

Brookhaven Lab, DuPont Develop New Catalysts Will Convert Renewable Feedstocks to Useful Industrial Materials

BNL, with DuPont's Central Research & Development Department in Wilmington, Delaware, has developed a new class of catalysts that could some day convert plant-derived feedstocks or raw materials into industrially useful materials such as chemicals and synthetic fibers.

This research is described in the October 15 issue of the German journal *Angewandte Chemie*, in a paper coauthored by Morris Bullock of BNL's Chemistry Department, Marcel Schlaf and Prasenjit Ghosh, then of Chemistry; and Paul Fagan and Elisabeth Hauptman of Dupont. "This is an early step in a long-term goal to develop new feedstocks, which are nonrenewable and add atmospheric carbon dioxide to the environment. In contrast, he said, biomass-based feedstocks are mainly derived from plants. At a time when oil prices continue to increase, these plant-based products may offer an economically advantageous, energy-saving, environmentally friendly alter-

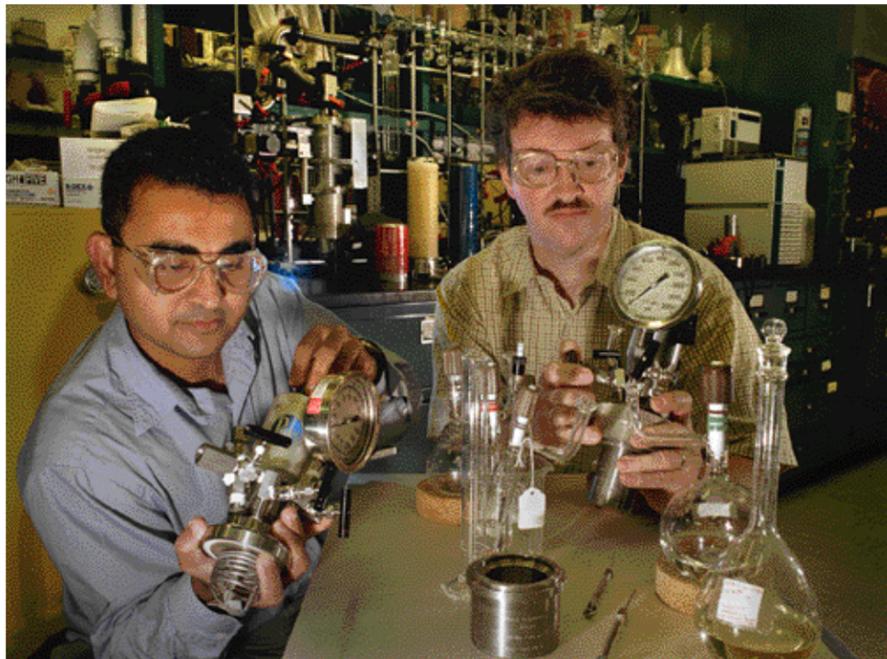
This research is a starting point to develop improved industrially important catalysts for key transformations of biomolecules.

ways to make chemicals and fibers," said Bullock, who is BNL's principal researcher in the project.

As Bullock explained, industrial chemicals and fibers such as nylon are traditionally derived from petroleum-based

native for DuPont and other chemical and synthetic-fiber manufacturers.

The BNL/DuPont collaboration used a ruthenium-based catalyst to accelerate the removal of oxygen from diols, which are organic compounds



Prasenjit Ghosh (left) and Morris Bullock of the Chemistry Department prepare for an experiment to test a new class of catalysts that they developed with DuPont for converting renewable feedstocks to useful industrial materials.

Roger Stouvenburgh CNS-13-01

commonly found in plants that contain compounds of hydrogen, oxygen, and carbon. Selective removal of oxygen converts diols into alcohols that can be used for making industrial materials.

The researchers hope to use this deoxygenation method on more complex compounds, such as glucose. Deoxygenation of glucose could be used for pro-

duction of chemicals that would have applications in large-scale industrial processes.

Dupont's goal is to derive 25 percent of its revenues in 2010 from renewable raw materials, such as carbohydrates. Fagan, principal researcher on the project at DuPont, said, "This research is a starting point to develop improved industrially important catalysts for key

transformations of biomolecules. We realize there is much more work to be done on these catalysts, but this is the kind of chemistry that will help DuPont meet its goal."

