

Recent Patents Awarded

Toshifumi Sugama, Associate Chemist in BNL's Department of Applied Science, was awarded U.S. Patent no. 4,927,462 for a specially oxidized carbon fiber used to reinforce the cement in geothermal wells. Oxidative treatment of the fiber surfaces improves their bond to cement, thus increasing the strength of the total cement structure.

Many kinds of fiber are used to reinforce the composition of cement in geothermal well construction, including hemp, jute, polyaramid, cotton or certain types of glass and aluminum fibers. However, temperatures in the well environment can reach 300°C or more, and under these conditions the fibers often deteriorate or fail to adhere to the cement matrix.

Sugama's invention was designed for use with carbon-based fibers, which are extremely stable in hydrothermal environments but adhere poorly to the cement matrix. To solve this problem, Sugama developed a process to treat the fiber surfaces with a hot, caustic solution that adds chemically active oxygen groups, such as functional carboxylic acid and sodium-labeled carboxyl groups, to the surface of the fiber.

When the fiber is added to the cement and the entire composition is heated to 300°C, the oxidized fiber surface reacts with calcium cations released by the cement at high temperatures. This results in a CaO-rich cement hydration product on the fiber that strengthens the interfacial bond between it and the cement.

Sugama's patent covers the oxidized fibers themselves, the oxidation process and the cement-fiber composite. The BNL scientist notes that while a carbon fiber is the preferred type for this invention, other types could

be treated and used in a similar manner.

Two different groups of BNL scientists recently received patents for newly developed radiolabeled chemical compounds that can be used in conjunction with positron emission tomography (PET) to trace diseases in brain tissue.

Former BNL employee **Daniel W. McPherson**, and Chemistry Department Senior Chemists **Joanna S. Fowler** and **Alfred P. Wolf** were awarded U.S. Patent No. 4,874,600 for a new radiolabeled brain imaging agent, no-carrier-added (NCA) [¹¹C]putrescine, which can be used to detect and monitor malignant brain tumors in humans.

In addition, **Wolf** and former BNL employee **Chyng-Yann Shiue**, along with BNL Research Collaborators **Lan-Qin Bai** and **Ren-Tui Teng**, were awarded U.S. Patent No. 4,871,527 for a series of related radioligands, NCA [¹⁸F]-N-fluoroalkylspiropiperidols with alkyl groups of two to six carbon atoms. These radioligands can be used to map receptors for the neurotransmitter dopamine in the human brain. Problems with the production and transmission of the dopamine have been linked to neuropsychiatric disorders such as Parkinson's disease and schizophrenia.

When injected into a patient, the radiolabeled putrescine accumulates in malignant tissue in the brain but is not taken up in large quantities by normal tissue; similarly, the fluoroalkylspiropiperidols show a high affinity for dopamine receptors in the brain.

Once it has reached its target site, (continued on page 2)

Van Slyke Lecture The Origin of Blood Cells

Before the work of Makio Ogawa and others, there were two main theories on the origins of blood cells during hematopoiesis, the process by which the cellular components of blood are formed. These theories differed regarding the number of precursor or blast cells needed to give rise to the three types of blood cells: red cells, white cells and blood platelets.

One theory held that there was more than one type of blast cell and that each was not interchangeable.

Professor of Medicine and the Director of the Division of Experimental Hematology at the Medical College of South Carolina (MCSC), Ogawa and others, however, disproved that theory by proving the unitarian view: that there is only one type of blast cell, which is capable of giving rise to all other blood cells.

As the Lab's third Van Slyke Lecturer, Ogawa will discuss his findings in the talk "The Origin of Blood Cells: Hemopoietic Stem Cell Proliferation and Differentiation," on Monday, August 20, at 8 p.m. in Berkner Hall.

Not only did Ogawa find that blast cells randomly differentiate into one of the three other types of blood cells, but he also demonstrated that differentiation is controlled not genetically, but by molecular regulators. Also contrary to a popular theory, he has shown that, when separated in cell culture, the primitive daughter cells of the blast cell may differentiate into different cell lines.

