BROCHHEN BULLETIN Vol. 54 - No. 24 July 21, 2000 **BROOKHAVEN NATIONAL LABORATORY**

BMRR To Close

As announced by Laboratory Di-rector John Marburger last Thursday, the Brookhaven Medical Research Reactor (BMRR) will cease operation by this calendar year's end.

The small, three-megawatt BMRR began operating in 1959 to provide neutrons for a promising brain cancer treatment - Boron Neutron Capture Therapy (BNCT). Significant progress was made in advancing this concept, but recent clinical trials showed the need for more research into implementing treatment.

As a result, DOE is reducing funding for the program at the end of this fiscal year, and BNL was unable to identify alternative support. Also, operating the BMRR will cost significantly more without the High Flux Beam Reactor, which provided important overhead services.

With all these factors in mind, and with input from a BSA advisory committee, the Laboratory Director made his decision. "It is disappointing whenever a research program comes to an end, and this is certainly the end of an era of reactor-based research at Brookhaven," said Marburger. "I still believe that BNCT is a promising form of treatment for a devastating disease, and we will provide our data to other institutions that are continuing this important work." - Pete Genzer

Patent Gives Battery Research a Charge



From left, Hung Sui Lee, James McBreen, and Xiao-Qing Yang.

BNL researchers Hung Sui Lee, Xiao-Qing Yang, and James McBreen, all of the Energy Sciences & Technology Department, and former visiting scientist Caili Xiang have been awarded a U.S. patent for their work in developing a new kind of electrolyte for use in lithium-ion batteries.

"This opens up a new approach in developing electrolytes for lithium-ion batteries," says Lee, the chemist in charge of the organic synthesis work.

Rechargeable lithium-ion batteries now dominate the market for use as a power source in cell phones and many laptop computers. Researchers would like to scale up these batteries for use in electric and hybrid electric vehicles.

One problem, however, is that in today's lithium batteries, the salt component of the electrolyte — the fluid that carries the flow of electricity from the positive cathode to the negative anode — is expensive and toxic, Yang explains. With the large quantities required for vehicle batteries, these drawbacks could become prohibitive.

So, with funding from the DOE's Office of Basic Energy Sciences, BNL's team has been looking at ways to improve the electrical conductivity of electrolytes containing less-expensive, less-toxic salts.

In the technique for which they have been awarded a patent, the researchers have designed and synthe (continued on page 3)

27th Pegram Lecture: **Edward Tufte on Information Design**

here's no excuse. They were, after L all, rocket scientists," said Edward Tufte, Professor Emeritus at Yale University, on the failure of engineers to make clear the link between cold weather and O-ring failure which led to the Challenger space shuttle disaster in 1986. Tufte's masterful analysis of the Challenger disaster is one of the topics he will cover



in the 27th George B. Pegram Lectureship on Thursday, July 27, from 12:30 to 6:30 p.m. in Berkner Hall.

Tufte will adopt the style and content of his popular one-day course, "Presenting Data and Information," which he has given nationally and overseas to scientists, executives, and government agencies.

Tufte, who has been called the "da Vinci of data" by The New York Times,

> will discuss the fundamental strategies of information design, including how to give effective presentations on paper and in person. For example, he will show how best to present statistical data, and he will review the basics of information design in business, (continued on page 2)





Kringle Sculpture Makes EMBO J Cover

he cover of the June 1 issue of the European Molecular Biology Organization Journal (EMBO J) shows a photograph of a sculpture, captioned "Kringle (1989), brushed aluminum (16 by 6 feet) by Walter F. Mangel."

The sculpture, designed by BNL's Biochemist Mangel ,was inspired by his research. He explained that a kringle was the name of a Scandinavian pastry shaped in three interacting loops. Representations of kringles are above the door to most Danish bake shops to symbolize a bakery.

When a domain in several proteins was discovered by a Danish scientist to have a shape similar to the pastry, the domain was called a kringle.

So, in biology, kringles are tripleloop structures of 80-100 amino acids constrained by three disulfide bridges. It was found that kringles are closely involved in the formation and dissolution of blood clots and in the metastasis of cancer cells.

Mangel and his research team study how the blood clots that can lead to (continued on page 2)

Scientific Career Advisory Program Established



In response to a recommendation by the Brookhaven Council, scientific departments are initiating a new mentoring program for postdoctoral research associates and assistant scientists. The program will provide additional avenues for career advice to the junior scientific staff. One or more senior scientists within each department has been named to serve as a "Scientific Career Advisor."