"We are continuing to study ways to improve the activity of the new catalysts so that they become attractive for industrial use," Bullock said. He and

(continued on page 2)

RHIC Update

Machine Nears Full Luminosity

The "squeeze" is on. That's the news from the Collider-Accelerator (C-A) Department, where accelerator physicists have been working to squeeze the beams at the Relativistic Heavy Ion Collider (RHIC) to increase collision rates. A higher collision rate, also known as luminosity, will yield more data for the four experiments searching for quark-gluon plasma, the form of matter that RHIC aims to create.

"The more the beam is squeezed, the more densely packed the ions and the higher the probability of getting collisions," said Dejan Trbojevic of C-A, Head Commissioner at RHIC, "particularly collisions at the center of each detector, which are most useful for taking data."

RHIC reached full collision energy in July and is now achieving a peak luminosity of about 1,400 collisions per second. The jump in luminosity from the previous level, about 700 collisions per second, is the result of squeezing the beam in two directions.

First, RHIC's storage radio-frequency (RF) cavities were made operational. The electric field squishes the ions in each bunch closer together from end to end, that is along the direction of motion.

The result is that each bunch of about half a billion

ions, previously spread over a distance of five meters, is now squeezed into less than half that space, two meters. This reduction is responsible for putting more of the collisions at the centers of each detector.

The beam has also been squeezed in diameter from 300 to 150 microns (millionths of a meter). This "low beta squeeze" effectively focuses the beam at the collision points, increasing the rate of collisions.

"The RHIC experiments' productivity depends on two things; luminosity and stability of operations," says Physics Department Chair Sam Aronson, "Because what really matters is the total number of collisions delivered. The increase in luminosity is most welcome by the experiments, as this will lead to

(continued on page 3)

367th Brookhaven Lecture

Tickling Superconductors With Infrared

From determining the structures of interplanetary dust particles to identifying debris from the TWA flight 800 crash off Long Island, many investigative studies done at the National Synchrotron Light Source (NSLS) have used the intense infrared light produced there.

The NSLS's infrared can also be used to detect microscopic changes in materials when they become superconducting, that is, are transformed into a state that allows electricity to pass through with no resistance.

While the superconducting process has been long studied, it is still not completely understood. For instance, researchers at the

NSLS are studying a magnesium diboride compound discovered this January in Japan. They are using the pulsed nature of synchrotron light to develop a new type of measurement that reveals more about how this material becomes superconducting at the relatively high temperature of 40 Kelvins.

To describe this novel measurement, Larry Carr of the NSLS Department will give the 367th Brookhaven Lecture on "Tickling Superconductors With Infrared Light." The talk will be given in Berkner Hall at 4 p.m. on Tuesday, October 23.

Larry Carr received his Ph.D. in 1982 at Ohio State University.

His research using infrared synchrotron radiation began in 1988 at Emory University. He continued this work while on the scientific staff of Northrop Grumman, before joining BNL in 1996. Carr's research has focused on infrared properties of superconductors and applications of synchrotron radiation.

Refreshments will be offered before and after the lecture. Those who would like to accompany the lecturer to dinner after the talk at a restaurant off site may call Laura Miller, Ext. 3259, by 2 p.m. on October 23 to reserve their place.

— Liz Seubert



Larry Carr, National Synchrotron Light Source (NSLS) Department, is in front of the far-infrared spectrometer at beamline U12IR of the NSLS's Vacuum Ultraviolet ring.

Roger Stouvenburgh D0021001

Calendar of Laboratory Events

- The BERA Sales Office is located in Berkner Hall and is open weekdays from 9 a.m. to 3 p.m. For more information on BERA events, contact Andrea Dehler, Ext. 3347; or M. Kay Dellimore, Ext. 2873.
- Additional information for Hospitality Committee events can be found at the Lollipop House and the laundry in the apartment area.
- The Recreation Building (Rec. Bldg.) is located in the apartment area.
- Contact names are provided for most events for more information.
- Calendar events flagged with an asterisk (*) have an accompanying story in this week's Bulletin.

— EACH WEEK —

Mondays: Arts & Crafts

1 p.m., Rec. Bldg. \$5 per month covers materials. "Make Your Own Necklace." Marcia Leite, Ext. 1040, mhsleite@hotmail.com. — Hospitality event.

