

BNL 50th Anniversary Distinguished Lecture

Exploring Brain Function With Nuclear Magnetic Resonance

One of the exciting ways that researchers plan to use the new Magnetic Resonance Imaging (MRI) facility that is part of BNL's Center for Imaging and Neurosciences is to explore the possibilities of functional MRI. Functional MRI is one of two new nuclear magnetic resonance (NMR) techniques that have made it possible for scientists to gain information noninvasively on brain function in living humans and animals.

A scientist particularly prominent in this field is Robert Shulman, Sterling Professor of Molecular Biophysics and Biochemistry at Yale University, who will give the second talk of the BNL 50th Anniversary Distinguished Lecture Series.

Shulman's talk, entitled "Exploring Brain Function With Nuclear Magnetic Resonance," will be held on Thursday, February 27, at 4 p.m. in Berkner Hall. Refreshments will precede the lecture.

Discovered in 1946, NMR is a phenomenon whereby atomic nuclei exposed to a magnetic field absorb energy from a radio-frequency field at characteristic frequencies. NMR has been used by biologists, chemists and physicists for studying living tissues and numerous materials — and, now, brain function.

In functional MRI, for example, researchers compare images of the subject's brain at rest and then during the performance of an intellectual task. In this way, they can localize brain activity during sensory or cognitive stimulation of the subject, and, thus, probe cognitive processes.

A second new NMR technique involves measuring the activity of glutamate, a neurotransmitter that carries signals from one nerve cell to another in the brain. This neurotransmitter activity is correlated with changes in brain activity and energy consumption.

Shulman will discuss the benefits and pitfalls of these methods as well as their potential for revolutionizing the scientific understanding of brain activity.

Shulman earned an A.B. and Ph. D. in chemistry from Columbia University in 1943 and 1949, respectively. After completing a postdoctoral fellowship at the California Institute of Technology, he became head of the semiconductor research section at Hughes Aircraft Company in 1950. Three years later, he joined the technical staff at Bell Laboratories, where he eventually headed of the biophysics research department.

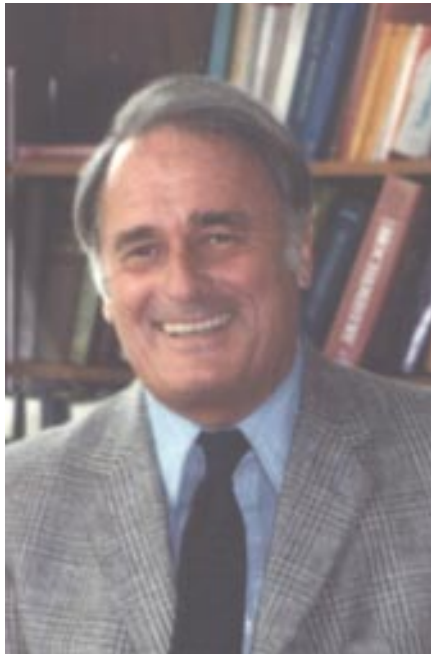
After joining the Yale faculty in

1979, he became Director of the Division of Biological Sciences, 1981-87, assuming his present position in 1994.

A member of the National Academy of Sciences and the Institute of

Medicine, he is a recipient of the Havinga Medal of the University of Leiden and the Gold Medal of the Society of Magnetic Resonance in Medicine.

—Diane Greenberg



Robert Shulman

Tritium Plume Tracked To Brookhaven Avenue

The first results from testing of groundwater samples from new temporary monitoring wells in operation along Brookhaven Avenue since February 10 became available earlier this week: In three out of the five wells, which were sunk about 1,100 feet south of the High Flux Beam Reactor (HFBR), levels of radioactive tritium were well below the Environmental Protection Agency's (EPA) drinking water standard of 20,000 picocuries per liter.

