

At the NSLS, BNL Biologists Decipher Structure of Botulism-Causing Toxin

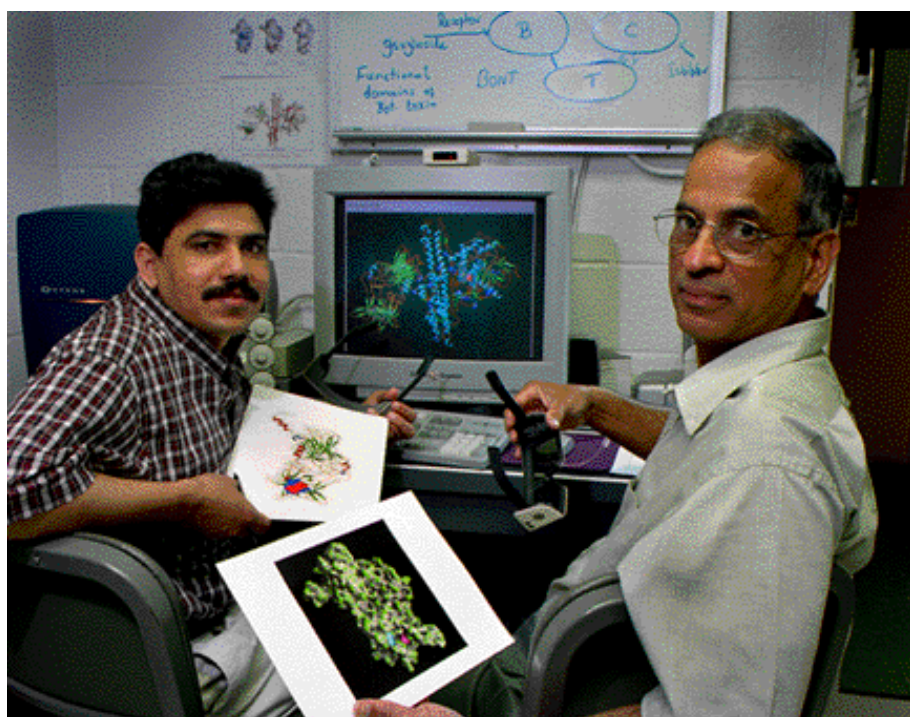
The toxins produced by *Clostridium botulinum* bacteria are among the deadliest known to humankind. A drop ingested can paralyze the body, including the muscles responsible for breathing, leading to death by asphyxiation.

Now, in what could be a first step toward effectively disabling these deadly poisons, Subramanyam Swaminathan and Subramaniam Eswaramoorthy, both of Biology, have deciphered the structure of one of the toxins and learned how it binds to the nerve cells it attacks.

"Since binding to the nerve cell is the first step in neurotoxin poisoning,

"Understanding this interaction at the molecular level could help us design a vaccine."

understanding this interaction at the molecular level could help us design a vaccine to prevent the toxin from attaching," Swaminathan says. Such a vaccine or other therapeutic drugs based on the toxin's molecular structure would be invaluable to people consuming botulinum-tainted food, and to soldiers on the battlefield or others facing the threat of biological weapons.



Subramanyam Swaminathan (right) and Subramaniam Eswaramoorthy of the Biology Department, with 3-D images of the botulinum toxin structure.

"You have to understand the toxicity and how it works to find preventive measures," Swaminathan says.

To decipher the toxin's molecular structure, the scientists bombarded crystalline samples with high-intensity x-rays at the National Synchro-

tron Light Source (NSLS). By studying how the x-rays diffract as they bounce off or pass through parts of the crystal, the scientists work backward to reconstruct the shape and arrangement of the atoms in the molecule.

"Without the intense x-ray beams

at the NSLS, it would be very difficult to do this," Swaminathan says.

The current studies were on botulinum neurotoxin B, one of seven types produced by *C. botulinum* bacteria. Scientists have previously analyzed the structure of botulinum neurotoxin A, but at a much lower resolution. The level of detail in the current analysis is unprecedented.