Makio Ogawa received his M.D. degree in 1964 from Osaka University Medical School, Japan. In 1973, he was awarded his Ph.D. from the Institute of Medical Science, University of Toronto, Canada. He is board-certified by the American Board of Internal Medicine, 1975, and the Hematology Subspecialty Board, 1978.

After joining the MUSC Division of Hematology (DEH) in 1973 as an assistant professor of medicine, Ogawa was promoted to associate professor in 1977, and to professor in 1980. He was named DEH Director in 1984, and Research Associate Director of the Hollings Oncology Center in 1987.

A fellow of the American College of Physicians, Ogawa now serves as President of the International Society for Experimental Hematology. He was elected to the American Society for Clinical Investigation in 1979 and to the Association of American Physicians in 1984.

Ogawa is the third Van Slyke Lecturer since the series was established in 1987 in honor of the late biological chemist Donald D. Van Slyke.

Known as the initiator of modern clinical chemistry, Van Slyke served as BNL's Associate Director for Life Sciences, 1948-51. In 1956, Van Slyke resumed full-time research at BNL, until his death at age 88 in 1971. The Van Slyke lectureship is funded by private sources, with a donation from Associated Universities, Inc.

Insurance Against Unresolvable Conflicts in the Workplace



Four members of BNL's Employee Relations Committee meet to discuss the way to handle an employee's problem (from left) June Herbert, Randolph Church, Richard Eggert, and chairperson Nicole Bernholc.

— Photos on pages 1 & 2 by Roger Stoutenburgh

BNL's eight-member Employee Relations Committee is the workplace equivalent of an insurance policy: You hope you'll never have reason to use it, but if you do have a problem it's nice to know it's there.

Nicole Bernholc, committee chair and an industrial hygienist in the Safety and Environmental Protection Division, says the ERC was established to help non-union Lab staff resolve work-related problems that have not been resolved within normal channels. The committee's assistance, available to both staff and management-level employees, is completely confidential.

The committee offers a range of services, from a compassionate, objective ear to referrals or actual mediation. "Many people don't know

how to use the system or what they're entitled to," Bernholc explains. "If they feel they're unfairly treated, we may be the starting mechanism for them — to give them directions on documenting an unfairness, to put them in touch with the right people, or to intercede if that's what they need."

The eight committee members are chosen for their three-year stints by the Lab Director, usually after a search that includes a recommendation from their department chairperson. Members are chosen, in part, for qualities such as objectivity and good communications skills.

"We try to choose members from across the departments, to represent the different levels of disciplines," says Bernholc. "We're trying to reflect

the make-up of the BNL community."

In addition to Bernholc, the current committee members are: Randolph Church, Ext. 2550; Richard Eggert, Ext. 4834; June Herbert, Ext. 4692; William Kollmer, Ext. 4479; Marguerite Marsch, Ext. 3275; Michael Schaeffer, Ext. 7941; Richard Sebeck, Ext. 4314; and Susan Foster (Employee Relations Counselor, ex officio), Ext. 2888.

Conflicts commonly handled by the committee include problems with salary reviews or lack of promotions, disputes about job responsibilities, disagreements over use of leave, or just day-to-day relations.

In Bernholc's experience, the larger problem in many of these cases is a simple lack of dialogue between employees and supervisors. "Commu-

nication is a hard skill, and a lot of fears and preconceptions can get in the way. Part of what has to happen is to begin cutting through all that."

Bernholc stresses that the committee members' level of involvement and the steps they take to resolve a problem depend entirely on the wishes of the person seeking help. "If someone comes to us, we give them a place to have a say," she says. "Often, that's as far as it goes, and they don't want us to intercede. People need to be heard and get an acknowledgement that something is a problem. Then they can step back and decide what to do themselves."

Another important committee function is to provide advice on how to document a problem. Such documentation — which may include gathering eyewitnesses — is essential if the person causing the problem is going to be approached.

Once adequate documentation has been compiled, the committee member working on the case may intercede, using that documentation as factual proof. In some cases, if the person seeking help agrees, the problem may be referred to the Personnel Department.

