the names of the awardees are engraved. — Diane Greenberg



Pictured are: (from left, front row) Peter Paul, Interim Laboratory Director; awardees Xiao Feng Lin, Eastport South Manor High School; Pratiksha Desai, Riverhead High School; and Julie Wilson, Longwood High School; (from left, second row) Gregory Fess, representative for Battelle's community relations and charitable distributions program; awardees Melissa Mulkush, Shoreham-Wading River High School; and Irene San Pietro, William Floyd High School; Pam Mansfield, BWIS Coordinator; and Carl Kohrt, Battelle President and Chief Executive Officer, and BSA Board Vice Chair.

Calendar of Laboratory Events

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

— EACH WEEK —

Weekdays: Free English for Speakers of Other Languages Classes

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

Mon., Tues., & Thurs.: Kickboxing

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

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

Noon-12:45 p.m., Rec. Bldg. Scott Bradley, Ext. 5745, bradley@bnl.gov.

Tuesdays: Aqua Aerobics

5:15-6:15 p.m. \$2 pool fee per class or use pool pass. Mary Wood, Ext. 5923.

Tuesdays: BNL Music Club

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

Tuesdays: Welcome Coffee

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

Tuesdays: Toastmasters

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

Tuesdays & Thursdays: Aerobics

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

Wednesdays: On-Site Play Group

9:30-11:30 a.m., Meet at the playground in the apartment area. Parents meet while children play. Monique de la Beij, 399-7656.

Wednesdays: Farmer's Market

11:30 a.m.-1:30 p.m., Berkner Hall parking lot

Wednesdays: Hispanic Heritage Club

11:30 a.m., Berkner Hall, Room D. All are welcome. Carmen Narvaez, Ext. 3254, or www.bnl.gov/bera/activities/hispanic.

Wednesdays: Weight Watchers

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

Wednesdays: Yoga Practice

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

Wednesdays: Stretch

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

Wednesdays: BNL Ballroom, Latin & Swing Dance Club Lessons

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

Thursdays: Science Discussion Group

12:30-1:30 p.m., Berkner Hall, Room A or D. Patrice Pages, Ext. 3270, pages@bnl.gov.

Thursdays: Falun Dafa Class

Noon-1 p.m., Free. Rec. Bldg. Falun Dafa refines the body and mind through exercises, meditation. www.falundafa.org.

Fridays: Science Museum Tours

11 a.m.-2 p.m. BNLeers are invited to a free tour of the BNL Science Museum. No reservations are needed. Gail Donoghue, Ext. 2838.

Fridays: BNL Social & Cultural Club

7-11:30 p.m., Brookhaven Ctr., social. Rudy Alforque, Ext. 4733, rudy@bnl.gov.

— WEEK OF 7/29 —

Tuesday, 7/30

Bus Trip to Flushing, Queens

\$5 per person. Join the English for Speakers of Other Languages (ESOL) Program for a bus trip to Flushing, Queens, to visit the Botanical Gardens and to enjoy a Chinese buffet lunch. Bring an extra \$10 to cover the cost of the buffet lunch. Air conditioned coach bus departs the Rec. Bldg. at 9 a.m. and returns at approximately 6 p.m. For reservations and additional information, contact ESOL Program Coordinator Jen Lynch, Ext. 4894, or lynch@bnl.gov.

VoiceStream Wireless Demo

10 a.m. - 2:30 p.m., Berkner Hall. Special rates will be presented to BNLeers on VoiceStream's wireless network. Richard Goll, (516) 343-5900.

Wednesday, 7/31

Enterprise Car Rental Demo

11 a.m.-2 p.m., Berkner Hall. A representative from Enterprise Rent-a-Car will present BNLeers with special rates on car rentals and answer questions about Enterprise's on-site car-rental services. Michael Reynolds, Ext. 4888.

For Four Internships With the IAEA BNL Recruits Long Island Students for Vienna



Roger Shoulenburgh/bnl.gov

Four Long Island students have been recruited by BNL for a one-year internship at the International Atomic Energy Agency (IAEA) in Vienna, Austria. BNL's International Safeguards Project Office (ISPO), which recruited the students, provides technical assistance to the IAEA so that it can better verify that nuclear material under IAEA safeguards is not diverted for non-peaceful purposes. Funding for the internships was provided by the U.S. Support Program to IAEA Safeguards.