The scientists have analyzed the part of the toxin molecule that binds to

"Without the intense x-ray beams at the NSLS, it would be very difficult to do this."

nerve cells, as well as the part that actively blocks the release of neurotransmitters — the chemical messengers nerve cells use to communicate with one another and with muscle cells. More work is needed to understand how the toxin moves through the cellular membrane. Finding ways to block any one of these steps could potentially stop the toxin in its tracks.

Such detailed knowledge of the toxin's mechanism of action, in addition to stimulating vaccine development, could also enhance the toxin's (continued on page 3)

Free Electron Laser Research Milestone Reported in *Science Today*

Proof-of-Principle Experiment at BNL's ATF Verifies Theory of High Gain Harmonic Generation Free Electron Laser

An important first step in creating a powerful new tool to generate extremely intense, coherent pulses of light has been taken in a proof-of-principle experiment at Brookhaven's Accelerator Test Facility (ATF). BNL, in collaboration with Argonne National Laboratory researchers, verified the theoretical foundation of the high gain harmonic generation free electron laser (HGFG FEL) operating in the infrared region of the light spectrum. The work is reported in today's issue of the journal *Science*.

The HGFG FEL would be a complementary research tool to the National Synchrotron Light Source (NSLS), opening up new research opportunities in chemistry, biology, and materials science. To extend its usefulness in this wide range of research, work now focuses on refining the technique to produce pulses of shorter wavelength light in the deep ultraviolet spectral region, with the ultimate goal of extending the approach to generate coherent, high-intensity pulses of x-rays.

The groundwork for this research was prepared by Li Hua Yu, NSLS, the project's principal investigator from BNL; Sam Krinsky, Deputy Department Chair of the NSLS; and Ilan Ben-Zvi, head of the ATF. (See L.H. Yu, *Phys. Rev. A* 44, 517B, 1991; and I. Ben-Zvi, A. Friedman, C.M. Hung, G. Ingold, S. Krinsky, L.H. Yu, I. Lehrman and D. Weissenburger, *NIM*, A318, 208, 1992.)

Yu explained, "The HGFG FEL offers the possibility of combining the intensity and coherence of a laser with the broad spectrum of light available in a synchrotron. The invention of the laser provided a revolutionary source of coherent light that created many

The team on the experiment for the high gain harmonic generation free electron laser included: (from left) Erik Johnson, Bill Graves, Bob Malone, Igor Pogorelsky, Marcus Babzien, Li Hua Yu, Xijie Wang, Lou DiMauro, John Skaritka, Marc Montemagno, Bill Cahill, Bob Harrington, Ilan Ben-Zvi, Sam Krinsky, and Mike Lehecka, all of BNL. Not present were: (from BNL) Jeffrey Aspenleiter, Bill Bambina, Michael Caruso, Walter DeBoer, Pete DeToll, Adnan Doyuran, Rodger Hubbard, Sorin Pop, George Rakowsky, Bob Scheuerer, Don Shea, Lorraine Solomon, Mal Tardd, Martin Woodle, and Vitaly Yakimenko; from Argonne National Laboratory: Sandra Biedron, John Galayda, Efim Gluskin, John Jagger, Vadim Sajaev, and Issac Vasseraman.



new fields of scientific research. The development of the HGFG FEL may extend the reach of lasers to much shorter wavelengths, thus opening new research opportunities."

There is great interest around the world in producing coherent x-rays using FEL techniques. By analogy, a chorus led by a conductor is coherent; an uncoordinated group of singers, incoherent. The Brookhaven/Argonne team is unique in investigating the HGFG approach, which is expected to produce much sharper, short bursts of coherent emissions than other techniques.

In the HGFG approach, the properties of the laser are imposed on the electron beam by "seeding" the beam

with laser light so that the start-up signal is coherent.

Also, HGFG uses the realization that the multiples of the laser frequencies (harmonics) can be generated and amplified in the FEL, shifting laser properties such as stability to high frequencies.

Another feature of the HGFG configuration is that it can be achieved in a "single-pass" device, which means that, unlike conventional lasers, it does not require high-efficiency mirrors. This will be crucial to projecting high-performance laser characteristics into x-ray sources of the future (see Brookhaven Bulletin, Jan. 14, 2000).