Mondays: BNL Gospel Choir

5:15-7 p.m. Rehearsals in Berkner auditorium. Seeking new members, all faiths. Frances Ligon, ligon@bnl.gov, Ext. 3700; Sydell Lamb lamb@bnl.gov, Ext. 3389; www.bnl.gov/bera/activities/choir/.

Tuesdays: Welcome Coffee

10 to 11:30 a.m. Rec. Bldg. Come and meet friends. The first Tuesday of every month is special for Lab newcomers and leaving guests. Mimi Luccio, 821-1435.

Tuesdays: Toastmasters

Meetings on 1st & 3rd Tuesday of each month, 5:30 p.m.; 4th Tuesday at 12:05 p.m., in Bldg. 463. All are always welcome. www.bnl.gov/bera/activities/toastmasters/default.htm.

Wednesdays: On-Site Play Group

9:30-11:30 a.m., Rec. Bldg., Free. Parents meet while the children play. Babies welcome. Monique de la Beij, 399-7656.

Wednesdays: BNL Ballroom, Latin & Swing Dance Club

Beginner to adv. lessons. Brookhaven Center. Marsha Belford, belford@bnl.gov or Ext. 5053.

Wednesdays: Cooking Exchange

1:30-2:30 p.m., Rec. Bldg., every third Wednesday. \$1 per evening covers the cost of ingredients. Marcia Leite, Ext. 1040, mhsleite@hotmail.com.

Wednesdays: Weight Watchers

noon-1 p.m., Brookhaven Center South Room. Mary Wood, Ext. 5923.

Wednesdays: Yoga Practice

12-1 p.m., Rec. Bldg. Free. Ila Campbell, Ext. 2206.

Wednesdays: Stretch

\$4 per class. 5:15-6:15 p.m., Rec. Bldg. Pat Flood, Ext 7886.

Thursdays: Falun Dafa Class

Free, 12-1 p.m., Rec. Bldg. Exercises, meditation. www.falundafa.org.

Tuesdays & Thursdays: Aerobics

\$4 per class. 5:15-6:30 p.m., Rec. Bldg. Pat Flood, Ext 7886.

Tues. & Thurs.: Aqua Aerobics

5:15 p.m. \$2 pool fee per class or pool pass. Mary Wood, Ext 5923.

Mon. & Thurs.: Cardio Kickboxing

\$5 per class. Mon. & Thurs. noon-1 p.m. Thurs. 5:15-6:15 p.m. Tues. classes: in the Gym. Thurs. classes: Brookhaven Ctr. Must register. Mary Wood, Ext. 5923, or wood2@bnl.gov.

Mon., Wed. & Thu.: Tai Chi

12:15 - 12:45 p.m., Rec. Bldg. Scott Bradley, Ext. 5745, bradley@bnl.gov.

— NEXT WEEK —

Monday, 10/22

IBEW Meeting

6 p.m., Knights of Columbus Hall, Railroad Ave., Patchogue. A meeting for shift workers will be held at 3 p.m. in the union office. The agenda includes regular business, committee reports, and the president's report.



The Chhandayan World Percussion Ensemble: (from left) Emikiano Valerio, Yousif Sheronick, Samir Chatterjee, Mario Monaco, and Dan Weiss.

BERA Indo-American Association Dinner-Concert Gains \$12,100 for WTC Victims

At its October 5 dinner concert held to benefit the victims of the World Trade Center tragedy, the BERA Indo-American Association collected \$12,100. The money has been given to BSA for the American Red Cross relief efforts.

This record total was reached through donations from the more than 300 people who attended the event. Fifteen local restaurants, FLIK at BNL, and the musicians of the Chhandayan World Percussion Ensemble donated their services to provide a superb dinner, followed by a unique performance that held the audience spellbound.

Achyut Topé, BERA-IAA President, thanked in particular the club members who had worked so hard to organize the event and the BNL staff of various departments and divisions who also gave valuable assistance.

By hosting or participating in this event, the club and the international community at the Lab demonstrated support for the victims of the September 11 tragedy and support for BSA's management in preserving an excellent working environment at BNL for all staff, Topé said.

Later, on behalf of BSA, BNL Deputy Director for Operations Thomas Sheridan received from Topé a symbolic check for \$12,100. Sheridan thanked and congratulated BERA-IAA and everyone concerned in this effort, which, he commented, united so many members of the community.