Susan Pepper (above, second from left) who heads ISPO, said, "This new, one-year internship program is in software programming. It will be mutually beneficial for a national lab and the

IAEA to partner with academia. We will be bringing new talent to the nuclear industry."

Pictured with Susan Pepper are the four IAEA interns (from left): Sam Aro of Brooklyn, Christopher Dalton of Brightwaters, David Heyman of Wantagh, and Courtney Patterson of Laurelton. Aro, Dalton and Heyman are recent graduates of the Chubb Institute in Westbury, a computer training school, and, in addition, hold bachelor's or master's degrees.

Patterson, a recent graduate of SUNY Old Westbury, worked as an intern for BNL this past year and for the IAEA in Vienna for two weeks last summer.

— Diane Greenberg

Proteins Talking

(cont'd.)

beyond the level of the functions of the individual proteins and makes them act together to coordinate their functions. Studying these interactions can help identify these coordinated functions, and may also reveal intrinsic features of the interacting proteins.

The approach taken by Maslov is part of an ongoing interdisciplinary effort in which scientists are trying to understand phenomena that involve many proteins, such as diseases. The understanding of how pro-

tein interaction networks are designed might, for instance, give insight into the causes of cancer. One of the hubs in the human protein network, called p53, has a major role in preventing cells from developing into a tumor.

"The computer modeling program developed in this work can be applied to interactions in other networks, such as food webs in ecosystems, neural networks, the Internet, and even among stock market agents," Maslov says. — Patrice Pages

Electrodes With Nanoscale Materials

(cont'd.)

To make a lithium tin electrode, for example, the researchers mixed excess lithium hydride with tin oxide. Part of the lithium hydride reacts to form lithium oxide, while the remainder reacts to form a lithium tin alloy. Hydrogen is removed as a gas. After the initial formation of the lithium tin alloy and lithium oxide composite, hydrogen is alternately added and removed.

This treatment results in the formation of a nanocomposite material made of tiny grains with a diameter of 20-30 nanometers (one nanometer is a billionth of a meter). This small-grain size speeds up the electrochemical reaction because there is more surface area upon which the reaction can take place. It also reduces the time taken for the lithium to diffuse into or out of the reacting particle. The lithium oxide acts as inert support for the electrochemically active lithium tin alloy.

The researchers also mixed lithium aluminum hydride with tin oxide, and lithium aluminum hydride with silicon oxide to make similar nanocomposite electrodes. Reilly maintains that any one of the many elements that form stable metal hydrides could be used to make nanocomposite materials with the BNL team's method.

Hydrogen is the key to forming nanocomposite materials in this new method. The hydrogen atoms are successively absorbed and desorbed from the lithium-tin alloy many times until it is broken down into tiny alloy grains. This chemical means of making nanocomposites is much more effective and practical than physically grinding materials to produce fine particles.

This research was funded by DOE's Office of Chemical Sciences. A patent is pending for this new method, and it is available for licensing by industry.

— Diane Greenberg

Service Awards

The following employees celebrated BNL service anniversaries during May 2002.

40 Years

T. Laurence Trueman Physics

35 Years

Herman Bartalomy C-A

Patricia Fox Budget

Paul Sparrow C-A

25 Years

Etsuko Fujita Chemistry

Roger McDonald ES&T

Rolf Rathjens Cent. Shops

20 Years

Randolph Church NSLS

John Foley Emg. Svcs.

Stanley Hanlon Staff Services

Joan Sperry EE&NS Dir.

10 Years

Gerardo Martinez-Guridi ES&T

Edmund Pavlak Waste Mgmt.

Glen Todzia Waste Mgmt.

James Waters Bus. Systems

In Memoriam

William Benedict, who had joined the Lab as a senior clerk A in Fiscal on October 8, 1947, and had retired 32 years later from the Reactor Division as an accountant, on January 31, 1980, died on September 27, 2001. He was 85.