The success of the current HGFG FEL investigation provides a promis-

ing road map toward using the technique with shorter wavelengths of light, which will open up ever wider ranges of experiments. For example, the intense mini-pulses of light in an HGFG FEL will allow scientists to follow a time-dependent process, such as a chemical reaction as it occurs in a tiny fraction of a second.

A deep ultraviolet FEL capable of vacuum ultraviolet operation is now being assembled at BNL in a project led by Erik Johnson, an NSLS physicist. The proof-of-principle experiments in the ultraviolet range are expected to take place within two years. The goal is to operate an HGFG FEL in the x-ray range within the decade.

— Diane Greenberg

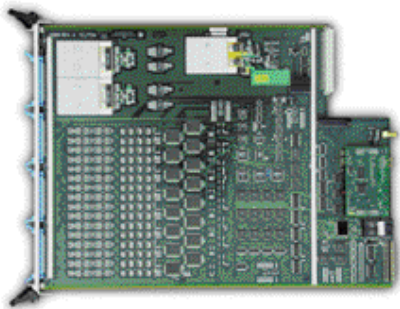
Seymour Rankowitz: 50+ Years at the Lab

Seymour Rankowitz, Associate Division Head of the Instrumentation Division and leader of the data acquisition and control systems group, has been at BNL for more than 50 years. However, retiring is the last thing on his mind.

"I can't imagine anyone wanting to get out of the business," he says. "Despite the pressure, nothing in retirement is as exciting as the work that's going on here."

For the past few years, Rankowitz and his group have been working almost exclusively on instrumentation for the Relativistic Heavy Ion Collider (RHIC) and one of its experiments, PHENIX (Pioneering High Energy Nuclear Ion Experiment).

For example, they designed the digital electronics for RHIC's beam-position monitor, as well as the timing system, the ARCNET control network, and the 64-channel time expansion chamber front-end modules for



Rankowitz and his group have now completed 112 of these PHENIX time-expansion-chamber front-end modules, which are installed and working (above, center, a module is shown in a testing phase). An additional 112 modules will complete the project by the year's end.

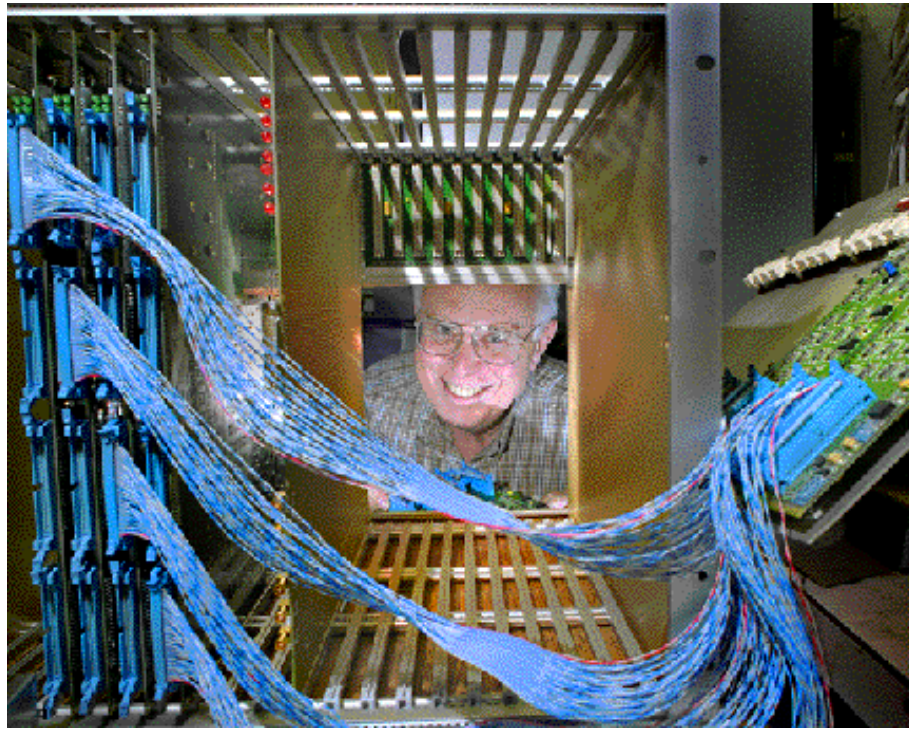
PHENIX. "Completing these crucial subsystems on schedule certainly kept our small, but very dedicated group buzzing," remarks Rankowitz.