International Flavor

As for the event's attendees, they first dined, as Topé noted, on "sumptuous food," which was provided at no charge by the following restaurants:

Danfords, Port Jefferson
Diamond Wok, Rocky Point
Dunkin Donuts, Port Jefferson Station

FLIK at BNL
House of India, Huntington
Ken's, Medford
King's Buffet, Medford
The Curry Club, Stony Brook
The Village Way, Port Jefferson Village
McNulty's, Miller Place
Michaelangelo Pizza, Middle Island
Pita House, Medford
Sansar, Hicksville
Savino's Hideaway, Mount Sinai
Selden House of Spices, Selden
Sitar, Huntington.

Drums of Unity & Peace

The diners then settled in Berkner auditorium to hear the Chhandayan World Percussion Ensemble's concert, "United We Stand, Drums of Unity & Peace."

Composed and directed by Samir Chatterjee, the concert showcased percussion instruments from India, the Middle East, Africa, and South and North America. Chatterjee describes the Ensemble's music as capturing the spirit of fusion where musical traditions move beyond horizons to blend with other cultures. The effect, he says, culminates in one unique sound that speaks of "droplets of music from all over the world."

A leading tabla player of India, Chatterjee appears frequently as a soloist and an accompanist throughout the world. He has taught tabla for 24 years, and founded Chhandayan to promote and preserve Indian music.

Other members of the group are Mario Monaco, who played instruments such as the berimbau, chequere, and cuica, of South American or Caribbean origin; Emikiano Valerio, who

played Cuban percussion, specializing in congas, timbales, and bongos; Yousif Sheronick, a music specialist who plays percussion instruments from around the globe and performed on the darabuka, rig tar, and bendir from the Arab world; and Dan Weiss, who performs in the jazz and experimental music scene, played mainly the American drumkit, the only percussion instrument that requires the use of both hands and feet.

Together, the musicians demonstrated the extraordinary variety of moods within percussion music, ranging from the spiritual "Invocation," to the exciting "Jungle," through "Loneliness," and the stormy "Typhoon."

Concluding with "Moonbeam," the performers were joined by guest singer Sanghamitra Chatterjee, whose beautiful voice highlighted the haunting tranquility of this song.

Before the concert, Topé had thanked the Ensemble for a performance "for which they expected nothing."

"We do expect something," replied Chatterjee. "We expect peace." — Liz Seubert

New Catalysts (cont'd.)

Dupont have filed for two patent applications on the catalysts.

This work was carried out under a three-year Cooperative Research & Development Agreement. It was funded by DuPont and DOE's Office of Science, Laboratory Technology Research Program. The fundamental research and development at Brookhaven that formed the foundation for this collaboration was funded by DOE's Office of Basic Energy Sciences, Division of Chemical Sciences.

— Diane Greenberg

COMPUTER TRAINING

AutoCAD LT Training



A three-day AutoCAD LT 2002 class is planned for early December at a cost of \$550 per person. Contact Pam Mansfield, Ext. 7286, pam@bnl.gov, by Friday, October 26, for registration information. For information on other training, see <http://training.bnl.gov/>.

In Memoriam

Walter Bernatzky, who joined the Medical Department as a dietary services assistant on December 16, 1974, died on October 7, 2000. He was 81. He had retired as a senior veterinary services assistant on June 13, 1980.

Jiri Lastuvka, who, on November 2, 1999, died at the age of 70, had joined the Central Shops Division as a senior standards inspector on October 6, 1980. As NDT/QC Inspector, he had retired from the Lab on September 16, 1993.

Leon Peker, who came to BNL as a physicist on January 31, 1978, in what became the Department of Advanced Technology, died at 71 on August 1, 2000. He had retired as a senior physicist on December 31, 1994, remaining a guest senior physicist until 1997.

Karl Walther, who served the Lab as a glassblower for 42 years, died on June 28, 2000, at the age of 81. He had joined the Physics Department on February 24, 1947, and had retired as a glassblowing specialist from the Instrumentation Division on April 30, 1989.

Invitation

*Humor, Art —
the Bouchiers!*

**Wednesday
October 24**

**David Bouchier talk:
A Year Not in Provence
5:15 p.m.**

Berkner Hall

**Diane
Barthel-Bouchier
Paintings, Drawings
11:30 a.m.-6:30 p.m.
Refreshments served**

RHIC Update *(cont'd.)*

much larger numbers of events. Achieving full luminosity is a very important goal."