But, in a fourth well, the tritium concentration reached about five times the EPA standard, and, in a fifth, levels were about 1.5 times the standard. The peak concentration measured to date is 32 times the EPA standard in samples taken from a well on the south lawn of the HFBR.

The latest results, said Sue Davis, Associate Director for Reactor, Safety & Security, indicate that the plume is farther south and may have been developing for up to three years, given its distance from any probable source at the HFBR.

The EPA has reviewed the data that BNL has collected to date and continues to conclude that there is no public health threat from the contamination, which has not reached any drinking water supply, on or off site.

The potable supply wells that provide BNL's drinking water are located north of the tritium contamination, in the opposite direction of groundwater flow. Nonetheless, on-site drinking water is tested daily for radioactivity and results continue to show that the Lab's tap water is not contaminated with tritium.

The Lab's top priorities, Davis said, continue to be to locate and stop the source, and to define the plume so remediation of the affected groundwater can begin. The highest tritium concentrations at Brookhaven Avenue were detected close to the 100-foot effective operating depth of the temporary Geoprobe wells. So, to characterize the plume better, the Safety & Environmental Protection Division has begun installing about ten vertical profile wells, which will sample the groundwater every ten feet from a depth of 200 feet to the water table, and every five feet in the intervals where the tritium plume may be present.

Three of these wells are being sunk at existing Geoprobe locations on Brookhaven Avenue, and a second line of up to seven vertical profile wells will be installed along Rowland Street, about 800 feet south of Brookhaven Avenue. The analytical results of samples from the first three wells will guide the decision on how and where to proceed with the installation of the wells on Rowland Street.

The HFBR will remain shut down until the situation is better understood.

— Anita Cohen

Brookhaven Lecture

A New 'Star of the Screen' — Flat Panel Laser Display

Televisions, videos, computers, automotive dashboards or aircraft cockpits — all communicate most effectively with clear, bright images on their screen.

Now, a completely new screen technology — a flat panel laser display invented at BNL by James Veligdan, Department of Advanced Technology (DAT) — offers images of high quality, that can be adapted to be interactive or in 3D. Also, they can be viewed at exceptionally wide angles and produced to scale on screens that can be flat, curved, huge or tiny.

The images promise to be so excellent and the technology has so many potential applications, that *Popular Science* magazine picked Polyplanar Optics Display, as the invention is called, as one of the 100 most significant products and achievements of 1996.

To discuss his invention, Senior Research Engineer James Veligdan will give the 324th Brookhaven Lecture on Wednesday, February 26. Veligdan's talk, entitled "Plane and Fancy: Flat Panel Laser Display," will be introduced by DAT Chair Robert Bari, starting at 4 p.m. in Berkner Hall.

In his talk, Veligdan will relate how he thought of his idea for the display, inspired by a well-known principle of physics. He will explain how the display works by shining light from a laser or incandescent source to a scanner, which directs the light beam into the proper sector of the wave



James Veligdan is surrounded by prototypes of his invention of a flat panel laser display.

guides. The wave guides, which are made of multiple sheets of laminated glass or plastic, guide the light to the screen to display the image.

Veligdan will continue by talking about the varied advantages and potential uses of the display, for which Associated Universities, Inc., holds the patent properties. Currently, Veligdan and a BNL team are developing it for cockpit displays in U.S. Air Force airplanes.

From the University of Pittsburgh, Veligdan had earned his B.S. in psychology in 1973 and B.S. in physics in 1979. In addition to practicing as a psychologist, he joined Westinghouse R&D Laboratory in 1974, where his research included laser isotope separation, optical radar and acousto-optic modulators. In 1985, he moved to BNL, starting as a DAT research engineer and being named to his present title in 1995.

Veligdan holds ten patents and has seven others pending, and his work has been the subject of articles in more than 30 magazines and newspapers. His interest in planes is not all in the optical field — he has built and flown his own glider, or sailplane, which is now on display in the Cradle of Aviation Museum at Roosevelt Field in Nassau County.

