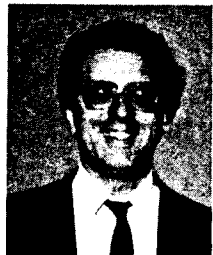


Denis McWhan Takes NSLS Chair

As a long-time user of the National Synchrotron Light Source (NSLS), Denis McWhan "knows what it's like to be on the floor — what the operating conditions are and what to expect." On Tuesday, May 1, McWhan moved from the NSLS experimental floor to its upstairs department offices, when he became Chairman of the NSLS Department.

McWhan's appointment was announced on April 25 by BNL Director Nicholas Samios, who said, "I am happy to announce that Dr. Denis B. McWhan of AT&T Bell Laboratories has accepted the position . . . Dr. McWhan has had a long relationship with the Light Source as a user, which has culminated in his service for the past year as Chairman of the Users Executive Committee. He has also been responsible for the management of the five AT&T x-ray beam lines at NSLS, and he has had a distinguished career as a researcher in solid state physics.

"As Denis takes on this position," Samios continued, "I would like to thank Sam Krinsky for the outstanding job he has done as Acting Chairman since September. This has been a difficult job, and Sam has performed magnificently. We are pleased that he will continue to serve as Deputy Chairman of the Light Source in the future."

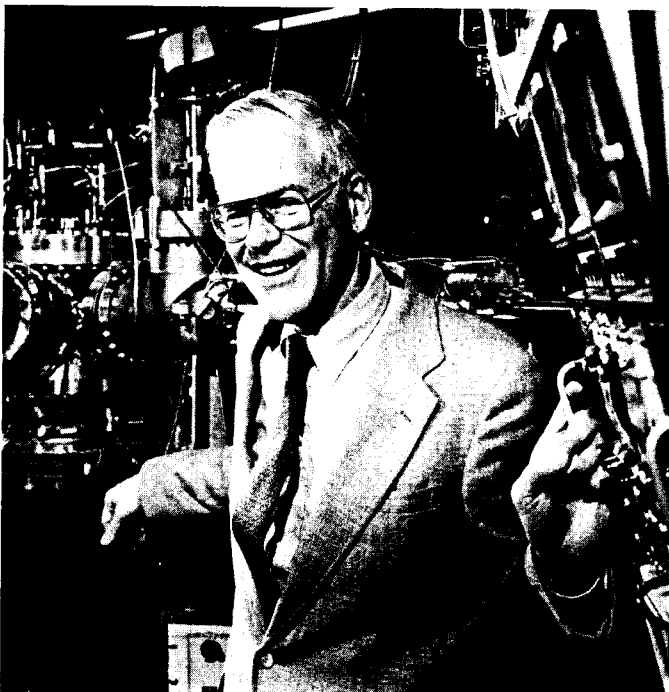


Samuel Krinsky

As Samios pointed out, "The Light Source is now the premier synchrotron radiation source in the world, with 1,500 users from many different disciplines and organizations, and outstanding research results are commonplace. Denis and Sam will have the task of maintaining this strength and leading to a new and stronger future."

This is a challenge McWhan relishes. As one who began using the High Flux Beam Reactor in 1974, and who has used the NSLS since the early 1980s, he observed, "It's exciting to realize that BNL is the only laboratory where condensed matter scientists have access to synchrotron radiation, neutron, positron and muon sources.

"In terms of synchrotron radiation, the Light Source is the world's leading facility because of the dedicated work of the NSLS staff over many years. In addition to providing synchrotron radiation to our 1,500 users, we look forward to the NSLS staff's continuing forefront research and development in synchrotron sources and insertion devices and, in collaboration with the Accelerator Test Facility, possible new sources of radiation, such as ultraviolet free electron lasers. We will rely on the users and accelerator physicists to define what the next



Denis McWhan

generation of sources should be and to make the scientific case for them."

Though he expects his own experience as an NSLS user to be invaluable to him in his new role, McWhan expects to spend far more time running the Light Source than using it. "I will try to be part of a couple of the magnetic scattering experiments this summer, but the challenge of keeping the NSLS as the premier synchrotron radiation facility through the 1990s will take all of my time," he said.