Robert Isler died on September 1, 2001, at age 80. He had joined the Nuclear Energy Department on May 1, 1952 as an associate chemical engineer. Promoted to a chemical engineer, he had retired from the Reactor Division on September 30, 1988, after serving BNL for 36 years.

Recycling Auto Or Other Waste? Get Know-How, Help From BNL

What do you do when you need to get rid of, for instance, your car's old auto parts, oil, or antifreeze? One answer is to contact a BNL Environmental Compliance Representative for help.

Because the Lab wants to make it easy for employees to dispose of their auto and other waste properly, five department or division BNL Environmental Compliance Representatives have been named to assist employees, facility users, and guests. They are: Deborah Bauer, Ext. 5664; Steve Ferrone, Ext. 5531; Peter Pohlot, Ext. 5660; John Selva, Ext. 8611; and Mel Van Essendelft, Ext. 2905.*

"People who don't know about or who ignore the right disposal procedure can cause the Lab much unnecessary expense," said Pohlot.

A typical story about auto waste abandoned on site began last April. Two 5-gallon containers of what appeared to be motor oil and antifreeze, with some auto parts, were found in the BNL cottage area.

"Since the contents of the materials were unknown, the materials had to be sampled and analyzed in case they contained any hazardous materials," Pohlot said. The results came back indicating that the contents were indeed motor oil and antifreeze.

"But the cost of the sampling, analytical and Lab personnel time associated with this event exceeded \$3,000," commented Pohlot. "These materials could have been disposed of right here on site at no cost, and the money spent by the Lab could have been used much more productively."

Under New York State Department of Environmental Conservation's regulations, Pohlot said, every automotive service station and parts retail store must maintain a retention facility for oil used on their property, and must accept from any individual, at no charge, used engine oil in quantities not to exceed five gallons per day.

In addition, the BNL on-site public service station, Upton Industries, accepts used antifreeze. Metal automotive parts can be placed in a residential recycling container.

"Many people at BNL dispose of their personal automotive and other waste responsibly," said Pohlot. "But we are hoping to make everyone realize how easy it is to join in the effort."

*Each coordinator assists certain Lab areas: **Bauer** - EENS, NSLS, Instrumentation; **Ferrone** - Life Sciences, Chemistry, Physics; **Pohlot** - Directors Office, CEGPA, Facilities & Operations, Finance & Administration; **Selva** - Waste Management, Environmental Restoration, Environmental Safety & Health; **Van Essendelft** - Collider-Accelerator and Reactors.

Get to Know Your Lab!



Roger Stoutenburgh 0630399

**Q: When is science child's play?
A: At BNL's Science Museum!**

The Lab community is invited to join the second employee lunchtime tour, which will be held on July 26.

Meet at noon in the upper lobby of Berkner Hall. The group will go by bus to the Science Museum to find out what makes it such a popular stop for more than 13,000 elementary school children each year: hair-raising activities in electricity, exploring magnetism, and other wonders of the scientific world.

No reservations are needed. For information, call Elaine Lowenstein, Ext. 2400.

Russian Chorus Sings at BNL, 8/10

The Boston Russian Chorus, directed by Irina Shachneva, will present Russian liturgical, romance, and folk music in a concert sponsored by the Hospitality Committee and Quality of Life Office. The concert will be held on Saturday, August 10, at 5 p.m. in the Recreation Hall in the BNL apartment area.

The chorus, with soloists Alexander Prochorov and Larisa Fillipenko, will perform the music of Rachmaninoff, Chesnokov, Tchaikovsky, and others, in the spirit of original Russian village singing.

After the concert, the audience is invited to meet the artists at a coffee reception. Donations of \$5 per person or \$7 per family will be appreciated.

For more information, call Joe O'Connor, Ext. 2212.

Arrivals & Departures

Arrivals

Jeffrey Carlson Plant Eng.
Ahmed Sidi-Yekhlef C-A

Departures

Jerome Lamontagne ES&T

BERA Asian Pacific American Association Gave Multicultural Evening of Harmony



A composite photo showing some of the May 31 performers.