After the lecture, all are invited to join Veligdan for discussion and refreshments. To have dinner with the speaker at a restaurant off site, call Marcie Chaloupka, Ext. 2746, before noon on Wednesday, February 26

— Liz Seubert

Roger Stoutenburg

'Generous Response'

On Wednesday of last week, BNL sponsored an emergency blood drive in response to a request from Long Island Blood Services to help alleviate a critical shortage — less than a one-day supply — of types O and B blood in the local area.

In her memo to employees, Blood Drive Chair Susan Foster noted, "Our goal is to supplement the blood inventory with 100 units of blood."

BNLers came through: 149 people attempted to donate, and 139 pints of blood were collected, with 97 units being types O and B. Eleven pints came from first-time donors.

"This was a wonderful, generous response," said Foster. "It proves once again how important the BNL community is to the Long Island community."

IBEW Meeting

Local 2230, IBEW, will hold its regular monthly meeting on Monday, February 24, at 6 p.m., in the Knights of Columbus Hall, Railroad Avenue, Patchogue. The agenda includes regular business, committee reports and the president's report. There will be a meeting for shift workers at 3 p.m. at the union office.

Arrivals & Departures

Arrivals

Joanne J. Beebe-Wang.....AGS
Alan W. Campbell.....RHIC
Donald R. Hensley.....Plant Eng.
Joyce O. Mortimer.....Central Shops
Faisal A. Shafiq.....Chemistry
Donald Zaharatos.....Plant Eng.

Departures

This list includes all employees who have terminated from the Lab, including retirees:

Rose M. Almasy.....Info. Services

Software Demo

Representatives of Hummingbird Communications will demonstrate the following software on Thursday, February 27, at 2 p.m., in the seminar room of the Computing & Communications Division, Bldg. 515:

- **NFS Maestro release 5.1.3** for Windows NT and Windows '95.
- **Exceed 5** for Windows NT, Windows '95 and Windows.

For more information, call Ronnie Evans, Ext. 2851.

BERA Offers Ski Day

BERA is sponsoring a one-day ski trip on Wednesday, March 19, to Brodie Mountain ski resort in Ashford, Massachusetts. The cost of \$40 per person, due by March 7, includes round-trip bus and lift tickets. Ski rentals at Ashford are \$16 for adults and \$14 for children 12 and under.

The bus will leave from the BNL tennis courts at 5 a.m., and make a pickup at LIE Exit 63 at 5:15 p.m., if requested. For more information or to reserve your seat, stop by the BERA Sales Office, Berkner Hall, weekdays, 9 a.m. to 1:30 p.m., or call Andrea Dehler, Ext. 3347; Bob Marascia, Ext. 7779; or Augie Hoffmann, Ext. 3884.

Daffodil Sale

Again this year, BERA will sell bouquets of daffodils to benefit the American Cancer Society. Each bouquet will sell for \$5, and paid orders are being taken at the BERA Sales Office, weekdays, from 9 a.m. to 1:30 p.m.

Pick up reserved bouquets on Thursday and Friday, March 20 & 21, at the BERA Sales Office. Extras will be sold that Thursday in the Berkner Hall lobby, from 11:30 a.m. to 1 p.m.

For more information, call Andrea Dehler, Ext. 3347.

ANS Meeting

Henry Bokuniewicz, Director of the Long Island Groundwater Research Institute, and BNL Ecologist Jan Naidu will speak on "Tritium and Long Island's Groundwater" at a meeting of the Long Island Section of the American Nuclear Society (ANS), on Tuesday, February 25, at 8 p.m., at the Radisson Hotel in Islandia. For reservations and dinner information call Ken White, Ext. 4423.

Equipment Demo

On Thursday, February 27, from 10 a.m. to 2 p.m. in Berkner Hall, Contech-RTI, a manufacturer's representative of test-and-measurement equipment, will present products of the Yokogawa Corporation of America, including: graphic recorders, digital storage oscilloscopes, PC-based data-acquisition systems, power measuring meters with harmonic analysis, and a time interval analyzer.