Way Back When

When Rankowitz looks back, he recalls that instrumentation at BNL was buzzing right from the start. In 1949, when he joined the Instrumentation and Health Physics Department, as it was then known, everyone was handling several projects simultaneously to support the new Lab's research.

At that time, the department was chaired by J. Horner Kuper, with William Higinbotham heading the Instrumentation Division. Most of the scientists, engineers, and technicians were fresh out of the World War II Manhattan Project at Los Alamos, with some newcomers just out of school.

"The excitement and motivation among them was extraordinary," Rankowitz recalls. "I worked directly for Willy Higinbotham, who was a brilliant, inspiring leader, an intellectual powerhouse, and a wonderful human being. He had the energy to



Sy Rankowitz of Instrumentation, pictured last year looking into a front-end module crate which would hold about 15 of these modules to be used in the PHENIX detector at RHIC.

overpower the entire operation until he left us in 1968 to devote himself to nuclear nonproliferation efforts at BNL."

In those early days, developing scientific equipment was mostly done from scratch. "Now that we can get many parts of our instrumentation from industry, it's almost hard to remember that at that time, there was nothing out there. We had to make it ourselves," says Rankowitz. "There was no instrumentation industry then. We pioneered it."

Designing Devices

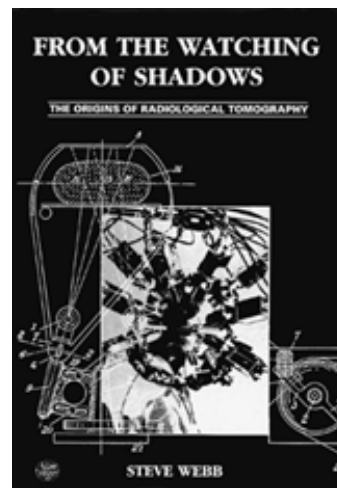
From the late 1950s, Rankowitz was involved in developing real-time computer systems in instrumentation and laboratory automation.

He has vivid memories of the thermionic tube-based instrumentation he worked on for the neutron time-of-flight spectroscopy at the fast chopper beam in the Brookhaven Graphite Reactor, as well as his work on the High Flux Beam Reactor's (HFBR) multiple spectrometer control system in 1965. This system simultaneously operated, controlled, and monitored one x-ray and eight neutron spectrometers. Independent research groups used the spectrometers, working at identical workstations that could be operated locally or from a central computer.

As computers and networking technology evolved in the 1970s and 1980s, Rankowitz helped design several generations of new neutron and x-ray spectrometer systems that were used by HFBR and National Synchrotron Light Source researchers in materials science, structural biology, physics, and chemistry.

During the energy shortage of the

1970s, offshore nuclear power reactors were considered as a possible alternative power source. Researchers from what was then the Department of Applied Science (DAS) were asked to evaluate any potential ef-



The first complete history of radiological tomography features the BNL "head shrinker," designed by Higinbotham and Rankowitz, on its cover.

fects on coastal oceanography. Rankowitz designed the radio telemetry and data-acquisition electronics for the innovative moored sensor buoys used by DAS. Positioned at various depths, sensors provided data that could be retrieved by radio telemetry for much longer periods than had previously been possible.

Head Starts at PET

One project that Rankowitz worked on made early history in the evolution of positron emission tomography (PET). To develop scanning tech-

niques to locate brain tumors, researchers at Massachusetts General Hospital had used tracers. After being absorbed in brain tumor tissue, the tracers emitted positrons that could be detected and counted by a pair of sodium iodide photomultiplier detectors, one on each side of the patient's head.