Friday, May 31, was a BNL evening to remember, when, at a dinner and concert in Berkner Hall, many BNLeers and neighbors joined with the BERA Asian Pacific American Association (APAA) in their mission of celebrating the culture and achievements of Asian Pacific Americans and supporting American values through cultural connections.

Celebrating with the APAA were BNL's Diversity Office, the Asian American Faculty Staff Association of Stony Brook University (SBU), and SBU's Asian American Center Bridge.

Says APAA coordinator Hai-Dee Lee of BNL's Occupational Medicine Clinic, "This multi-cultural program, which featured presentations not only by Asian Pacific Americans, but also by Americans of various ethnic and national origins, demonstrated how easy it is to build bridges across different cultures through music and dance. Indeed, it was fascinating to see the strong bonds shared by everyone through their cultural contributions."

APAA has received many favorable comments on this unique interconnection of cultures from the attendees of that evening. "From these comments, we believe that people's sense of unity was strengthened by the program," says Achyut Topé, APAA coordinator. Both Lee and Topé express APAA's gratitude for "the strong support received from Interim Director Peter Paul, Special Assistant to the Director Satoshi Ozaki, Diversity Office Head Lorraine Merdon, and the many Laboratory managers who helped make the event so successful."

The APAA welcomes new members. For more information about the APAA, go to <http://www.apaa.bnl.gov/>. To view other pictures from the dinner and cultural performances, see <http://www2.bnl.gov/rudy/social/apaa>.

Hispanic Heritage Club Meeting

The BERA Hispanic Heritage Club will be sponsoring a concert featuring classical Spanish and Flamenco music and dance on September 21, at 7 p.m. in Berkner Hall.

Volunteers to help organize the event are welcome.

The club meets every Wednesday at 11:30 a.m. in Berkner Hall, Room D.

For more information call Carmen Narvaez, Ext. 3254, or visit the club web page at <http://www.bnl.gov/bera/activities/hispanic>.

Trip to Queens, 7/30 Botanical Gardens, Chinese Lunch

On Tuesday, July 30, join the English for Speakers of Other Languages (ESOL) Program on a bus trip to Flushing, Queens, to enjoy the Botanical Gardens and a Chinese buffet lunch. The trip costs \$5 per person; bring an extra \$10 to cover the cost of lunch. The air-conditioned coach will leave the Recreation Bldg. at 9 a.m. and return at about 6 p.m. For reservations and information, contact ESOL Coordinator Jen Lynch, Ext. 4894 or lynch@bnl.gov.

Wild Side Correction

Scarcely had the Bulletin distribution of last Friday, July 19, begun, when two experienced birders, Tom Lambertson of Central Shops Division, and Amy Halsted of American Physical Review, tactfully informed the editor that the "wood thrush" in the photo by Roger Stoutenburgh was, in fact, a brown thrasher. This, they said, was evidenced



Roger Stoutenburgh 0630399

A wood thrush? Not! It's a brown thrasher. The Bulletin regrets its error, made last week.

by this bird's two white wingbars, its longish bill and tail, and the stippled stripes that stop below the eye with a dark line rather than rising up on the cheek to just above the eye.

Also, a wood thrush, the Bulletin learned, is very shy and likely to be "spied creeping furtively through low brush," while a brown thrasher is bold and may attack those encroaching on its territory, as Stoutenburgh found while he was taking the photo.

The Bulletin remains confident of its ability to distinguish robins from seagulls, but has taken the precaution of retaining these two helpful bird watchers as informal consultants. Hot tips on cool nature to be seen around the BNL site will always be welcome from knowledgeable readers. — Liz Seubert

Indian Classical Music Concert, 8/3 'Music of the East — Instruments of the West'

The BERA Indo-American Association invites all BNLeers to an evening of Indian classical music, when Dee Harris and Viral Pandya present the concert "Music of the East — Instruments of the West" on Saturday, August 3, at 7 p.m. in Berkner Hall.



the soundtrack for a documentary entitled "Silver Bear, A Shaman's Journey."

A young tabla player, Viral Pandya is also involved in Indian classical music as well as the east-west fusion. He has studied with Kinnar Seen and other artists.