The program is available to both new and current postdoctoral research associates and assistant scientists who are on term or project appointments. They are encouraged to meet with advisors to discuss topics such as: promotions and tenure at BNL, proposal writing and funding searches, integration with other researchers and facilities at and outside the Lab, professional recognition and rewards, and assistance in finding employment outside BNL.

If you have any questions about the program, contact your Department Chair; one of your department advisors; Marsha Kipperman, Ext. 2871; or Marilyn Pandorf, Ext. 5251.

Photographed above are a group of Scientific Career Advisors and members of the Human Resources Division (HR) who are closely involved with the new program: (standing, from left) Stephen Shapiro, Physics Department; John Miller, Chemistry Department; Robert D'Angio, HR; Gerry Bunce, Collider-Accelerator Department (C-A); William Studier, Biology Department; Peter Bond, Director's Office; Marilyn Pandorf, HR; Richard Setlow, Biology; Charles Flagg, Environmental Sciences Department (ES); Carol Creutz, Chemistry; Marsha Kipperman, HR; Michael White, Chemistry; Lorraine Merdon, Diversity Office; Peter Daum, ES; Dan Imre, ES; Harold Atkins, Medical Department; and Graham Smith, Instrumentation Division; (seated, from left) Harald Hahn, C-A; Creighton Wirick, ES; Robert Beuhler, Chemistry; Philip Pile, C-A. Not pictured: Ilan Ben-Zvi, National Synchrotron Light Source Department (NSLS); Michael Brennan, C-A; Stephen Dewey, Chemistry; Louis DiMauro, Chemistry; A.J. Francis, ES; Michael Harrison, Superconducting Magnet Division; William Horak, Energy Sciences & Technology Division; Erik Johnson, NSLS; Samuel Krinsky, NSLS; Y.Y. Lee, C-A; Peter Takacs, Instrumentation; and Laurence Trueman, Physics.

Thank You, BNL **From Los Alamos**

John Browne, Director of Los Alamos National Laboratory, sent a letter dated June 22 to the Bulletin Editor:

On behalf of the University of California and everyone at Los Alamos National Laboratory, I would like to thank the staff of Brookhaven National Laboratory for the support and assistance given to us during the Cerro Grande Fire. Although this was a devastating experience for us, it showed how communities, individuals, and organizations can come together to help each other in a time of crisis. We are overwhelmed by the outpouring of aid and support from throughout New Mexico and across the nation.

Your help at this very difficult time was greatly appreciated, as will be remembered as we begin the process of recovery and renewal. Sincerely,

yoh c. p

John C. Browne Director

Pegram Lecture: Edward Tufte

discuss how information can most effectively be presented via video, overheads, computers, handouts, multimedia presentations, and Web sites.

Tufte, Professor Emeritus at Yale University, has written seven books, several of them best-sellers, including the The Visual Display of Quantitative Information; Envisioning Information; and Visual Explanations.

For \$20, each registrant will receive a copy of these books to keep after using them during the presentation, as well as a souvenir poster and refreshments

during the lecture breaks.

Advance registration is recommended since Tufte usually speaks to a full house. To register in advance, mail or deliver a check made out to BSA for \$20 to Melanie Covitz, Bldg. 179B, by July 24. Checks will be returned after July 24, if the lecture is fully subscribed. The lecture reservations will be made on a first-come, first-served basis. The registration and book service desk opens at 11:30 a.m. in the Berkner Hall lobby on the day of the lecture. Diane Greenberg



Among the visualizations Tufte discusses is the classic depiction of massive numbers of Napoleon Bonaparte's troops who a in freezing w

(cont'd)

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 second 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: BNL is committed to preventing pollution and minimizing waste generation.

Q: How do you minimize or eliminate pollution associated with your work? A: By considering pollution prevention (P2) opportunities in the planning phases of work (such as during experimental review, work planning). For example, during the experimental review process, our environmental support staff (ESH Coordinator, Environmental Compliance or Waste Management Representative) recommends that alternatives to hazardous chemicals and modifications to experiments be made as long as results are not affected. It is also possible to use the "How to manage this waste stream" web page (http://www.esh.bnl.gov/pollutionpreve/How%20do%20I. htm) and ensure that wastes that are generated are managed properly. **Q:** If you had an idea on how to prevent pollution, what would you do?

Environmental Stewardship Policy Awareness

A: If it were a simple idea that I could implement, I would implement it. If it required planning assistance or funding, I would contact our environmental support staff for help in submitting a Pollution Prevention Proposal to my manager and the Pollution Prevention Council for funding consideration. There is also a suggestion form available on the Pollution Prevention web page.