But this system was too slow and had to be moved around to get sufficient information. Instrumentation's Rankowitz, Higinbotham, and Martin Rosenblum, working with James Robertson of the Medical Department, developed a positron emission coincidence scanner in 1962 (see BNL Report 6041). This scanner could accumulate data more quickly without changing the position of either the patient or the detector.

The BNL designs used 32 detectors configured first spherically, then



Rankowitz and colleagues designed and built the BNL "hair dryer," a pioneering device in the early days of positron emission tomography (PET) technology.

in a single plane. However, analyzing the data from so many pairs of detectors required much more computing power, speed, and fast memory than was available.

"The two devices we built became affectionately known as the 'head shrinker' and the 'hair dryer,'" says Rankowitz. The historic importance as well as the eye-catching nature of the head shrinker made it a natural choice for the cover design of the first complete history of radiological tomography (see left). The hair dryer (see photo above) was later used in Canada for blood-flow studies. Eventually, systems developed elsewhere evolved into the modern PET scanners.

Future Forecast

Today is "where it's at" for Rankowitz. With his colleagues, he continues to develop innovative instrumentation and detector technology for research at BNL and neutron facilities.

"I could never have an alternative I'd enjoy more," Rankowitz says. "The need for better data acquisition never goes away, and there's always another experiment to start on."

— Liz Seubert

Equipment Demo

Voicestream/Omni, Today, 8/11

Today, Friday, August 11, from 10 a.m. to 2:30 p.m. in Berkner Hall, Voicestream/Omnipoint Communications will discuss special rates for BNLers for digital PCS wireless services on the GSM network.

All service plans include free caller ID, voice mail, SMS messaging, and more.

Monthly plans include one from \$19.99 for 75 minutes, \$39.99 for 500 minutes with the first incoming minute free, and weekend calling free with a one-year contract.

Other options include special international calling and roaming.

For more information, call Richard Goll at (516) 343-5900.

Environmental Stewardship Policy Awareness



BNL's Environmental Management System (EMS) is being audited during July-October. As a Lab employee, you should be prepared to answer questions that auditors might ask. This is the last in a five-part series to help you understand how BNL's EMS policy commitments apply to you and to give sample questions and answers. Your answers should be specific to your own work.

Policy: We will work to continually improve our environmental management system and performance.

Q: What does this really mean to me and my organization?

A: Continual improvement is a regular part of my daily activities. It is driven by the need not only to eliminate the source of problems, but also to ensure that systems do not stagnate — that they remain vigorous and relevant. We continually review our systems and processes to seek opportunities to do things better. As a part of the BNL team, I learn from our mistakes and successes and use that feedback and knowledge to improve.

IBEW Meeting

Local 2230, IBEW, will hold its regular monthly meeting on Monday, August 21, at 6 p.m. in the Knights of Columbus Hall, Railroad Avenue, Patchogue. There will be a meeting for shift workers at 3 p.m. at the Coram Union Office at 3650 Route 112.

The agenda includes regular business, committee reports, and the president's report.

Address Change

The Office for Foreign Visits and Assignments has moved from Bldg. 30 to Bldg. 50. All correspondence concerning foreign visits and assignments should be directed to David Peter, Ext. 2355, or Valerie Morton, Ext. 5524, in Bldg. 50.



Among those on board were: (from left) Joe O'Connor, who also heads the Lab's English for speakers of other languages program; Ivan Banchev, and Yelena and Steve Volkov.

Hospitality Banjo Cruise: A Great Ice-Breaker

On Wednesday, August 2 — one of the few summery evenings of the summer — 66 BNL students, facility users, families, employees, and retirees gathered for a sunset Banjo Cruise across Long Island Sound on the Port Jefferson Ferry. The Hospitality Committee had arranged discount tickets for the round-trip voyage and invited BNL community members of all categories to meet in this relaxed, yet out-of-the-ordinary atmosphere.

After being greeted at the dock by Hospitality Committee member Mary Jane Sheridan, the BNL participants

received name tags for easy recognition and boarded the newest ferry in the Port Jeff fleet, the *P.T. Barnum*. People wandered from deck to deck, settled in to chat or picnic, or sang along with the music. Some brought delicious food to share and swapped recipes. The sunset was delivered as advertised; the banjo music was lively.