Tickets cost \$5 per person; children under 12 years of age will be admitted free. For more information and to purchase tickets, contact Kumi Pandya, Ext. 7734; Achyut Topé, Ext. 5672; or Sharada Sambasivan, Ext. 4862.

Dee Harris is a guitarist and multi-stringed instrumentalist of western music. As a guitarist, he is largely self-taught. He has developed many new techniques on his instrument and has redesigned his guitar to achieve the subtleties of Indian classical music.

Harris has engaged in many east-west recording projects, including his trio "Spirit Form," which mixes Celtic and Indian music. He was recently commissioned to compose and record

BERA Off-Road Club Get-Together, 8/4

The BERA Off-Road Club will meet at 8:30 a.m. on Sunday, August 4, in the parking lot of Carvel on the William Floyd Parkway, and will leave promptly at 9 a.m. for Smith's Point. All BNLeers are welcome as long as they have appropriate 4-wheel drive equipment and accessories, a valid sticker, and Green Key. For more information, e-mail borc@bnl.gov.

Upton Nursery School Recruiting for Fall

The Upton Nursery School is a small cooperative nursery school that meets in BNL's Recreation Building in the apartment area. The school is run by parents with two experienced, professional teachers, one with New York State certification, and both with master's degrees.

The nursery school meets two mornings a week, 8:30-11:30 a.m., from September to June. Children must be 3 years old by December 1. The curriculum includes kindergarten topics with a focus on language and social skills in a warm, fun, pressure-free environment. The school has always welcomed children from different countries and those who do not speak English.

If there is enough interest, a program for 2-year-olds will start in September. Children need to be 2 years old by December 1.

The first 15 students who are signed up for the school will receive free September tuition.

For information, contact Cathy Lavelle, 369-3098 or lavellec@bnl.gov.

Calendar (continued)

Saturday, 8/3

BERA Fishing Trip

\$49 per person. The Captain Bob leaves the dock in Mattituck at 8 a.m. and returns at 3 p.m. Tickets can be purchased at the BERA Sales Office on weekdays from 9 a.m. to 3 p.m. Directions to the dock are available at the sales office too. For more information, contact Andrea Dehler, Ext. 3347, or Sue Cataldo, Ext. 4461.

— WEEK OF 8/5 —

Wednesday, 8/7

BSA Noon Recital

Noon, Berkner Hall. Musical Director Paul Schenly presents three rising stars from Pianofest in the Hamptons. See <http://music.bnl.gov>.

Thursday, 8/8

BERA Bridge Club

7 p.m., Brookhaven Center. South Room. Morris Strongson, Ext. 4192, mms@bnl.gov.

Friday, 8/9

N.Y. Yankees Baseball Game

\$55 per person includes ticket and bus transportation to Yankee Stadium to watch the Yankees take on the Oakland Athletics. Bus departs the Brookhaven Ctr. at 4 p.m. and will return at approximately 11:30 p.m. Tickets available at the BERA Sales Office, Berkner Hall, weekdays from 9 a.m. to 3 p.m. Andrea Dehler, Ext. 3347.

Saturday, 8/10

Defensive Driving Course

9 a.m.-3:30 p.m., Berkner Hall, Room B. To register, send a check for \$26 per person, made out to Empire Safety Council, in care of Scott Zambelli, P.O. Box 670, Mount Sinai, NY 11766. Include your telephone number in case you need to be contacted. All checks must be received by August 2.

***Boston Russian Chorus Concert**

5 p.m., BNL apartment area Recreation Hall. The Hospitality Committee and the Quality of Life Committee sponsor a concert of Russian liturgical, romance, and folk music by the Boston Russian Chorus, under the direction of Irina Shachneva. The concert will feature the music of Rachmaninoff, Chesnokov, Tchaikovsky, and others in the spirit of original Russian village singing. A "meet the artists" coffee reception will follow the concert. A suggested donation of \$5 per person or \$7 per family is appreciated. Joe O'Connor, Ext. 2212.

— WEEK OF 8/19 —

Thursday, 8/22

BERA Bridge Club

7 p.m., Brookhaven Center. South Room. Morris Strongson, Ext. 4192, mms@bnl.gov.