For more information, contact George Goode, Ext. 4549 or browse the BNL Pollution Prevention Webpage at http://www.esh

Kringle

heart attack and stroke are dissolved. These researchers have shown that the process is regulated by the five kringles in plasminogen. When plasminogen, an inactive enzyme, is activated, the resultant active enzyme plasmin can destroy fibrin blood clots.

A major paradox in the field had been how, on the one hand, plasminogen can coexist with plasminogen activators in the blood without being activated — and yet, on the other hand, in the presence of a fibrin blood clot, the plasminogen activators interact to generate the plasmin that dissolves the clot.

The answer came through experiments done in the Biology Department and at the High Flux Beam Reactor (HFBR) and the National Synchrotron Light Source (NSLS) with

Venki Ramakrishnan and John Sutherland.

In the absence of a fibrin blood clot, the kringles in plasminogen interact to generate a closed form that prevents plasminogen activators from binding. In the presence of a fibrin blood clot,

plasminogen binds to the clot via its kringles. Upon binding, the kringles no longer interact with each other, and this leads to the largest change in protein conformation so far observed (open form).

One consequence of this is that now plasminogen can interact with plasminogen activators, so that the resultant



The experiments done at the

HFBR and NSLS were reported in a 1990 paper in *Science* that has been cited more than one hundred times. Further experiments had been planned at the HFBR, before its closure.

Mangel designed the kringle sculpture during this period, and it is now in his yard at home.

But how did it get on an EMBO J cover?

(cont'd)

In 1996, Mangel and coworkers William McGrath and Bob Sweet, all from the Biology Department, published in *EMBO J* the crystal structure of the adenovirus proteinase, a target for antiviral therapy. An editor at Oxford University Press liked one of the drawings and put it on the cover of the April 1996 issue.

"Because I had gotten to know the cover editor, a year ago I asked her if she would be interested in putting a photograph of a sculpture of a kringle in my back yard on the cover," Mangel said. "She suggested I take photographs in the fall when the leaves are changing color. I was pleasantly surprised when she said she liked one of the photographs and would put it on a cover. This experience has been part of the fun in doing science."



Nora Volkow Honored

Nora Volkow, Associate Laboratory Director for Life Sciences, attended a luncheon given on May 18 by Senator Kenneth LaValle (right) as part of a program to honor Women of Distinction. Shirley Strum Kenney, **President of the State** University of New York at Stony Brook and Vice-Chair of the BSA Board of Directors had nominated Volkow for the program, citing Volkow's research on the effects of substance abuse to the human brain.



(cont'd)

synthesized a series of boron-based compounds that, when added to electrolytes, increase their electrical conductivity to a level comparable with those currently used.

"There are still some improvements that need to be made," says Yang. Spectroscopy studies the team is conducting at BNL's National Synchrotron Light Source will help. "By understanding how these additives work with the salt and the electrolyte at the molecular level, we can modify their molecular structures to improve their performance," says Yang.

The team has already gotten inquiries about licensing the invention, but nothing has been agreed to yet. One company that could benefit is Gould Electronics, Inc., a manufacturer of lithium-ion batteries that entered a Cooperative Research and Development Agreement (CRADA) with BNL last spring (see Brookhaven Bulletin of March 31, 2000).

Karen McNulty

Science Museum Thursdays 1-2 p.m.

Continuing through August 31, the Science Museum will be open on Thursdays from 1 to 2 p.m. Children 14 and under must be accompanied by a parent or guardian. All BNL employees, retirees, facility users, subcontractors, and their families are welcome.

Weight Watchers

Do you want to improve your shape? Join Weight Watchers and get moral support from others who feel the same. Registration for the next Weight Watcher's program at the Lab will be on Wednesday, July 26, at noon, in the Brookhaven Center. The cost will be \$89 for 10 sessions, with the first session starting on Wednesday, August 2. Contact Mary Wood, Ext. 5923 or wood2@bnl.gov for more information.



Service Awards

The following employees celebrated ser-
vice anniversaries during June, 2000
40 Years
Thomas A. Wild Supercond. Magnet
35 Years
Richard E. Watson Physics
30 Years
Frank M. Dusek C-A
Howard A. Gordon Physics
25 Years
Brian F. Briscoe C-A
Ralph J. Giordano Plant Eng.
Stephen F. Lenski Info. Tech.
Susan N. Rackett-Rossetti SSD
20 Years
Karen E. Adelwerth Dir. Reac. Ops.
Richard E. Backofen Info. Services
Joseph C. Curley C-A
Peter H. Daum Applied Sci.
Louis A. Evers Reactor
Edward G. Gallagher Business Syst.
Ronald S. Hauser Central Shops
Payton T. King Medical
David K. Kirby Physics
Francis E. Loeb Physics
Denise M. Miesell Plant Eng.
Bruce E. PennBudget
Richard J. Reeve Staff Services
David J. Schlyer Chemistry
Dieter K. Schneider Biology
Daniel M. Sheppard Central Shops
Joseph E. Tuozzolo C-A
Wu-Tsung W. Weng C-A
10 Years
John J. Berry Plant Eng.
Gregory T. Flett Plant Eng.