To achieve a jump to peak luminosity of 2,000 or more collisions per second, the physicists are planning to double the number of bunches in each beam, from the current 56 to 112.

This would double the luminosity without increasing the number of ions in each bunch, which can cause beam instabilities. Higher bunch intensity will be tried later on.

There's more than science driving these physicists.

"We are waiting for two cases of champagne from Fermilab," said Trbojevic, who, with accelerator physicist Steve Peggs, entered a friendly wager with Steve Holmes of the Fermi National Accelerator Laboratory in 1992, betting that RHIC would reach full luminosity before Fermilab's Tevatron accelerator does.

What are the chances? The RHIC physicists are somewhat optimistic that they'll achieve their goal within a few weeks.

"But RHIC switches over to running polarized protons around Thanksgiving," said Peggs, "so we better get it before then." — Karen McNulty Walsh

Correction

John Parise is the Co-Director of the new Materials Center directed by Doon Gibbs. His name was misspelled as Parisi in the Bulletin of October 12, 2001.

Wanted: Art, Crafts!

Creative people in the Lab community are asked to enter their finest work to exhibit in the Fall BNL Arts & Crafts Show in Berkner Hall, Monday to Wednesday, November 19-21. For more information, call Liz Seubert, Ext. 2345.

Shopping Trip, 11/10

Join BERA on an all-day shopping trip to Franklin Mills Discount Mall in Philadelphia, Pennsylvania, on Saturday, November 10. Shop at 200-plus stores including 30 new designer stores. All stores are under one roof; there is no sales tax on clothing. Shops include Burlington Coat Factory, Levi's Dockers, JC Penney Outlet store, Gap, Donna Karan, Marshall's Mega Store, Old Navy, Bed Bath & Beyond, and many others.

Bring lunch or try one of the restaurants at Franklin Mills. The bus will leave from the Brookhaven Center at 7 a.m., returning at about 10 p.m. A pickup at Exit 63 may be made on request. Reserve your \$20 place from BERA Sales Office, Monday-Friday, 9 a.m.-3 p.m.

U.S. DOE's Office of Science Staff Meet With OEP's Brian Murfin



Roger Stouvenburgh, CH-956-01

In September, visitors from DOE's Office of Science (OS) came to BNL to discuss science educational initiatives with the new Manager of BNL's Office of Educational Programs (OEP), Brian Murfin. Trying out a hands-on exhibit in the Lab's Science Museum are: (from left) OEP's Renée Flack, visiting Einstein Fellow Stephanie Toney, OS Assistant Director of Science Education Peter Faletta, OS Program Director Cindy Musick, and Murfin. An article on Murfin and his plans for OEP appears in the supplement issued with this week's Bulletin.

2002 BSA Scholarship Alert

Applications for 2002 BSA Scholarships are available from the Human Resources Division, Bldg. 185. The application deadline is November 15.

Children of regular employees of BNL are eligible to compete for up to 13 BSA scholarships, each for \$2,500 per year, renewable for up to four years of study toward an academic degree.

In addition, up to two scholarships will be awarded to BNL employees' children who are black, Hispanic, or Native American. In the event that there are no awards to under-represented minority candidates, then the remaining scholarships will be awarded to non-minority students.

Applicants must be secondary school seniors who will be gradu-

ated during the current academic year and entering college by fall 2002.

In addition, qualified applicants must be: children of BNL employees who began regular, full-time or regular, eligible part-time employment no later than November 15 of this year, and who are employed by BNL at the time the award is announced; or children of retired employees or employees who died while in regular service at the Lab. Stepchildren are eligible if the employee regularly claims the child as a dependent for income-tax purposes, or if the stepchild has resided in the employee's household for the previous two years before making the application.

For more information, contact Bonnie Hulse, Ext. 2885.

Arrivals & Departures

Arrivals

Yongbin Leng C-A

Departures

James Ainoris Plant Eng.
Barry Arbeit ITD
Chau Lac C-A
Steven Mulhall Physics

Bowling Scores

— High Rollers —
Scores as of October 11

Ron Picinich	...264/199/180/643
Ed Meier 194
Pete Wynkoop 192/181
Frank Loiacono 192
Pete Lombardo 191
Liz Simes 184
Carol Rooney 171
Kay Conkling 164

Water Quality Booth at Healthfest 2001 Samples A-D: Water Key on the Web

At Healthfest's two-day fair, in that the different brands BNLers again took part in a drinking-water taste test — which set BNL drinking water in competition with three other "brands" of drinking water. They were: Greenlawn, Hampton Bays, and the on-site bottled water, Aqua Cool. This was a blind taste test,

Now Available At the BERA Store:

Gift Certificates

Gift certificates in \$10 increments are now available for purchase at the BERA Sales Office in Berkner Hall.