Saturday, 8/24

Bronx Zoo Trip

\$32 per adult, \$28 per child. Includes bus transportation and Zooventure tickets. (Zooventure includes general admission, zoo shuttle, Bengal Express, one-way Skyfari Cable Car ride, and the Children's Zoo.) Bus leaves Brookhaven Center at 8:30 a.m. and returns at approximately 6:30 p.m. Paid reservations can be made at the BERA Sales Office, weekdays, from 9 a.m. to 3 p.m. Andrea Dehler, Ext. 3347.

— WEEK OF 8/26 —

Monday, 8/26

IBEW Meeting

6 p.m., Knights of Columbus Hall, Railroad Ave., Patchogue. 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.

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

Classified Advertisements

Placement Notices

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

OPEN RECRUITMENT – Opportunities for Laboratory employees and outside candidates.

MK8292. SCIENTIFIC POSITION (reposting) - Requires a Ph.D. in physics, strong background in accelerator theory, experience in electron accelerator systems and proficiency in numerical simulation codes. Experience in electron cooling theory or experiment, expertise in particle storage rings, experience in superconducting RF and hands-on experience in operations of particle accelerators highly desirable. The mission of the Collider-Accelerator Department includes the development, improvement, and operations of a suite of particle accelerators used to carry out the program of accelerator-based experiments at BNL. The next major upgrade of the RHIC collider will be based on electron cooling of the stored beams. The department is seeking a staff member that will take part in the design, construction and operation of a high-energy electron cooler for RHIC. The position and compensation will be commensurate with the capabilities and experience of the candidate. Under the direction of I. Ben-Zvi, Collider-Accelerator Department.

MK2756. POSTDOCTORAL RESEARCH ASSOCIATE – Requires a Ph.D. in physics or materials science with a strong background in electron microscopy. Experience with first principle calculations using density functional theory aimed at addressing electronic structure of strongly correlated electronic systems is highly desirable. The calculations, which will be tested by electron diffraction, electron energy loss spectroscopy and other TEM observations, include, but are not limited to, the density of the states near the Fermi level and valence electron distribution. The ability to collaborate with experimentalists is expected. Research group is the Nanoscale Structure of Advanced Materials Group, which conducts research in the areas of nanoscale electron beam characterization of advanced materials. The group runs the Electron Microscope Facility, which has state-of-the-art electron microscopes and has a strong interaction with scientists in the Physics and National Synchrotron Light Source Departments. Under the direction of Y. Zhu, Materials Science Department.

MK2757. POSTDOCTORAL RESEARCH ASSOCIATE – Requires a Ph.D. in physics or materials science with a strong background in electron microscopy. Experience with nano-scale molecular dynamic calculations of disordered materials and crystal defects is highly desirable. Emphasis will be placed on the study of grain boundaries of superconductors and transition metal-oxides to understand atomic structure, electronic structure and charge distribution of interfaces by comparing theory with electron microscopy experiments. Research group is the Nanoscale Structure of Advanced Materials Group, which conducts research in the areas of nanoscale electron beam characterization of advanced materials. The group runs the Electron Microscope Facility, which has state-of-the-art electron microscopes and has a strong interaction with scientists in the Physics and National Synchrotron Light Source Departments. Under the direction of Y. Zhu, Materials Science Department.