John J. Berry	Plant Eng.
Gregory T. Flett	Plant Eng.
Eugene W. Kaczynski	Staff Services
Robert M. Lake	Budget
Leonard S. Santangelo	NSLS
William R. Softye	Plant Eng.
Roger L. Thompson	. Rad. Control
Frank Trapani	Plant Eng.
Nancy A. Wright	NSLS

Road Closed

From Wednesday, July 26 through Friday, July 28, Brookhaven Avenue will be closed in both directions in front of the Information Technology Division, Bldg. 515, due to underground steam line repairs.

Free Summer Sundays Continue Through August 27 This Sunday, Visit Not Only BNL, But Also, The National Weather Service Facility

This Sunday there will be an exciting 3-D picture demonstration at BNL, و where seemingly flat pictures "jump out" into the 3rd dimension when viewed with special 3-D glasses. A groundwater model will also be on display, showing a the different strata of Long Island's unique aquifer, and how they function to effectively filter and purify groundwater. Summer Sunday Tours continue this ⁵ week with guided bus tours of the Lab site which run continuously throughout the day. The Whiz Bang Science Show, a lively, interactive demonstration of basic scientific principles, will be presented continuously between 10 a.m. and 3 p.m.

Everyone is invited to attend this Sunday's free tour of the National Weather Service facility located here at BNL. Come visit the Weather Service forecast office where all of the day-to-day forecasts and warnings are issued. The Doppler radar is sure to be of interest to tour participants, as well as the weather balloon site, and all the computer technology that makes weather forecasting possible.

The Camp Upton Historical Collection, located in the Camp Upton chapel, contains the history of the BNL site during its pre-Lab days as a U.S. Army camp during World wars I and II. Organized by BNL's Museum Programs of the Community Relations Office, BNL Summer Sunday tours run from 10 a.m. to 3 p.m., but visitors must arrive before 3 p.m. The tours are free, open to the public, and no reservations are required.



Sunset Banjo Cruise, August 2

The Hospitality Committee invites the Brookhaven Laboratory Community to a sunset banjo boat cruise on the Long Island Sound. Who: students, facility users, guests, families, employees - everyone.

Where: Port Jefferson Ferry. Take 25A West to Rte. 112. Take 112 North to the ferry dock.

When: Wednesday, August 2, 6-9 p.m. Allow 45-60 minutes driving and parking time.

Cost: Adults, \$8; children 6-12, \$5; under 6, free. Food and beverages are available for purchase on the ferry, or bring your own.

For information call Mary Jane

Pianofest Recital Noon, July 26

Next Wednesday, July 26, sees the return of "Pianofest in the Hamptons" for its final recital of the season at Berkner Hall, at noon.

Pianofest is a group of prize-winning young artists coached by Paul Schenly and other master teachers. Schenly will introduce his selection of performers in a diverse program of piano masterpieces.

Noon recitals are free, informal, and open to all. Lunch may be brought into the auditorium.

IBEW Meeting

Local 2230, IBEW, will hold its regular monthly meeting on Monday, July 24, 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.

BROOKHANEN

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Bldg. 134, P.O. Box 5000 Upton NY 11973-5000 phone (631) 344-2345, fax (631) 344-3368, e-mail bulletin@bnl.gov

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

Equipment Demo

Voicestream/Omni 7/27

On Thursday, July 27, 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 unlimited 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.

Sheridan, 331-3286, or Mimi Luccio, 821-1435.

Arrivals & Departures

Arrivals

Andrew C. Ferguson		
David T. Free	Physics	
Philip M. Marino	NSLS	
Dennis J. Ryan	Rad. Control	
Andrei P. Shishlo	C-A	
Irina V. Sourikova	Physics	
Jun-Suhk Shu	Physics	
Mangala D. Tawde	Biology	
Geraldine A. Townsend	. Rad. Control	
Stephen F. Townsend	. Rad. Control	
Demonstrument		

Departures

Anne S. Baittinger	Biology
Tzi-Shan Chou	
Gaby Ciccarelli	. En. Sci. & Tech.
James K. Fitzsimmon	
Roy J. McWilliams	Plant Eng.
Louisa Morrison	
William R. Softye	Plant Eng.
Christopher Wennes.	
Desong Zhao	Instrumentation
John Ř. Zullo	

Counterintelligence **Awareness Training Required by August 2**

Several DOE Directives require that every employee complete awareness training on the subject of counterintelligence. A web-based program on Counterintelligence Awareness (Course #GE-CIA) has been developed with a link placed on the Training & Qualification Program Office web site at http://training.bnl.gov/courselist. htm. All BNL employees are required to complete this training on or before August 2. If you have any difficulties, call the training hotline, Ext. 6252.