The goal in each case, says Bernholc, is "to come up with a mutually acceptable solution. It may be a long process, it may require several talks, and it may not be resolved in the way the complainant expected."

There is no formal training for committee members, but Bernholc invites experts to the committee's monthly meetings to discuss commu-

(continued on page 2)

Leaving the Lab — After 35 Years or More

After 41 years of service, Edward Sperry left the Lab last November 30 — but, unfortunately, without the Bulletin's knowing. So we caught up with Sperry this month, nine months into his retirement.

On August 11, 1947 — during the year that the Lab was founded on this site — ground was broken for the Brookhaven Graphite Research Reactor (BGRR), which was the first atomic reactor built for peacetime research using atomic energy.

To construct the graphite-moderated reactor, approximately 60,000 graphite bars had to be milled. As an employee of the contractor building the BGRR, BNL retiree Edward Sperry III was one of the machine operators shaping the reactor-grade graphite in Bldg. 480, which is now Metallurgy.

After a milling accident convinced him that he should do something safer for a living, Sperry became a BNL employee on September 20, 1948, starting as a blueprint machine operator in what was then called the Engineering Department.

"There were no photocopy machines in those days," recalls Sperry, "so if multiple copies of a report were needed, I made that many blueprints."



Edward Sperry III

In the meantime, he learned drafting through correspondence courses and on-the-job training. Later, Sperry completed the credit requirements for an associate's degree at C.W. Post College.

So, in January 1951, Sperry was promoted first to a tracer, then to a draftsman in June of that year. In January 1959, he became a designer and made senior designer in January 1963. Named a design engineer in July 1969, he moved up the ranks until he retired last November as a design engineer I.

"At the time, Engineering was a service department, so we did work for the entire Lab," says Sperry, whose assignments included design projects for many of BNL's big machines.

One of Sperry's most interesting assignments was the year he spent as the technical illustrator for the BGRR operations manual. "If I couldn't find the necessary drawings, I did them, and if pictures were needed, I arranged for them," Sperry remembers.

Sperry's most memorable design was his 1965 invention of a beam-port closure, to be used in the High Flux Beam Reactor. "It was a shutter and collimator in one," explains the inventor.

For this, Sperry was awarded U.S. patent no. 3,384,751 and \$50 from the U.S. Atomic Energy Commission, to which he assigned his patent.

As interesting as working around the Lab was, Sperry joined the Physics Department in November 1976, where he stayed until retirement.

As a part of the Physics design group, he was involved with designs that included shielding, start-up collimators, and shutters for HFBR experiments. His last five years at the Lab were primarily spent working for experiments at the National Synchrotron Light Source, designing beam-line devices with precise, miniature control mechanisms.

Though retired from the Lab, Sperry is staying nearby in Ridge, in a house of his own design. It sits on the same property as a house that his father built after he moved the family from Jamaica, Queens, when Ed was 14 years old.

Three generations of Ed's family have worked for the Lab: Ed's late father, Edward Sperry Jr., retired in 1965 as Foreman of the Paint Shop. Ed's son, Edward Sperry IV, is now a technical specialist in the Accelerator Development Department. Ed Sperry and his wife Irene also have a daughter, Doreen, who lives in Merrick with her husband and two children.

In addition to joining his old group for their monthly luncheon, Sperry continues to bowl with the Designers team in the men's league and with Irene on the Draftecs team in the mixed league.

"I'm the eldest member of the Bowling League," states Sperry. "I started to bowl when the league first went off site, after the 16-lane bowling alley was torn out of Bldg. 902 around 1949, 1950."

After leaving the Lab, "Irene and I went down to the Florida Keys, and we've been living it up ever since. So I still think I'm just on a long vacation and haven't really faced retirement yet — that's for next year," he admits. — Marsha Belford

The new fluoroalkylspiropiperidols are prepared by N-alkylation of spiropiperidol with the appropriate NCA ¹⁸F-labeled alkyl halides; the patent holders also developed a new method to synthesize the halides. The resulting radiopharmaceuticals also have a high specific activity and are made with easily obtainable starting materials.