The experiments to which he refers are studies in magnetic x-ray scattering, a technique that he, BNL Deputy Director Martin Blume and BNL Physicist Doon Gibbs have been developing for several years. This work, said McWhan, "has enabled us to learn new things about a class of materials called heavy fermion superconductors."

Magnetism is a common focus to several NSLS experiments, a fact which precipitated the "Workshop on the Use of Synchrotron Radiation in the Study of Magnetism." It will take place at BNL on Wednesday, May 16, in conjunction with the NSLS Annual Users' Meeting, May (continued on page 2)

Tech Transfer Rewarded

Three Department of Applied Science researchers have won Federal Laboratory Consortium Awards for Excellence in Technology Transfer.

The winners are Leonard Hamilton and Paul Moskowitz, for their work with the photovoltaics industry, and Meyer Steinberg, for his efforts in promoting HYDROCARB, a novel process to make clean carbon fuel.

The Federal Laboratory Consortium (FLC) is made up of more than 500 federal laboratories and research centers. To date, 12 BNL researchers have won FLC Technology Transfer Awards since the award program was established in 1984.

Hamilton and Moskowitz are credited with identifying and evaluating health and safety hazards, as well as risk management approaches for new manufacturing processes and materials used in photovoltaic energy systems.

Having begun this work in 1979 for the Photovoltaics Technology Division of the U.S. Department of Energy (DOE), they point out that DOE had the foresight to incorporate environmental, health and safety concerns early in the development of photovoltaics.

As part of their work, Hamilton and Moskowitz prepare environmental audits of industry and university facilities; train personnel on risk assessment/management techniques; network with industry, university and federal agencies on environmental, health and safety issues; and operate an electronic bulletin board for exchanging information.

Recently, they began a cooperative program with the Solar Energy Research Institute, Photon Energy Inc., Siemens Solar Inc., and ASARCO Inc. to evaluate the feasibility of recycling hazardous solid wastes produced by the photovoltaics industry. The program will assist industry in developing environmental controls at minimal cost. It will also help to ensure that further development of the technology will not be impeded by future environmental hazards.

Hamilton and Moskowitz give thanks to Alec Bulawka, project officer, and Robert Annan, director, of DOE's Photovoltaics Technology Division, for sustained funding of their program.

In winning his tech transfer award, (continued on page 2)



Tiger Team Ends Visit

Berkner Hall was filled to near capacity on Friday, April 27, when these members of the Tiger Team gave closeout comments on their month-long assessment of BNL's compliance with applicable environmental, safety and health regulations. The Tiger Team's findings will be issued as a report in about one month, after which they will be summarized in the Bulletin.

The U.S. Department of Energy (DOE) team was headed by John Tseng (standing above), who was in charge of three subteams of technical experts: (from left) Joseph Boda headed the subteam on environmental compliance; Oliver Lynch was on the subteam appraising safety and health compliance, which was headed by Yo Taik Song; and Wayne Hibbitts led the subteam evaluating management policies and practices.

Along with the subteam representatives, Tseng expressed his appreciation for the "cooperation and support we have received from the Lab — it's tremendous." Tseng also noted that during this assessment, BNL set two Tiger Team records — as the first non-defense facility to be assessed and the first facility to host an all-DOE team.

In thanking the Tiger Team for their efforts, BNL Director Nicholas Samios observed that a good scientific program goes hand in hand with a good safety and environmental protection program. "We have been enormously successful in our scientific endeavors," he said, "and I know we can achieve the same level in safety and environmental matters.

"I want to thank the staff, technicians — everyone at Brookhaven," Samios added, "for their efforts in preparing for the Tiger Team, assisting them, and now responding to their findings. Good job!"

Coming Up

Keith Jones, Senior Physicist in the Department of Applied Science, will present the next Brookhaven Lecture on Wednesday, May 16, at 4 p.m., in Berkner Hall. His topic will be "From Anthracite to Zeolite — Elemental Analysis Using Photon and Ion Beams."



Associate Director for Applied Programs Sy Baron (second from right) congratulates (from left) Paul Moskowitz, Leonard Hamilton, and Meyer Steinberg for winning 1990 Federal Laboratory Consortium awards for technology transfer.

