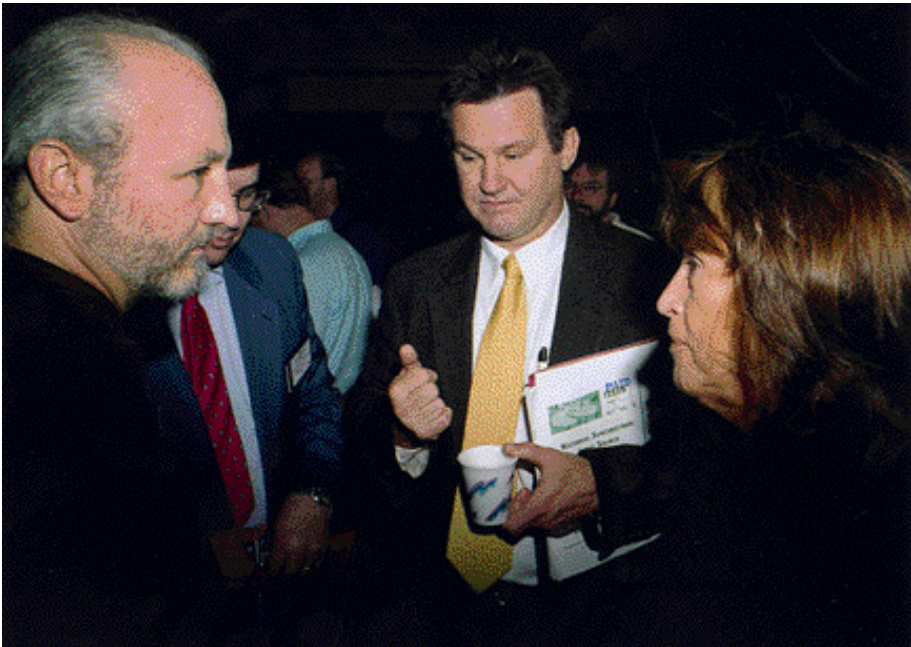


## Crystallography, Source Development, Agency Funding Among Topics Discussed at 1999 NSLS Users' Meeting

The expansion of protein crystallography, the history and present-day development of synchrotron-radiation sources, and the growth of research in the face of flat budgets were topics reiterated during the National Synchrotron Light Source (NSLS) Annual Users' Meeting that took place May 24-26. The on-site meeting was comprised of six workshops, a poster session and a vendor show in addition to the main meeting, which was held on May 25th.

The main meeting started with an overview by Lab Director John Marburger, who was introduced by Denis McWhan, Associate Laboratory Director for Basic Energy Sciences. The focus then moved to user science.

Later, Michael Hart, NSLS Chair, gave an update and spoke about future plans. According to Hart, NSLS research in biological sciences is expanding, with protein crystallography the fastest growing application. Hart presented the proposed NSLS Phase



photos on this page by Roger Stoutenburgh

(From left) 1999 NSLS Users' Meeting Organizing Committee Chair Paul Stevens, 1998-99 Chair of the User's Executive Committee (UEC) John Parise, and 1999-00 UEC Chair Barbara Illman.

III upgrade, as well as details of budgets and operations over the past year.

Erik Johnson, NSLS, talked about the Source Development Laboratory, where work is underway to develop a fourth-generation source using a linac and a free electron laser (FEL). The latter will commence operations in what is called the self-amplified spontaneous emission (SASE) mode, with the linac slated to begin running in 1999. Ultimately, the FEL will be what is known as a seeded device in which an external laser will provide the initial signal, or seed, to be amplified in the undulator.

Giving the final talk before lunch, Patricia Dehmer, who is the Associate Director of DOE's Office of Basic Energy Sciences, set DOE in perspective as the largest agency for funding re-

search and facilities for the physical sciences. Dehmer then summarized the strategic plan that has been developed by the NSLS to address science in the 21st century.