Classified Advertisements

Placement Notices

The Laboratory's placement policy is to select the best-qualified candidate for an available position. Consideration is given to candidates 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, handicap or veteran status.

Each week, the Human Resources Division lists new placement notices, first, to give employees an opportunity to request consideration for themselves through Human Resources, and second, for general recruiting under 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, or call the JOBLINE, Ext. 7744 (344-7744), for a complete listing of all openings.

Current job openings can also be accessed via the BNL Home Page on the World Wide Web. Outside users should open "http://www.bnl.gov/bnl.html", then, under "Information," select "Jobs." For scientific staff openings, select "Scientific Personnel Openings"; for all other vacancies, select "General Personnel Openings."

SCIENTIFIC RECRUITMENT - Doctorate usually required. Candidates may apply directly to the department representative named.

SCIENTIST - Trained in nuclear physics, with a broad knowledge of experimental technique and theory. Reading knowledge of French, German and Russian is preferred. Familiarity with scientific databases and VMS operating systems is desired. Initial responsibilities will include scanning and keyword abstracting of articles on low and intermediate energy nuclear physics for entry into the Nuclear Science References (NSR) bibliographic database of the National Nuclear Data Center. Will be expected to take over responsibility for updating, maintaining and quality control of the NSR. Contact: Charles Dunford, Department of Advanced Technology.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates.

NS 0083. BIOLOGY ASSOCIATE POSITION - (term appointment) Requires a bachelor's degree in biochemistry, molecular biology or related biology or chemistry field, and laboratory experience in biochemistry/molecular biology. Experience with agarose gels, DNA biochemistry and computers a plus. Some travel required. Biology Department.

Talk on Gender Difference in the Workplace

In 1996, a nationwide survey of 170 professional women and men in aviation, transportation and other nontraditional fields generated information, real-life experiences and strategies related to gender-based issues and research.

Using these data, Mary Ann Turney, one of the survey's researchers and Director of Flight Programs at Dowling College's School of Aviation and Transportation, will discuss "Men and Women Working Together." All are invited to her talk, immediately following a Brookhaven Women in Science meeting, at noon in Room B, Berkner Hall, on Thursday, February 27. Bring your lunch.

With an Airline Transport Pilot Certificate from the Federal Aviation Administration, as well as Instrument and Multiengine Flight Instructor ratings, Turney administers the Dowling Flight Training Program, teaches several aviation courses and advises Dowling's Precision Flying Team. She holds a master's degree from Hofstra University and expects to complete the doctoral program this year at NOVA Southeastern University.

Outreach Workshop

Helping Your Child Cope With Transition

As children grow up, they change, and may need help in overcoming behavior and adjustment problems at points of transition in their lives.

Parents want to understand and respond to their children's difficulties with the maturation process — but parents themselves need help in developing the appropriate skills for this challenging situation. The next Outreach workshop, "Skills Development for Your Child: Coping With Transition," will be presented by licensed psychologist John McGarry. After talking about the changes and transitions experienced by all children, McGarry will offer techniques that parents can use to help their children meet the demands of today's complex society in healthy ways that can revitalize and enrich the whole family.

Sponsored by the Employee Assistance Program (EAP) of the Occupational Medicine Clinic, the workshop will take place on Tuesday, February 25, from noon to 1 p.m. in Berkner Hall.

McGarry, whose Ph.D. from Hofstra University was granted with a dual specialization in both clinical and school/community psychology, also holds a postdoctoral degree from the Institute for Rational Emotive Behavior Therapy, New York.

To register for the workshop, complete the bottom portion of the Outreach flyer recently sent to all employees and return it to EAP Staff Psychologist Dianne Polowczyk, Bldg. 490, by Monday, February 24.

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