— Photos on this page by Stoutenburgh

Harvey Brooks to Deliver Haworth Lecture on Monday

"Science and Technology Policy and the American Competitiveness Debate" will be the topic of a Labwide lecture by the Lab's sixth Haworth Distinguished Scientist, Harvey Brooks. The talk will take place on Monday, May 7, at 4 p.m. in Berkner Hall and will be followed by a reception.

An emeritus professor of applied physics and of technology and public policy at Harvard University, Brooks began his appointment last January, but this lecture was postponed due to snow.

During the talk, Brooks will review not only the proposed causes of the

decline of American competitiveness in the world market, but also the suggested solutions to this problem. He will especially focus on the role that science and technology play, and how government policy regarding basic research and high technology affects American competitiveness.

Brooks took his A.B. in mathematics at Yale University in 1937 and his Ph.D. in physics from Harvard University in 1940. There, he served as Dean of the Division of Engineering and Applied Sciences, 1957-75.

Now at Harvard's Kennedy School of Government, Brooks is researching the national policy on dual-use technologies, that is, technology having both military and civilian applications. One of his current memberships is on the U.N. Advisory Committee on Science and Technology for Development.

The Haworth Distinguished Scientist appointments were established to honor the memory of Leland J. Haworth, BNL's second Director, who died in 1979.

While at the Lab, Brooks' host is the Department of Applied Science. For more information about his BNL schedule, call Pat Taylor, Ext. 2452.



Harvey Brooks

Tech Transfer (cont'd)

Meyer Steinberg was cited "For unstinting and continuing efforts in promoting the HYDROCARB process for producing clean carbon fuels from coal up to the point of industrial acceptance and initial funding of a prototype system."

Steinberg, along with BNL consultant Edward Grohse, invented HYDROCARB, a two-part process in which coal is reacted with hydrogen, and the resulting methane is then further decomposed into elemental carbon and hydrogen.

HYDROCARB has worldwide applications, Steinberg points out. "Wherever large resources of coal exist, including the U.S., Canada, Poland, Australia, China and South Africa, HYDROCARB can be used to produce an economical and clean carbon

fuel," he says. "The process also produces hydrogen-rich and methane-rich gaseous fuel or liquid methanol and gasoline fuel." He adds that the fuels are ash- and sulfur-free, making them "highly environmentally acceptable."

As a result of Steinberg's efforts, AMAX Corporation of Golden, Colorado, has entered into a cost-shared agreement with the DOE Morgantown Energy Technology Center to build a prototype plant, which is required to test the economics of the laboratory-proven process and to see whether it can be scaled up.

According to Steinberg, AMAX intends to use HYDROCARB to upgrade the initial products from its own mild, low pressure and low temperature coal-gasification process into clean carbon, which is already used in copying machines and to make tires.

RHIC/QED Workshop Looks Forward



Once the two beams of heavy ions in BNL's proposed Relativistic Heavy Ion Collider (RHIC) start colliding at a combined energy of 200 billion electron volts per nucleon pair, interactions will occur where the nuclei actually hit each other and make nuclear reactions. These are the collisions that could produce a quark-gluon plasma. In addition, enormously strong electromagnetic fields will cause long-range electromagnetic interactions. These effects, perhaps never before observed, could mean that traditional calculations using quantum electrodynamic (QED) perturbation theory may be inadequate.

Addressing the questions brought about by this possibility was the principal aim of the April 20-21 BNL workshop entitled "Can RHIC be Used to Test QED?" which drew over 50 participants from Europe and the United States.

Photographed during one session were (from left) two BNL organizing committee members, Mark Rhoades-Brown and Michael Tannenbaum; and three of the speakers, Chris Bottcher, Oak Ridge National Laboratory (ORNL); Michael Strayer, ORNL; and Berndt Muller, Duke University. Not present was Mirek Fatyga, the third member of the organizing committee.

BNL Does Good Business With Small Business



Roger Stoutenburgh

For another year, BNL has captured a small business award from the Department of Energy (DOE). Accepting the award from Hilary Rauch (second from left), Manager of DOE's Chicago Operations Office, is BNL Associate Director for Management & Physical Plant, Parke Rohrer (center).