Acquaintanceships flourished, and, with a renewed sense of BNL community, the group disembarked by the light of a crescent moon. All agreed: "We should do this again!"

— Liz Seubert



The group from the Lab also included: (from left) Shashi Somani, BNL Deputy Director Tom Sheridan, Nora Robles, BNL Director John Marburger, and Mike Robles.

Note: The Hospitality Committee invites all to a weekly welcome coffee on Tuesdays, 10-11:30 a.m. in the Recreation Building in the apartment area. These get-togethers are intended to introduce newcomers to life at the Lab and help them to make new friends. Watch the Bulletin for other planned events. For more information, call Hospitality Committee President Mimi Luccio, 821-1435, or Vicki Chang, Ext. 1053.

Join the International Set Preschoolers at Upton Nursery School



Stoutenburgh D0090600

classes, led by a teacher with credentials in early childhood development. High parent involvement gives the excellent student:teacher ratio needed by all preschoolers, whether or not

they speak English.

Michael Herbert, a photographer in the Information Services Division who sent his daughter to the school, plans to send his second daughter as soon as she is old enough. "Emma was very happy at

the school and learned a lot," says Herbert. "My wife and I liked the idea that she would make friends with children from other cultures, and we also liked being closely involved with what she was learning. We hope to send Genevieve to the school soon."

The Upton Nursery School meets on Mondays, Tuesdays, and Thursdays, 8:30-11:30 a.m., in the Recreation Building in the apartment area. Registration is being accepted for the 2000-2001 school year, which starts in September.

BNL employees, facility users, guests, on-site contractors, and their families who would like their three-to-four-year-old to attend the school should contact Shelly Shumway, shellyshumway@yahoo.com or 732-1367, Nora Robles, 345-3204, or M. Kay Dellimore, Ext. 2873.

Not many nursery schools send out enrollment forms in several languages, but BNL's Upton Nursery School does. Here on site, visiting scientists of many nationalities can find a friendly environment where their preschoolers can play and learn with other children even though they might not yet speak English.

"Our focus is multicultural, and we specialize in welcoming children from every country," says Shelly Shumway, who heads the small, parent-run cooperative school.

First started at the Lab in 1965, the school provides small, friendly

Toxin Structure (cont'd)

use in several therapeutic applications. Botulinum toxins are currently used to treat a variety of involuntary movement disorders. By injecting minute quantities of the toxin into the spasmodic muscles that cause facial twitches, writer's cramp, or stuttering, for example, doctors have been able to calm the muscles. Treatments, however, are only temporary and must be repeated. Understanding the structure of the toxin could improve the efficacy of these treatments.

The current research could also lead to better tests for the presence of the toxin in foods and in weapons or weapons factories. One direct aim of the research, which is funded by the Chemical and Biological Nonproliferation Program of the U.S. Department of Energy, is to provide improved means of detecting and limiting the spread of toxins and biological weapons.

The Brookhaven scientists work with minute quantities of purified botulinum toxin, which they purchase from the Food Research Institute in Wisconsin under strict regulation and with the approval of the U.S. Centers for Disease Control and Prevention in Atlanta. Only authorized scientists have access to the laboratory.

The current research appears in the August 2000 issue of *Nature Structural Biology*. — Karen McNulty

BERA Events For All the Lab Community

Enjoy joining in some of these upcoming BERA events. All BERA activities are automatically open to all employees, retirees, facility users, BNL visitors, and their immediate families.

Tickets may be purchased from the BERA Sales Office in Berkner Hall, Monday through Friday, from 9 a.m. to 3 p.m. Tickets are sold first come, first served. All departures are from the Brookhaven Center promptly at the times listed below. For additional information, contact Andrea Dehler, Ext. 3347, or M. Kay Dellimore, Ext. 2873.

Waldbaum's Balloon and Music Festival Adult \$9 Child \$5
Friday to Sunday
August 18 to 20
Calabro Airport, Shirley.
(No transportation provided.)