The plan calls for the study of more complex systems in four DOE categories that integrate physics, chemistry, materials science, and biology. Dehmer's talk ended with a discussion of flat budgets and the challenge of making the difficult but defensible choices.

After lunch, John Norvell, who is the

Assistant Director, National Institute of General Medical Sciences of the National Institutes of Health (NIH), delivered the keynote address on his agency's support for synchrotron radiation-based research.

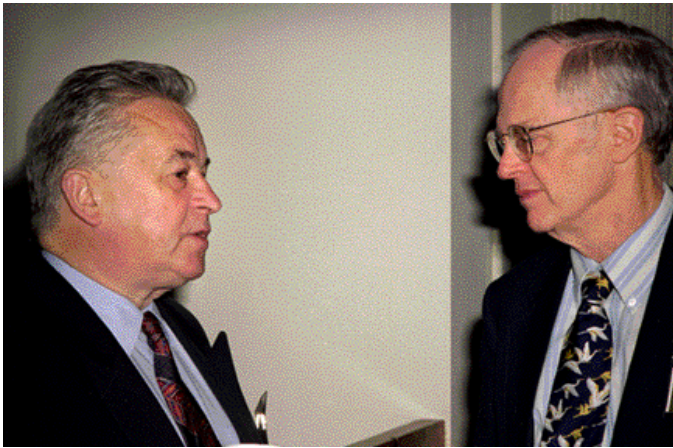
For example, last October, NIH granted BNL's Biology and NSLS Departments \$1.6 million to develop new structural biology techniques, equipment and software as the first installment of a five-year, \$8.3 million investment in the project. Not only have several new programs been put in place, but also plans are evolving for an increasing NIH role in supporting the beam lines and part of the upgrade of the NSLS's storage rings.

Jerry Hastings, NSLS, then gave a talk entitled "Insertion Device Evolution at the NSLS," in which he presented a historical perspective that highlighted the many firsts at the NSLS in the field of synchrotron radiation-source development.

Finally, Kwang-Je Kim, Associate Director of Research of the Advanced Photon Source, Argonne National Laboratory, concluded the formal part (continued on page 2)



Kwang-Je Kim



Michael Hart and John Norvell

## BNL Asbestos-Transforming Technology Is Environment Finalist In 10th Annual *Discover* Awards for Technological Innovation

An asbestos-digesting foam developed by BNL and W.R. Grace & Company was among four DOE-funded innovations that became finalists in *Discover* magazine's 1999 Awards for Technological Innovation.

The winners within each of *Discover*'s ten categories were announced June 5th, at a ceremony at Walt Disney World's Epcot Center, and will be featured in a special July awards issue. While it was not the winning innovation within the environment category, BNL's asbestos-abatement technology finished third in that division in an on-line *Discover* magazine readers' poll.

The magazine's editorial panel had selected this year's 27 finalists from among more than 4,000 nominees. The winning technologies were selected by an independent panel of judges. The four DOE-funded technologies that became finalists this year brought the Energy Department's finalist total to 27 over the ten years of this contest.

"It is gratifying to have independent recognition of the value of Department of Energy-funded research to the nation," said Secretary of Energy Bill Richardson, following the announcement of the finalists in April.

"Whether done at one of the Department's national laboratories or at a university, this research is already making and will continue to make real contributions to our country's environment, health and economic competitiveness."

### DMA

Dubbed the asbestos eater, this new product is capable of destroying what is called chrysotile asbestos contained in porous

Among those at BNL who helped develop the asbestos-eating technology, which was a *Discover* Magazine Awards for Technological Innovation finalist, are: Leon Petrakis (front, left), who holds asbestos fireproofing before treatment with the BNL-Grace abatement process; Ron Webster (front, right), who holds a treated panel; (back, from left) Marita Allan, Toshi Sugama, and Bob Sabatini.



materials installed as fireproofing.