Standing by are: BNL Director Nicholas Samios (left); Jerry Bellows (third from right), Manager of DOE's Brookhaven Area Office (BAO); Timothy Drawbridge (second from right), BAO Contract Specialist; and Robert Gordon, Chief of BAO's Administrative Branch.

The award, issued by DOE Secretary James Watkins, was won "in recognition of the outstanding performance and support of the DOE small business program for fiscal year 1989."

To earn the award, BNL not only met its goal of doing 60 percent of its business with small and small disadvantaged businesses, it exceeded it. Last year, in fact, BNL awarded 68.2 percent of its contracts to these firms and spent a total of \$52,537,470.

Denis McWhan (cont'd)

17-18. As the workshop's chair, McWhan said that the large number of experiments represented "show the power of synchrotron radiation. Here we have a wide range of new experiments providing information on the magnetic properties of materials."

"But the areas where synchrotron radiation has really changed the way in which we look at things is in surfaces," he added. "Synchrotron radiation is now one of the major probes of the structure and electronic properties of surfaces, and a large number of exciting experiments continue to be done at the NSLS in this area. I think that most of the NSLS' major participating research teams [PRTs] are doing some form of surface studies."

As the head of a Bell Labs PRT, McWhan was responsible for planning beam line X16B. Four years ago, when he became responsible for all five AT&T x-ray beam lines, he and his family moved permanently to Mt. Sinai.

McWhan earned his B.S. degree at Yale University in 1957, then his Ph.D. in chemistry from the University of California, Berkeley, in 1961. Following his postdoctoral work at the Royal Institute of Technology in Stockholm, Sweden, he became a member of the technical staff at AT&T Bell Laboratories in 1962.

A fellow of both the American

Physical Society and the American Association for the Advancement of Science, McWhan was the recipient of the Bell Laboratories Distinguished Technical Service Award in 1982. With the exception of a year's sabbatical as the visiting Director de Recherche at CNRS, Grenoble, France, in 1973, he was with Bell Labs for 28 years.

He comes now to BNL with his eye on the future. "It's a real challenge to keep the Light Source improving," McWhan said, "to keep putting new things in and keep having good science come out." — Anita Cohen

Equipment Demo

On Tuesday, May 8, IBM representatives will demonstrate their new UNIX workstation, the RISC System/6000 in Berkner Hall from 10 a.m. to 3 p.m.

In addition, a seminar on the RISC System/6000 machine will be held in Berkner Hall at 10 a.m. and at 1:30 p.m. Speakers will be Ray Dupont, from the RISC System/6000 Hardware Architecture Group in Austin, and Kevin McLaren, from IBM's Federal Group, Washington, D.C.

Note to Employees:

Attendance at lectures, meetings and other special programs held during normal working hours is subject to supervisory concurrence.

Inside Info

Thomas Ludlam became Associate Head of the RHIC Project on May 1. As a physicist in the Physics Department, Ludlam headed the task force formed in 1985 to guide the Relativistic Heavy Ion Collider (RHIC) concept to project status. In his new capacity, he will be a member of the RHIC project management team, headed by Satoshi Ozaki, and have responsibility for project areas that relate to the implementation of physics experiments, including liaison with potential users of the collider.



Roger Stoutenburgh

Thomas Ludlam

He will work with Lawrence True-man, Associate Director for High Energy and Nuclear Physics, to formulate and oversee the experimental program.

In announcing Ludlam's appointment, Ozaki said, "Since coming to Brookhaven in 1978, he has been an active advocate for the development of the new field of quark matter research within the international community of nuclear and particle physicists. As many of us know, he has been instrumental in gaining the sustained support from the nuclear physics community for RHIC. He has also been active in detector research and development in this field. I am very happy to have a scientist with such experience as my associate, and together we will move forward on the exciting endeavors of the RHIC project."

Balancing the Demands Of Chemistry and Children

Mary Willcox is one of 17 undergraduate students who have been at BNL since January pursuing research as part of the Department of Energy-sponsored Science and Engineering Research Semester (SERS) program. But Willcox has a few more challenges than the other students have — four more, to be exact.

Willcox is a single mother with four children — Sarah, 13; Rachel, 9; Daniel, 8; and Theresa, 4. She has brought them to BNL for the semester to live on site and attend schools in the Longwood district, while she works in the Chemistry Department under the supervision of J. Robb Grover.