Gift certificates can be used toward the purchase of items sold at the BERA Sales Office.

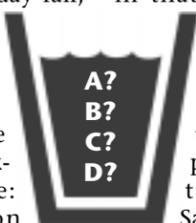
National Pride Items

- *NYPD and FDNY hats \$10
- *T-shirt (flag and pledge) ... \$10
- *T-shirt (eagle w/tear) \$10
- Eagle sweatshirt \$20
- Flag lapel pins \$1

*The BERA Store will donate \$6 to the World Trade Center Relief Fund for every hat and T-shirt purchase.

were identified only as Sample A, B, C, and D.

While the results of the taste test are being tallied and will be reported in a future Bulletin, the identities of Samples A through D can be found on the web, at www.bnl.gov/bnlweb/pubaf/water/samplekey.



Coming up

BSA Distinguished Lecture The Aging Process

The BSA Distinguished Lecture on "Puzzles and Paradoxes of the Aging Process," by biomedical gerontologist Caleb Finch, a professor at the University of Southern California, has been rescheduled. The talk will be given on Wednesday, November 14, at 4 p.m., in Berkner Hall.

Noon Recital Canceled

As a result of travel difficulties following the World Trade Center disaster, the 10/24 noon recital featuring violinist Thomas Bowes has been canceled.

Classified Advertisements

Placement Notices

The Lab's placement policy is to select the best-qualified candidate for an available position. Candidates are considered in the following order: (1) present employees within the department/division and/or appropriate bargaining unit, with preference for those within the immediate work group; (2) present employees within the Laboratory; and (3) outside applicants. In keeping with the Affirmative Action Plan, selections are made without regard to age, race, color, religion, national origin, sex, disability or veteran status. Each week, the Human Resources Division lists new placement notices, first, so employees may request consideration for themselves, and second, for open recruitment. Because of the priority policy stated above, each listing does not necessarily represent an opportunity for all people. Except when operational needs require otherwise, positions will be open for one week after publication. For more information, contact the Employment Manager, Ext. 2882; call the JOBLINE, Ext. 7744 (344-7744), for a list of all job openings; use a TDD system to access job information by calling (631) 344-6018; or access current job openings on the World Wide Web at www.bnl.gov/JOBS/jobs.html.

OPEN RECRUITMENT — Opportunities for Laboratory employees and outside candidates.

MK2316. POSTDOCTORAL RESEARCH ASSOCIATE - Requires a Ph.D. in the field of Life Sciences to study the mechanisms of bacterial resistance and homeostasis to heavy metals. Our primary interest is to understand the structural basis of the regulatory pathways controlling heavy metal resistance and homeostasis in *Ralstonia metallidurans* CH34, a soil bacterium that is very well adapted to heavy metal pollution. Several heavy metal resistance pathways from this organism have been cloned and characterized. Since the genome of this organism was recently sequenced, proteomic approaches will be developed to further understand the functioning of this organism as a model for bacterial adaptation to heavy metals. This position will offer comprehensive training from molecular biology through protein purification, protein-protein interactions and interactions between proteins and nucleic acids. Will join a dynamic, diverse group of scientists with experience in environmental sciences, microbiology, molecular biology and protein work. Under the direction of D. van der Lelie, Biology Department.

MK2443. POSTDOCTORAL RESEARCH ASSOCIATE - Requires a Ph.D. in chemistry. Experience with synthesis and characterization of metal nanoclusters or other nanostructures, photochemical methods, and environmental spm techniques, including electrochemical aspects highly desirable. Will prepare, image, and study nanoparticles and measure and model resonant current with STM. Under the direction of C. Creutz, Chemistry Department.

MK2317. POSTDOCTORAL RESEARCH ASSOCIATES (Two Positions) - Requires a Ph.D. in structural biology, molecular biology/biochemistry, or crystallography. One position requires strong background in molecular biology/biochemistry and for the other experience in computer modeling and docking programs is preferred. Research program involves structure determination of macromolecules in complex with inhibitors and docking of small molecules to receptors with the use of computer techniques. Under the direction of S. Swaminathan, Biology Department.