The process is the first to destroy asbestos chemically without having to remove asbestos-containing fireproofing and without diminishing the remaining fireproofing's performance (see Brookhaven Bulletin, December 12, 1997). Thus, this technology eliminates the need to remove and dispose of old asbestos-containing fireproofing, and reapply new fireproofing.

Codeveloped by former BNL employee Leon Petrakis in the Department of Applied Science, the new technique uses a foamy solution that chemically digests asbestos fibers, dissolving them into harmless minerals. While the new technology is being used, there is virtually no emission of asbestos fibers, thus allowing for simpler preparation of the abatement area. When the treatment is done, so few fibers remain that the product no longer falls under regulations for asbestos-containing material.

The new technology is available from Grace as DMA, for Digestion Material for Asbestos. For more information, go to [http://www.gcp-grace.com/products/fireprotect/dma\\_info.html](http://www.gcp-grace.com/products/fireprotect/dma_info.html) on the World Wide Web.

# Maglev Inventors Win Franklin Institute's 2000 Franklin Medal in Engineering

"For the invention of a novel repulsive magnetically-levitated train system using superconducting magnets, and subsequent work in the field," Maglev inventors Gordon Danby and Jim Powell will be awarded the 2000 Benjamin Franklin Medal in Engineering by The Franklin Institute.

One of five Franklin medals awarded annually, the engineering medal will be presented to Danby and Powell on April 27, 2000, in the rotunda of the Benjamin Franklin National Memorial in The Franklin Institute of Philadelphia. In addition to the awards ceremony and dinner, the Franklin medal winners and others will be involved in a series of lectures, symposia and informal discussions planned for the week of April 24.

Founded in 1824, The Franklin Institute was established to transform the city's economy from commerce to industry by fostering science and technology literacy among working people, and by supporting and promoting local science-based manufacturers. Dating from the Institute's founding, the Institute's medals are given annually in recognition of the recipients' genius and civic spirit and in memory of the Institute's namesake, Benjamin Franklin, who exhibited those same qualities.



L.I. Students Test Their Vehicles During 9th Annual Maglev Contest

Long Island middle-school students enthusiastically test a handmade, model Maglev vehicle with Carol Otto, an educator with the Museum Programs of the Community Relations Office. Those shown were among almost 300 students from 15 school districts in Nassau and Suffolk Counties who entered the 9th Annual Middle School Magnetic Levitation Contest held at the Lab.

The students designed and built model Maglev vehicles according to certain size and weight specifications, with the goal of designing the fastest vehicle with the fewest magnets. Fifteen winners received trophies.

In addition to Brookhaven Lab, the contest was sponsored by Hofstra University, Center for Technology Education; the Long Island Technology Administration Association; the Nassau Technology Association; and the Suffolk Technology Education Association.

Maglev — the suspension, guidance and propulsion of vehicles using magnetic forces — was invented by Brookhaven Lab scientists Gordon Danby and James Powell (see box, top left) in their spare time. In 1968, they were granted the world's first patent for a practical, electrodynamic, magnetically levitated train — or what is now know around the world as Maglev.

After 30 years of research and development, and billions of dollars of investment, Maglev is almost a reality for use at speeds over 500 kilometers per hour between cities in Germany and in Japan. Within the U.S., federal and state governments are interested in Maglev as an alternative to long car rides and short airplane trips that is energy-efficient, affordable, safe, quiet, pollution-free, and convenient. In fact, Florida will study the feasibility of this form of transportation by operating Maglev on a guideway to be located at Cape Canaveral.

# Summertime Is Lyme Disease Time

Students and visitors who are new to BNL this summer may also be unfamiliar with Lyme disease, which is the most common tick-borne disease in the U.S. and is epidemic in Suffolk County, which has the highest incidence of Lyme disease in the country.