Employee Relations (cont'd)

nication and arbitration topics. And, she says, because the committee members are the peers of the people they assist, their approach to ERC work is comparable to that of people chosen for another well-known peer review process.

"When people are appointed for jury duty, they often become more aware of the responsibility involved in judging their peers," says Bernholz. "It's a similar situation with the



A Cure for the End-of-Summer Blues

It's that time of the summer when the beach begins to feel like too much of a good thing, the kids are bored and restless, and you wish there were something new and different the family could do together on a Sunday.

There is. It's the Summer Sunday Tour Program, right here at BNL.

For two more Sundays — August 19 and 26 — visitors are welcome to come to the Lab to enjoy the Exhibit Center/Science Museum. Its three stories are full of lively displays depicting BNL's contributions to science and technology. There you'll also find the Camp Upton Historical Collection, an extensive collection of photos and memorabilia from World Wars I and II, when the site was the U.S. Army's Camp Upton.

You may want to plan your visit around the Whiz-Bang Physics Show. Audience volunteers are important partners in this lively, 45-minute show, which uses demonstrations of basic science principles to entertain and educate children and adults alike.

Here, for example, young participants have a "shocking" time. They are linked by their pinky fingers to the boy in the back, who is touching a small Van de Graaff generator with a metal pipe. When he makes contact with the generator, a harmless spark jumps to him and sends a tingle to everyone down the line, as well as a lesson about electricity.

Show times are 10:30 a.m., noon, 1:30 p.m. and 3 p.m., while buses to the Exhibit Center/Science Museum run continuously between 10 a.m. and 3 p.m.

BNLers Offer Courses This Fall at Stony Brook

Six BNLers are among those teaching evening courses this fall semester at the State University of New York at Stony Brook, through its School of Continuing Education (CED).

Open to anyone with a bachelor's degree, these and other CED courses are designed for the part-time, adult student, and offer graduate credit, which may be applied towards a CED master's degree or graduate-certificate program.

For a course catalog and registration information, call CED, 632-7050, before the final registration period, August 27-31.

• Lecturer in Labor/Management Studies at Stony Brook **Virginia Brown**, compensation and projects manager in BNL's Personnel Division, will cover "Job Evaluations and Compensation Systems" in a three-credit course, Mondays, 7-10 p.m.

Topics to be included are: union issues, comparable worth, job analyses, employee morale, equity-pay scales, and incentives.

• Lawyer **Jerry Cadwell**, a BNL nuclear engineer and lecturer in Stony Brook's Center for Science, Mathematics and Technology Education (CSMTE), will explore the relationship between "Law and Technology," in a three-credit course, Wednesdays, 6-9 p.m. at the Shoreham-Wading River High School.

The course is designed for laypeople who want to be more informed about the legal issues raised by modern technology.

• The Lab's historian, **Robert Crease**, an assistant professor of philosophy at Stony Brook, will discuss "Logic and Critical Reasoning" on Mondays, 6-9 p.m., during a three-credit course.

After reviewing forms of logic and reasoning, the course will introduce concepts of scientific thinking.

• BNL Guest Physicist **Paul Granis**, a Stony Brook professor of physics, will reveal "The Mystery of Matter: An Anecdotal Look at Particle Physics," in a three-credit course on Mondays, 5:30-8:30 p.m.

The course will trace the development of particle-physics theory, landmark experiments, and the tools of the trade: detectors and accelerators.

• BNL Project Engineer **Doan Hanson**, lecturer in Stony Brook's Environmental/Occupational Health and Safety certificate program, will introduce "Occupational Health Principles," in a two-credit course, Tuesdays, 6-8 p.m.

Topics include the role of regulatory agencies, public health hazards, monitoring techniques, and health-protection methods.

• BNL Senior Physicist **Mark Sakitt**, a CSMTE lecturer, will examine "Technology and Policy: National Security," during a three-credit course on Thursdays, 6-9 p.m.

The purpose of the course is to enable educated laypeople to understand and question defense policy from different national security perspectives.

Notaries on Site

In addition to those listed in last week's Bulletin, the following people are also notaries public:

Fiscal	Bldg.
Nick Scala	134
Medical	
Darcy Mallon	490
Reactor	
Debbie Doyle	120
Staff Services	
Rose-Ann Dobbeck	179B

committee members: They really want what's fair and really try to help their fellow employees."