Atlantic City Bus Trip \$24
Sunday, September 9
Resorts/Casino on Boardwalk
Atlantic City, NJ
Receive coin bonus return.
Departs from BNL at 8 a.m.
Returns at 10:30 p.m.

Wine Tour & Tasting \$23
Saturday, September 23
Bus trip to Paumanok, Jamesport, Pugliese, and Pindar Vineyards.
Free time in Greenport for shopping or dinner from 4:30 to 7 p.m.
Departs BNL at 11 a.m.
Returns at 8 p.m.

New York City \$19
Saturday, October 14
Do your own thing or visit The Hayden Planetarium or The American Museum of Natural History. Bus will make two stops; North side of the Museum at West 81st St.; and Rockefeller Center area for shopping and dining.
Departure from BNL at 11 a.m.
Returns at 7 p.m.

Radio City Christmas Show \$89
Saturday, December 9
2 p.m. matinee at Radio City Music Hall. Orchestra/front mezzanine seats. Free time in Rockefeller Center area to shop and dine.
Departure from BNL at 9 a.m.
Returns at 7 p.m.

Men's Money League

The BERA Men's Money Bowling League is open to BNL workers, facility users, and their families and friends. Beginning on September 5, the league will meet on Tuesday nights, with a 6:30 p.m. start. For more information contact John McCaffrey, Ext. 2075; Ron Mulderig, Ext. 3084; or Ken Kobel, Ext. 7351.

Arrivals & Departures

Arrivals
Dennis M. Kotarski Plant Eng.

Departures
Rafal Goraczniak Biology
Feng Hsu En. Sci. & Tech.
Geeta A. Joshi-Tope ... En. Sci. & Tech.
Dieter Lott NSLS

Call for Bowlers BERA Mixed League

Summer may not yet be over, but it's time to "think bowling" again.

All BNL employees, facility users, retirees, family, and friends are welcome to join in — you do not have to be a great bowler, just a willing one! Applications for the Thursday night mixed league that meets in Shirley are available now.

Captains' Meeting

A captains' meeting will be held on Thursday, August 24, at noon in the Building 211 conference room. All team registrations are due by August 31.

For applications and more information, contact Debbie Keating, Ext. 3888.

Flu Vaccine Shortage

Lower than anticipated production yield for this year's influenza vaccine component and other manufacturing problems have forced the start of the Occupational Medicine's influenza program to be delayed until early to mid-November. Occupational Medicine will continue to keep employees informed of any new developments.

BNL Food Drive

Please donate early: food will be picked up on Thursday, August 17. Or, send a check to BNL Food Drive, c/o Rita Kito, Bldg. 460, or Donna Wadman, Bldg. 129.

Classified Advertisements

OPEN RECRUITMENT - Opportunities for Laboratory Employees and Outside Candidates.

MK7018. SPECIAL ASSISTANT TO THE ASSOCIATE LABORATORY DIRECTOR (ALD) - Will report directly to the ALD - Basic Energy Sciences. Requires a bachelor's/master's or Ph.D. degree in an appropriate discipline. Candidate should have previous managerial experience and possess excellent analytical and communication skills (oral and written). Will provide direct managerial and administrative support to the ALD for Basic Energy Sciences (BES) in the operation of the Directorate programs. Will ensure the application of DOE, BNL, and other pertinent regulations, coordinate audits and reviews within the BES Directorate and oversee and implement corrective action plans and/or improvement initiatives. Will work on special projects; represent the ALD, requested, at meeting and planning sessions; and act as liaison between ALD and organizational units reporting to the ALD. Will also respond to requests for information from the Laboratory, DOE and outside organizations. Basic Energy Sciences Directorate.

(continued on page 4)

BROOKHAVEN BULLETIN

Published weekly by the Media & Communications Office for the employees, facility-users and retirees of BROOKHAVEN NATIONAL LABORATORY

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On the World Wide Web, the Brookhaven Bulletin is located at www.pubaf.bnl.gov/bulletin.html. A Weekly Calendar listing scientific and technical seminars and lectures is found at www.pubaf.bnl.gov/calendar.html.