First recognized in the U.S. in 1975 after a mysterious outbreak of arthritis near Lyme, Connecticut, Lyme disease is an infection caused by the spiral-shaped bacteria *Borrelia burgdorferi*. In the northeastern U.S., the bacteria is harbored within a tick called *Ixodes scapularis*, which is more commonly known as the deer tick because it is commonly found on white-tailed deer. Living within woods and fields, deer ticks are dark and small: in their larval and nymphal stages, they are no bigger than a pinhead. — making them very hard to spot.

Deer ticks take three blood meals during their life cycle: in the summer, during the larval stage; as nymphs, the following mid-May through July; and, as adults, the following spring. It is usually during that first blood meal from an infected white-footed mouse that deer ticks acquire *B. burgdorferi*. The nymph tick is responsible for 90 percent of human cases of Lyme.

As ticks feed, their bodies engorge with blood, and they transmit bacteria from their gut into the bloodstream of their victims. Once infected with the Lyme disease-causing bacteria, victims can display fever, muscle aches and fatigue — symptoms that are often mistaken for the flu. Only half of those with the disease display the red, round, bull's-eye target-shaped rash around or near the site of the bite.

If not diagnosed and treated with antibiotics until cured, then Lyme disease will progress. Years later, untreated victims display arthritis, neurological disorders, and heart irregularities. If left untreated, Lyme disease becomes chronic and resistant to antibiotic therapy.

Recently, one of two vaccines developed to prevent Lyme disease was approved by the U.S. Federal Drug Administration and has been made available to the public (see box below).

The chances of being bitten by a tick can be decreased by undertaking a few precautions: avoiding tick-infested woods and fields where deer roam; in those areas, walking in the center of trails to avoid overhanging grass and bush on which ticks crawl (they do not jump from trees); wearing light-colored clothing in those areas; tucking pant legs into boots and shirt tails into trousers; pulling socks over pant legs and taping the area where the two meet; wearing long-sleeved shirts; using a tick repellent; removing all outdoor clothing carefully, and washing and drying it at high temperature; and checking yourself, your family and pets for ticks.

If you find a tick attached to the skin, then you can remove it carefully with tweezers by grasping the tick as close to the skin surface as possible and pulling straight back with a slow, steady force. Avoid crushing the tick's body. Save the tick in a sealed container for later identification. If you have been bitten and/or are manifesting Lyme disease symptoms, seek medical attention.

# Lyme Disease Vaccine Available Free to High-Risk Employees

The recently approved Lyme disease vaccine is being offered free by the Occupational Medicine Clinic only to BNL employees with the highest occupational risk of getting Lyme disease (see story above). Those employees are BNLees whose current jobs require them to undertake Lyme disease-prevention training.

The clinic will contact each of these employees individually to discuss the pros and cons of the vaccine, and their interest in receiving it. Other BNL employees interested in having the vaccine administered should contact their medical providers.

Now available to the public over age 15, the recently approved Lyme-disease vaccine is administered in a series of three immunizations over a one-year period. It is reported to be safe and effective in people of age 15 to 70, the age group in which trials of the vaccine were conducted. However, the vaccine may not protect 100 percent of the individuals receiving it. In addition, if the series of three immunizations has not been completed, the vaccine's efficacy in producing immunity to the Lyme disease-causing bacteria is reduced.

Since the vaccine has only been used in a short-term trial, its long-term side effects are not yet known. But what is known is that this vaccine does not protect against other diseases, such as babesiosis and ehrlichiosis, that may also be the result of tick bites.

## NSLS Meeting (cont'd)

of the meeting with his talk entitled "Towards Coherent 1-Angstrom Radiation via High Gain Free Electron Lasers." In his talk, Kim included a detailed theoretical description on machine and device aspects of developing such a source.

At the end of the meeting, Barbara Illman, University of Wisconsin, took over the reins from John Parise, State University of New York at Stony Brook, as Chair of the User's Executive Committee, thanking Parise and his committee for their efforts over the past year and congratulating the meeting's organizers for its success.

"Over the next year, we expect to report accomplishments by the NSLS staff and users working together to maintain the historical position of the NSLS as a state-of-the-art user facil-

ity," she said.