A senior majoring in chemistry at the University of New Mexico, Willcox hopes to earn her Ph.D. in chemistry and continue to do basic research. Her interest in science started early, when she attended a college-preparatory program at Roswell High School, New Mexico. After her graduation, she earned an associate of arts degree at New Mexico State University in one year.

After marriage and a first child, Willcox took a job as a laboratory technician at the New Mexico Military Institute, where she worked for ten years. She also took one course per semester there and gained recognition as "College Physics Student of the Year" in 1983. And she became a mother three more times.

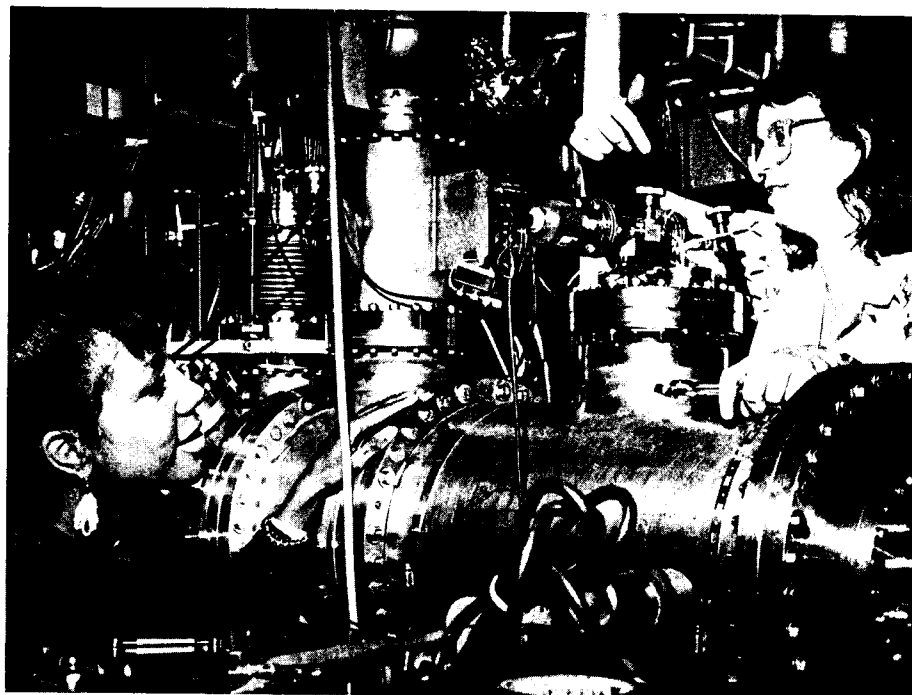
In 1988, with her marriage over, Willcox returned to school full time — this time, at the University of New Mexico (UNM). Last year, she won a research fellowship from the National Science Foundation's Research Experience for Undergraduates program. Ed Walters, a faculty member at UNM, who is also a user of the National Synchrotron Light Source (NSLS) at BNL, told Willcox about the SERS program — and she knew she'd like to give it a try.

Working with Grover at his NSLS beam line, Willcox is studying trifluorobromomethane (CF_3Br), a flame suppressant, to determine why and how it works.

"If we're successful in finding out why CF_3Br works so well to put out fires," Willcox said, "we would eventually like to suggest other products that would work equally well without depleting the ozone layer."

About her experience at BNL, Willcox added, "The opportunity to work at a national laboratory was important to me. The facilities here are excellent, and I never suffer time delays in my work, the way I sometimes used to, because of lack of supplies or equipment. Whatever I need is right here."

Grover is equally pleased to have Willcox work with him. He said, "Because of her enthusiasm, businesslike attitude, steady application to work and quick grasp of essential



At beam line U11 at the National Synchrotron Light Source, Mary Willcox (right), a Science and Engineering Research student at BNL, explains how she uses photoionization mass spectroscopy of molecular beams in her Chemistry Department experiment to Melva Ray, Director of the U.S. Department of Energy's Office of Minority Economic Impact, who was visiting the Lab.

— Photos on this page by Roger Stoutenburgh

scientific points, I think Mary has a promising career ahead of her."