— Lisa O'Rourke

To contact the Employee Relations Committee, call the ERC's confidential hotline, Ext. 4005, or call any of the committee members noted above at their own extensions.

Patents Awarded (cont'd)

each compound emits positrons that can be measured by PET. Physicists can then use the PET readings to locate and/or monitor the sites targeted by the compounds.

Several radiopharmaceuticals have been tested for use as diagnostic mapping agents for brain tumors or dopamine receptors. But the BNL scientists solved problems of purity, specific activity and ease of production in each case by developing and patenting new methods for producing the tracers.

The new putrescine compound is prepared by the Michael addition of an NCA alkali metal [¹⁴C]cyanide — preferably [¹⁴C]potassium cyanide — to acrylonitrile, followed by the reduction of the ¹⁴C-labeled dinitrile. The agent's 95-99% purity, high specific activity and half-life are all within acceptable limits.

Preschool Preview: Registration Begins for Upton Nursery School

As September approaches, it's time to decide what your preschooler will do once the pool closes and the days get chilly. Why not enroll your child in BNL's own fun and educational preschool program, the Upton Nursery School?

BNL employees and visitors can enroll three- and four-year-old children in this parent-cooperative, non-profit school for \$90 a month. Children must be enrolled for a minimum of three months in the program, which runs from September 11 to mid-June at the Recreation Building in the apartment area.

Renee Bloch teaches the three-year-olds, and Judith VanAsselt instructs the four-year-olds, in classes held on Monday, Tuesday and Thursday, from 8:30 a.m. to 11:30 a.m.

Both teachers will be at Berkner Hall on Wednesday and Friday, August 22 and 24, from 11 a.m. to 1 p.m. to meet parents and answer any questions. Enrollment chair Cal Roberts will also be on hand with registration materials, or you can call her at 874-2992 to obtain materials or information. Children can be registered anytime from now until school begins, but classes fill quickly, so sign up as soon as possible.



"We have children from the U.S. and many other parts of the world at the nursery school," says Renee Bloch, shown here acting out a story to some three-year-olds. "Both American and foreign-born preschoolers grow in their ability to speak English here." Bloch, who has taught at the nursery school for 25 years, also encourages foreign children and their parents to share cultural practices and languages in class.



At a festive gathering of all the school families, Judith VanAsselt is engrossed with some four-year-olds. The Upton Nursery School is a cooperative program, in which parents take turns assisting the teachers in the classroom. "It's a very beneficial arrangement for parents and children," Van Asselt explains. "Many parents say that's why they enroll their children here — so they can take part in and learn from their child's first school experience."



One of the many popular activities at the nursery school is cooking. The three-year-olds shown here are concentrating on the arduous task of making pudding. "Our emphasis is on activities the children can do themselves," says Bloch. "In that way, the children have the opportunity to be creative and develop their own abilities."



"The interaction with four-year-olds is wonderful," says VanAsselt, at far right in this photo. "I ask them what they want to do, and we talk about it and decide whether we can do it."

Catch a glimpse of
GLANCE
playing in Berkner Hall
weekdays, 11:30 a.m. to 1:30 p.m.
Show changes every Tuesday.

Correction

In the Bulletin story of July 27, 1990, "BNL's Alternating Gradient Synchrotron Turns 30 — Still Conquering New Frontiers in Physics," it was noted that the strong focusing principle, invented at BNL in 1952 by Ernest Courant, M. Stanley Livingston and Hartland Snyder, was "First used in 1960 to build the [33-billion-electron-volt (33 GeV)] AGS and the Proton Synchrotron at CERN ..."

Actually, the first useful accelerator to operate with the strong-focusing principle was the 1.2 GeV Electron Synchrotron at Cornell University. Constructed under the leadership of Robert R. Wilson, this accelerator was designed in 1953 as a weak-focusing machine. The design was soon changed to employ the new invention, and experimentation began at the accelerator in the spring of 1956.