Later, Illman commented that users' commitment to research at the NSLS is exemplified by the high quality of workshops they give at each annual meeting. Also, this year, more users than ever before actively supported their vested interest in the NSLS by volunteering to work with the users' executive committee on current and future issues affecting the NSLS, Illman said.

"The users have a unique position and responsibility for maintaining the excellence of the NSLS," concluded Illman. "The user community is growing. Dedicated researchers from diverse areas of science are making an impact on many scientific disciplines with research conducted here. Users need to be more aware and responsive to outside interests that can deter our use of large scientific facilities."



The 1999 NSLS Annual Users' Meeting organizing committee: (back, from left) Mark Chance, Albert Einstein College of Medicine; Committee Chair Paul Stevens, Exxon Research & Engineering Co.; Steven Hulbert, BNL; (front, from left) Nancye Wright, Linda Feierabend, and Sue Wirick, BNL. Not pictured: Joel Brock, Cornell University; Jean Jordan-Sweet, IBM; and Eva Rothman, BNL.



**If Any Alarm Bell Rings,  
Leave Bldg. Immediately**

**Effective Thursday, July 1, any time a fire alarm rings within a building at BNL, all occupants are to leave that building immediately — regardless of whether the bell is ringing continuously or intermittently.**

**In the past and as indicated on the back of the currently used 1997 BNL telephone directory, occupants of BNL buildings had to evacuate only upon hearing an intermittent bell.**

**Now, those in Lab buildings must leave upon the sounding of *any* bell.**

**This change not only puts the Lab in compliance with the way emergencies are responded to across the country, but also give building occupants additional time to get out of a building in the event of an emergency that requires evacuation.**

celerators. Performance analysis will include relating measured magnetic fields to construction parameters. Will work in the magnet R&D program within the Superconducting Magnet Division. Under the direction of P. Wanderer and M. Harrison, RHIC Project.

DD8045. TECHNICAL POSITIONS - Require an AAS degree or equivalent significant experience in the waste-management industry, including radiological operations experience and Radiological Worker and HAZWOPER training. Radiological and/or hazardous-waste packaging/handling/labeling experience and a knowledge of BNL standards and/or DOE orders that apply to waste management also required. Will support the Generator Services Supervisor by assisting waste-generators: in radioactive- and hazardous-waste characterization, with technical support on waste-management issues, and in pursuing waste-minimization opportunities. Waste Management Division.

**Sign Up Today  
For BBQ on July 2**

Those on-site residents and their friends and families who wish to attend the barbecue being held in honor of Independence Day are reminded that they must sign up by today, Friday, June 25.

Sponsored by the Hospitality Committee, the barbecue will be held on Friday, July 2, at 6 p.m. in the covered barbecue area within the apartment area. The Hospitality Committee will provide beverages, hamburgers, hot dogs, and the charcoal for grilling food; participants are asked to bring a side dish, salad or dessert to share.

To attend, fill out one of the slips found in the apartment-area laundry. Return completed slips today to Apartment 3A. For more information, call Julie Kim-Zajonz, 929-0405, or Susan Hart, 821-4257.

**IBEW Meeting**

Local 2230, IBEW, will hold its regular monthly meeting on Monday, June 28, 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 union office. The agenda includes regular business, committee reports and the president's report.



**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 complete list of all job openings; use a TDD system to access job information by calling (516) 344-6018; or access current job openings on the World Wide Web at <http://www.bnl.gov/JOBS/jobs.html>.

**OPEN RECRUITMENT** - Opportunities for Laboratory employees and outside candidates.

MK8121. ASSOCIATE SCIENTIST - Requires a Ph.D. in physics, and substantial experience in use of computer codes to optimize field strength and uniformity, quantity of materials, and ease of construction. A strong track record of innovation is preferred. Will be responsible for designing and analyzing the performance of superconducting magnets for particle ac-