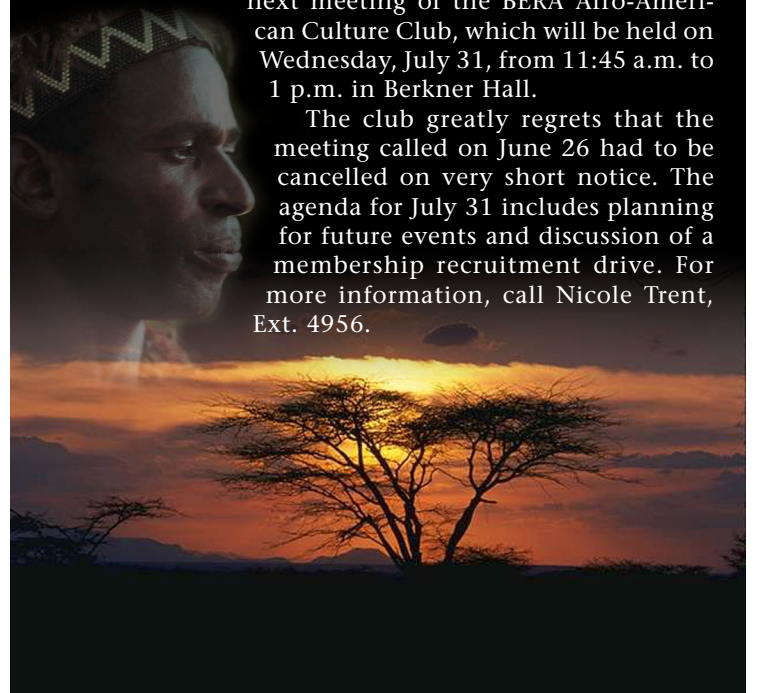
NS8963. ENVIRONMENTAL SCIENCE ASSOCIATE III (P-3) - Requires a BS in science/engineering, excellent oral and written communication skills, a general understanding of environmental science, knowledge of pc hardware/programs, the ability to work independently, and knowledge of and experience with mechanical/electrical systems. The ability to perform routine maintenance, troubleshoot, and formulate solutions to minimize experiment downtime is essential. Must be able to climb towers to heights of 100 feet and be willing to accept a flexible work schedule with protracted hours (including week-

ends). Will interact with scientists, tradespeople, and other professionals in the operation and maintenance of the Forest Atmosphere Carbon Transfer and Storage facility (FACTS-1) located in the Duke University Research Forest in Chapel Hill, NC. Environmental Sciences Department.

All Are Invited to Join BERA's Afro-American Culture Club Next Meeting Wednesday, July 31

The Lab community is invited to the next meeting of the BERA Afro-American Culture Club, which will be held on Wednesday, July 31, from 11:45 a.m. to 1 p.m. in Berkner Hall.

The club greatly regrets that the meeting called on June 26 had to be cancelled on very short notice. The agenda for July 31 includes planning for future events and discussion of a membership recruitment drive. For more information, call Nicole Trent, Ext. 4956.



Free Summer Sundays

BROOKHAVEN
NATIONAL LABORATORY

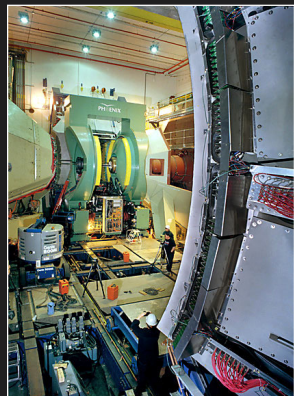
This Sunday, July 28, tour BNL's Relativistic Heavy Ion Collider.

This Sunday, July 28, visitors to the Lab will visit BNL's Relativistic Heavy Ion Collider (RHIC). RHIC replicates conditions thought to have existed immediately following the Big Bang, so that scientists can study subatomic particles and their interactions as well as how the universe evolved. RHIC is made up of two superconducting accelerator rings, each 2.4 miles in circumference. Visitors will tour the ring in a bus and see the PHENIX and PHOBOS detectors, which gather data from the heavy-ion collisions that take place at ring intersections.

In addition to the RHIC tour, a new hands-on exhibit called "Brain Teasers," a collection of 20 puzzles ranging from giant jigsaws to rope tricks, will challenge both children and adults. Also, local high school students will demonstrate the robots they built. In addition, the "Whiz Bang Science Show" — popular with both adults and children — will be shown at 10:30 a.m., noon, 1:30 p.m., and 3 p.m. every Sunday during the summer program.

Tour hours are between 10 a.m. and 3 p.m. Admission is free and no reservations are needed, but, to be admitted on site, all visitors age 16 and over must bring a photo ID.

Tours Continue Through August 25



A view of the PHENIX detector experimental hall.



Inside the PHOBOS detector

Roger Stoutenburgh CN3-211-01

Roger Stoutenburgh CN3-184-01

the **Bulletin**

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