This information came from Boyce McDaniel, the Floyd Newman Professor of Nuclear Studies emeritus at Cornell, who wrote to the Bulletin "for the sake of the record." He also wrote, "I was a member of the Board of Trustees at Brookhaven for 12 years, hence I find it indeed satisfying that the [AGS] is about to make a transition to another of its nine lives!"

\$wim, \$wam, \$wum

In 12 hours, 36 swimmers put in 81.9 miles — and earned the American Cancer Society \$4,500 during BNL's first Swimathon, on Saturday, August 4.

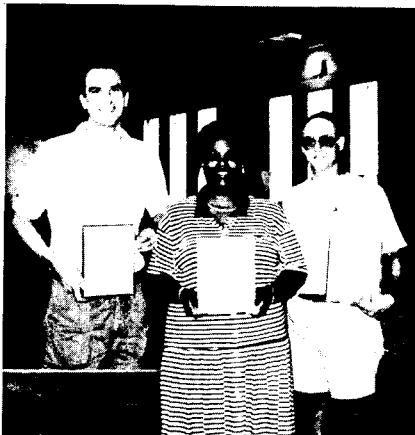
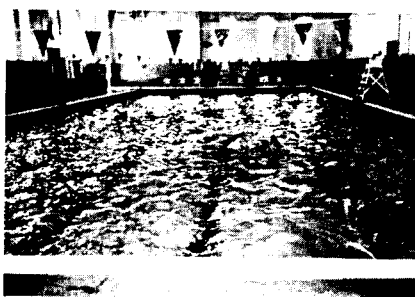
The Natant Nukes of the Department of Nuclear Energy (DNE) swam 12.5 miles to earn \$910 from their sponsors, the most raised by any team. The team included Jim Higgins, Partha Neogy, Greg Van Tuyle, and Ji We Yang.

For their best team effort, the Natant Nukes were awarded a small TV set, which they gave to DNE summer student Kimmy Schenter. Paired with fellow summer student Kara Plemel, Biology Department, as the "K Team," Schenter swam eight of the two-person team's 13 miles, the most miles swum by any team.

For the best individual fund-raising effort, Rich Thorp, Safeguards & Security Division, won a portable telephone for swimming two miles for \$262.

As a result of swimming 10.1 miles almost nonstop, summer student Jessica Hirschfelder, Safety & Environmental Protection Division, earned herself the good-spirit prize, a water lounge.

To make the BERA-sponsored event possible, five lifeguards donated their time, a dozen helpers counted laps, the deli My Hero in East Patchogue donated lunch and dinner party platters, and Service America, which operates the Cafeteria, donated boxes of cookies.



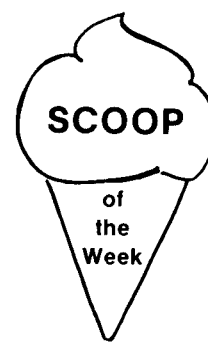
(top) A pool scene during Swimathon '90. (bottom) Swimathon '90 was organized by (from left): Greg Van Tuyle, M. Kay Dellimore and Peter Heotis. They hold thank-you plaques from the American Cancer Society.

Scoop of the Week

For assisting the Bulletin year-round with fact checking, Debbie Maceluch, Bonnie Miller and Darlene Peragine of the Personnel Records Group in the Personnel Division have each earned themselves a Scoop of the Week.

By suggesting news and story ideas, you too may win a Scoop of the Week. If you scoop the Bulletin's informed sources and your hot tip is turned into a published story, then you will be rewarded with an official certificate, redeemable for frozen yogurt at the Cafeteria.

To enter, write the Bulletin, Bldg. 134, or phone Ext. 5053.



Software Demo

On Friday, August 24, at 2 p.m. in the CCD Seminar Room, Bldg. 515, Robert Sims of SPC Software Publishing Corporation will demonstrate the new Harvard Graphics version 2.3. Among the major enhancements are: Hypershow, the ability to control the flow of a presentation "on the fly"; chart gallery; animated sequences; applications menu; and direct link to Draw Partner, an advanced drawing tool. Other enhancements include additional printer support and file compression to speed printing.

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