BERA Events

Join in some of the 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 on a first-come basis.

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.

New York Yankees \$49 Friday, August 18 Main Level Reserved Tickets 7 p.m. game vs. Anaheim Angels Departure from BNL at 4:30 p.m. Returns at 10:30 p.m.

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

Atlantic City Bus Trip\$24Sunday, September 9Resorts/Casino on BoardwalkAtlantic City, NJReceive coin bonus returnDeparts from BNL at 8 a.m.Returns at 10:30 p.m.

LI Ducks Baseball Game \$8

Tuesday, September 12 7 p.m. game vs. Bridgeport Bluefish EAB Stadium, Central Islip

(No transportation provided)

Wine Tour & Tasting

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.

\$23

\$19

New York City

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. also required. Must be capable of effectively interfacing with all levels of staff and management. CSP certification or equivalent license is highly desirable. Responsibilities will include the coordination of all ES&Hreview processes, (i.e., design, readiness, Health and Safety Plans, SAR/SAD) and the development of safety policies and procedures. Will provide staff support including participation in hazard evaluations and analyses, incident/accident investigations, safety assessments and reviews and coverage of other Safety Engineering tasks as assigned. Safety and Health Services Division.

OPEN RECRUITMENT – Opportunities for Laboratory Employees and Outside Candidates.

MK9999. POSTDOCTORAL RESEARCH ASSOCI-ATE – Requires a Ph.D. in nuclear, particle, or accelerator physics, excellent communication skills and the ability to interact effectively in a large group. Desirable experience includes familiarity with accelerator physics issues, strong grasp of electricity and magnetism, familiarity with basic processes of particle interactions in matter, and previous experience in maintaining large computer codes. Position is in the Advanced Accelerator Group and is involved in the design of a muon storage ring-based accelerator complex for the production of intense neutrino beams (Neutrino Factory). This work involves the design of muons, acceleration, and muons storage rings. Selected candidate is expected to work on the simulation of the front end of the Neutrino Factory and maintain and improve the simulation codes. Under the direction of R. Fernow. Physics Department.

NS8925. GENERAL SUPERVISOR, ELECTRICAL OPERATIONS – Requires a minimum of ten years' experience in electrical service and distribution systems; and knowledge, which should include electrical construction, maintenance and high voltage (above 600 volt) power distribution systems, including electrical substation operation and maintenance, overhead and underground distribution, circuit breaker operation and maintenance and cable selection. Previous supervisory experience or electrical engineering degree is required, as is a thorough knowledge of the NEC. Good communication and computer skills are highly desirable. Will be responsible for the safety and efficient operation and control of the site electrical distribution system, including direct supervision of the towerline electricians and operations electricisus witching orders to redistribute electrical power, prepare specifications, purchase requests and service contracts. Plant Engineering Division.

NS8686. PHYSICS ASSOCIATE POSITION – Requires a BS in physics, excellent communication skills, and an interest in being part of a rotating shift team responsible for the operation and troubleshooting of the Collider-Accelerator Complex for the experimental physics program. Background experience in high power pulsed power supplies, digital electronics, computer controls and programming, as well as laboratory test and measurement techniques is desirable. Collider-Accelerator Department.



LAB RECRUITMENT – Opportunities for Laboratory Employees Only.

NS8924. ELECTRICAL SUPERVISOR – Requires a minimum of ten years' experience in industrial facility electrical systems, including such areas as preventive and repair maintenance, light construction, trouble-shooting, wiring, motors, and motor control centers. A thorough working knowledge of the NEC is necessary. Will perform first-line supervision of electricians, including work assignments and scheduling, employee training, obtaining materials, tools and supplies, performance evaluations, attendance monitoring and technical direction. Must maintain records, coordinate work with other supervisors and provide technical assistance and information to customers as required. Plant Engineering Division.

DD8843. ENGINEERING POSITION – (Term Appointment) Requires BSEE/BSME or equivalent, demonstrated excellent communication skills and previous experience in a detail-oriented environment. Familiar ity with Lab ES&H policies and industrial safety including Environment, Safety and Health evaluations is