Summer Sundays Feature BNL's Firehouse

If you wanted to be a firefighter when you grew up and/or have kids who still do, then come back to the Lab this Sunday when the Fire-Rescue Group opens the engine bay doors to BNL's own firehouse, Bldg. 599, and the compartments of its various fire engines for a visit.

On display will be Fire-Rescue's two class A pumpers, its "stump-jumper" brushfire truck, its ambulance, the hazardous-materials response trailer, and the chief's car.

In addition to everyday response to on-site alarms, BNL firefighters have distinguished themselves within the local community. Lab firefighters helped fight the Rocky Point and Westhampton wildfires of 1995 (Brookhaven Bulletin, Sept. 1, 1995) and answered haz-mat calls in Brookhaven Town while its fire companies were involved in TWA Flight 800 recovery work (Brookhaven Bulletin, Aug. 16, 1996).

Most recently, BNL firefighters assisted the Middle Island Fire Department (see story, right).

Besides touring the firehouse, Lab visitors may take a guided bus trip around the site, participate in the Whiz Bang Science Show, and view the Camp Upton Historical Collection. BNL's Summer Sunday tours run 10 a.m.-5 p.m., but visitors must arrive before 3 p.m. The tours are free, open to the public, and no reservations are needed.

BNL Firefighters Help Out in the Neighborhood



BNL firefighters (from left) Joseph Perry, Kevin Cosgrove, Captain Charles LaSalla, Daniel Harrow, and James Forkin display the hydraulic powered Hurst Tool, known as the "Jaws of Life," in BNL's heavy rescue truck. With William Rabatin (not present) the crew had used the equipment to help the Middle Island Fire Department extricate a critically injured motorist trapped in his car after an accident.

All was quiet at BNL's firehouse on the evening of July 14, when in came a request from Suffolk County Fire Rescue Communications (FIRECOM). The call dispatched BNL's fire-rescue group to the scene of an off-site motor vehicle accident, where the Middle Island Fire Department was requesting assistance.

According to Charles LaSalla, the BNL fire Captain on duty that night,

"FIRECOM's initial activation requested BNL's heavy rescue truck to go to the intersection of Longwood and Smith Roads, where a victim was reported trapped in one of the automobiles involved in the head-on crash."

En route to the scene in BNL's first responder vehicle, LaSalla was updated on the situation and asked by FIRECOM to provide an ambulance also. Arriving less than five minutes

after being dispatched, LaSalla's crew was directed to begin extricating a male driver from his compact car. Assisted by firefighters from the Middle Island Fire Department, BNL firefighters James Forkin, Kevin Cosgrove, Joseph Perry, Daniel Harrow, and William Rabatin began moving the steering wheel and dashboard away from the trapped driver.

"Middle Island's crew did an outstanding job of opening up the driver's side door. Once we had access to the interior, our team began working to free the driver's legs," said LaSalla.

In order to remove the driver from the severely damaged vehicle, the firefighters used the Hurst tool — commonly known as the "Jaws of Life" — along with several ram tools, each of which is capable of pushing, pulling, spreading, and prying apart the dashboard and other vehicle components with several thousand pounds of force per square inch.

Once the victim was extricated from his vehicle, he was transported to Stony Brook University Medical Center by Suffolk County Police helicopter. He was later transferred to St. Charles hospital where he is recovering.

"This was the first opportunity that I had to act in the capacity of a Captain at an incident such as this," reported LaSalla, who had been promoted to Captain only three months prior to the incident. "Everyone, both BNL and the Middle Island firefighters, did a great job working together to accomplish the task at hand." — John Galvin

Classified Ads (cont'd)

DD8590. SCIENTIFIC ASSOCIATE POSITION - Requires a bachelor's degree in chemistry with a concentration in analytical or inorganic chemistry. Radiochemistry experience is highly desirable, as well as mechanical aptitude and machine shop and general computer skills. Will perform laboratory work in the development, chemical processing and assay of radioisotopes for use on and off site. Will participate in operation and maintenance of the BLIP and Target Processing Laboratory (hot cell) facilities. Related functions include isotope packaging and radwaste disposal. Medical Department.