MK2338. POSTDOCTORAL RESEARCH ASSOCIATE - Requires a Ph.D. and experience in microbial physiology/molecular biology. Research will involve investigation into the mechanisms of phosphate regulation in bacteria and the interactions of uranium and other actinides with bacterial phosphates. Individual will be expected to interact with a multidisciplinary research group engaged in the application of synchrotron radiation (EXAFS and XANES) to the study of metal-microbe interactions. Under the direction of A.J. Francis, Environmental Sciences Department.

(continued on page 4)

Calendar

(continued)

Tuesday, 10/23

IBM Seminar & Demo of T221
9:30-10:30 a.m. ITD Seminar Room, Bldg. 515. IBM will give a technical seminar on the T221, a 22" TFT LCD monitor, the highest resolution display with over 9.2 million pixels in a 22.2" viewing image. Contact Ed McFadden, Ext. 4118, emc@bnl.gov. Also, 11 a.m.-1:30 p.m., IBM will display the T221 in Berkner lobby. Corinne Lingeback, 301-803-2488.

Women Engineers' Networking Career Seminar

Noon, Berkner Hall, Room C. Cathleen Wehrmann will present "Discussing Your Performance With Your Manager." Seminar hosted by Patricia Williams. Topics: career development, future agenda, Web site, etc. Contact Arlene Zhang, arling@bnl.gov; or Lorraine Merdon, merdon@bnl.gov.

367th Brookhaven Lecture

4 p.m., Berkner Hall. Larry Carr, NSLS, will talk on "Tickling Superconductors With Infrared Light." Story, page 1.

Wednesday, 10/24

Art, Humor With the Bouchiers
11:30 a.m.-6:45 p.m., Berkner Hall, bird paintings by Diane Barthel-Bouchier; 5:15 p.m. Satirical talk, "A Year Not in Provence," with photos, slides, by David Bouchier. Refreshments after the talk.

Thursday, 10/25

Brookhaven Advocacy Council Meeting

Open Session, 12:30-1 p.m., Berkner Hall, Room C. Nancy Warren, Ext. 7548.

— WEEK OF 10/29 —

Thursday, 11/1

BERA Bridge Club
7 p.m., Berkner Hall. Morris Strongson, Ext. 4192, mms@bnl.gov.

Saturday, 11/3

BNL Ballroom, Latin & Swing Dance Club: November social

8 p.m. to 11:30 p.m., North Ballroom, Brookhaven Center, \$2/person club and BERA members, \$5/person others. Marsha Belford, belford@bnl.gov or Ext. 5053.

— WEEK OF 11/5 —

Thursday, 11/8

BWIS Wine & Cheese Reception

5:15-7 p.m., Recreation Ctr. Brookhaven Women in Science welcomes BNLers to this free social event.

Saturday 11/10

*BERA Shopping Trip
Shop in Pennsylvania. See notice at left. (Proposed overnight trip canceled.)

— WEEK OF 11/12 —

Wednesday, 11/14

Oscilloscope Demo

9:30 a.m. - 2:30 p.m., Berkner Hall. New Tektronix TD5500 Series Digital Phosphor Oscilloscope (1 GHz and 500 MHz models). Gary, 563-3520.

Divorced & Separated Support Group

noon-1 p.m., Berkner Hall, Room D. Mary Campbell, Ext. 4776, maryc@bnl.gov.

Thursday, 11/15

Money Talks Seminar

"Long-Term Care Insurance" More information to follow: Joyce Wund, Ext. 7516.

Note: This calendar is updated continuously and will appear in the Bulletin whenever space permits. Submissions must be received by the preceding Friday at noon to appear in the following week's Bulletin. Please enter the information for each event in the order listed above (date, event name, description, cost) and send it to bulletin@bnl.gov. Write "Bulletin Calendar" in the subject line.

Happenings

The camera club would like to make everyone aware that every year the photo industry gives an expo at the Javits Center in New York City. Dates are 11/1 through 1/3 from 10 a.m. to 4 p.m. Entry is free if you register on-line. It is for serious amateur and professional photographers. No one admitted under 12. For info call Ripp Bowman, Ext. 4672.



***Don't miss this week's Bulletin supplement featuring
BNL's Office of Educational Programs.***