Willcox drove cross-country with her four children when she came to the Lab. "It was 2,297 miles — four days of traveling, and the whole trip was a geography lesson. I especially liked Virginia and the long-span bridges of the East Coast," she said.

Her children complained, Willcox said, because they couldn't bring

along many of their treasured possessions — like a skateboard and about 67 stuffed animals. But, she added, "They are adjusting very well, and they are also learning about different cultures. A lot of children here are from other countries — and my children are learning that not everyone has the same holidays, the same beliefs or traditions."

— Diane Greenberg

Mini-Semester Introduces Students To Applied Physics, Technology

Applied physics and technology were the subjects of a four-day Mini-Semester at BNL for students from the City College of New York (CCNY), Bronx Community College (BCC), and Brooklyn Technical High School (BTHS).

From April 9-12, fifteen students participated in the program organized by the Office of Educational Programs. The students at right were the fourteenth group from CCNY to spend a mini-semester at BNL; the BCC group, pictured below top, are the pioneers from their college; and this is the second group from BTHS, below bottom.

Their full schedule included an introduction to positron emission tomography, BNL's magnet and computer facilities, the National Synchrotron Light Source, the Lab's occupational and environmental health program, nuclear physics, the Tandem Van de Graaff, and the Alternating Gradient Synchrotron.



Exploring Science for a Semester

During this spring semester, 18 undergraduates from across the U.S. left their college campuses to experience the real world of science by performing research tailored to their academic needs and supervised by scientists at BNL. They are students in the Brookhaven Semester Program and in the Science and Engineering Research Semester (SERS) program for undergraduates.

Started in 1968 by the Office of Scientific Personnel, the Brookhaven Semester Program selects participants from 22 member colleges and universities of the Regional Cooperative Association in Science and Mathematics. The Department of Energy-sponsored SERS program began four years ago. Currently, both programs are administered through BNL's Office of Educational Programs (OEP).



Pictured here with OEP administrators Renée Flack (standing, far left) and Robert Thomas (standing, far right) are the following students, whose BNL research advisor's names appear in parenthesis: (seated, from left) Barbara Feiccabrinno, California University of Pennsylvania (Darrell Joel, Medical); John Searingen, University of Illinois, (Laurence Littenberg and Richard Strand, Physics); Jin Pak, Washington College (Toshifumi Sugama, Applied Science [DAS]); Bruce Behrens, North Dakota State University (Samuel Aronson, Physics); Nannette Rivera, University of Puerto Rico (Mow Lin, DAS); Manish Wani, University of Texas at Arlington (Prantika Som, Medical); Lana Lall, Pace University (David Weber, Medical); (standing, from left) Shelia Wright, Jackson State University (Eugene Premuzic, DAS); Mary Willcox, University of New Mexico (J. Robb Grover, Chemistry); Charles Norton, Northeastern University (Bruce Stewart, DAS); Melissa Hurley, Stanford University (Betsy Sutherland, Biology); Rudolph Rico, State University of New York [SUNY] at Buffalo (Carol Creutz, Chemistry); Lisa Brown, Long Island University (Paul Falkowski, DAS); Chi Lam, SUNY at Buffalo (Jane Setlow, Biology); and Thomas Blum, Tarkio College (Tsong-Lun Chu, Nuclear Energy).

Absent from the photo are: James Kelaher, Creighton University (Jerome Barancik, DAS); Radha Kotamarti, North Dakota State University (Graham Smith, Instrumentation); and Hualiang Zheng, SUNY at Stony Brook (Leslie Lawrence, Computing and Communications).

Great Adventure Tickets on Sale

Tickets for the 1990 season at Six Flags Great Adventure amusement park, featuring "The Great American Scream Machine," are now on sale at the BERA Sales Office. Adults'

tickets are being sold for \$18 per ticket, a \$5 savings. Children's tickets are \$15.

If you have questions, call Louisa Barone at the Sales Office, Ext. 3347.

Film badges will be changed tomorrow. Please place your badge in its assigned rack space before leaving work today.



BROOKHAVEN BULLETIN

Published weekly by the Public Affairs Office for the employees of BROOKHAVEN NATIONAL LABORATORY

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