

BNL, W.R. Grace & Co. Develop First Product To Eliminate Asbestos in Installed Fireproofing

BNL and W.R. Grace & Co. of Boca Raton, Florida, announced Wednesday that they have developed the first product capable of destroying asbestos in installed fireproofing on building columns and beams without reducing the fire-resistive performance of the fireproofing material.

The new technique, which is expected to be commercially available in early 1998, uses a foamy solution sprayed directly onto asbestos-containing fireproofing. The foam chemically digests nearly all the asbestos fibers, dissolving them into harmless minerals. After being treated, the fireproofing is no longer a regulated material.

The process is the first to destroy asbestos chemically without having first to remove the fireproofing.

Grace anticipates that building owners will realize significant cost savings by using the new product. Current techniques for removing asbestos-containing fireproofing require the construction of airtight barriers, labor-intensive scraping of the fireproofing and the installation of new asbestos-free fireproofing.

The new product eliminates the need to remove and replace older material and substantially reduces the time needed for the abatement. More-

over, the new process produces essentially no waste and is expected to save building owners the expense of disposing of regulated waste materials.

Larry Ellberger, Chief Financial Officer and Acting Chief Executive Officer of Grace, said, "We are gratified by the excellent collaboration we have had with the scientists at Brookhaven, whose expertise in chemistry and materials science was a perfect complement to our scientists' knowledge of the product and its properties." Grace is the world's leading producer of spray-applied fireproofing, including the product Monokote MK-6 which protects structural steel against damage from fire.

Ellberger continued, "Brookhaven's involvement was critical to the timely completion of this project. This is a win-win for Grace shareholders, building owners and industry-government cooperation."

Energy Secretary Federico Peña welcomed the announcement, calling the new technology "an innovative, safe solution to a tough problem that affects people around the country." He added, "Partnerships between the U.S. Department of Energy laboratories and private industry consistently reap tangible rewards."

The multimillion-dollar research project was performed under a Cooperative Research & Development Agreement, or CRADA, through joint funding by Grace and the Department of Energy's (DOE) Office of Environmental Management and Office of Energy Research. Initial funding also

came from BNL's Laboratory Directed Research & Development program and the Department of Applied Science (DAS).

Leon Petrakis, the DAS researcher who led the BNL team, praised both the collaboration and its successful (continued on page 2)



Roger Stoutenburgh

Leon Petrakis (front, left) holds asbestos fireproofing before treatment with the BNL-Grace process, while Ron Webster (front, right) holds a treated panel. In back are: Marita Allan, Toshi Sugama and Bob Sabatini.

332nd Brookhaven Lecture

Collisions, Collisions . . .

Journeys are exciting.

From intrepid explorers to armchair travelers, almost everyone is intrigued by the lure of far horizons, hoping for mysteries to solve or benefits to gain. So a journey that promises a glimpse of the universe at the moment of its creation will be one of the all-time greats.

At BNL, this back-to-the-future voyage will be possible when BNL's Relativistic Heavy Ion Collider (RHIC) goes into operation in 1999.

RHIC will be the first particle accelerator with which scientists will be able to observe matter at the extremely high temperatures and densities that occurred in the natural universe immediately following the Big Bang.

As heavy-ion particles interact in RHIC's mini-bang head-on collisions, the quarks and gluons that make up nuclear particles are expected to break free from their confinement — liberated in the primordial state of what is called the quark-gluon plasma.

To explain how theorists visualize and seek to understand this eventful moment, Associate Physicist Klaus Kinder-Geiger of the Nuclear Theory



Roger Stoutenburgh

Klaus Kinder-Geiger, with RHIC in the background.

Group in the Physics Department will give the 332nd Brookhaven Lecture.

His talk on "Recreating the Big Bang in the Laboratory — Theory and Phenomenology of RHIC" will be given on Wednesday, December 17, in Berkner Hall at 4 p.m., when he will be introduced by former BNL Director Nicholas Samios.

QCD, or quantum chromodynamics, is the theory of the strong interaction, the one of four forces in nature that determines the behavior of quarks and gluons. Physicists use QCD to help understand and develop techniques to follow what happens during collisions, from their very beginning, when ions collide, to the very end, when data on hundreds of thousands of quark-gluon interactions are collected.

Using current data from lower-energy accelerator-based experiments to illustrate his talk, Kinder-Geiger will emphasize the expected difference in results from these heavy-ion experiments and the future RHIC experiments: that is, the discovery of the quark-gluon plasma. Putting their ideas to use in determining the particle decay modes and, thus, the detector signals that will identify this new phase of matter is a priority for Klaus-Geiger and other theorists in this field. (continued on page 3)

BNL Receives \$76M to Build Experiment, Accelerator Components for CERN's LHC

On Monday, U.S. Energy Secretary Federico Peña, National Science Foundation (NSF) Director Neal Lane and their European counterparts signed a long-awaited agreement that officially paves the way for American participation in the building of the world's highest energy particle accelerator. BNL will be a major U.S. participant in the collaboration.

The U.S., through the U.S. Department of Energy (DOE) and the NSF, will contribute \$531 million in components and materials over the next eight years to the Large Hadron Collider (LHC) which will be built at the European CERN laboratory.

Those contributions will total one-sixth of the cost of LHC's two large detectors, and one-twentieth of the design and construction costs for the accelerator itself. The LHC is scheduled to begin operating in 2005.

As a lead institution for the entire American participation in the project, BNL will receive about \$76 million of that amount. The money will be used to construct detectors making up a massive experiment called ATLAS, as well as for pieces of the accelerator. The money will also help BNL coordinate the efforts of the 230 scientists from 28 American universities and three national laboratories which are participating in ATLAS.

"We've waited for this moment for nearly four years," said BNL Senior Physicist Howard Gordon, Physics Department, who is Head of the U.S. ATLAS Project Office. "Now, we must begin in earnest the work of building ATLAS, which should give us understanding of the origin of mass."

The LHC will be a 16-mile underground ring that will straddle the borders of Switzerland and France. Seven times more energetic than the current record-holding accelerator, the Tevatron at DOE's Fermi National Accelerator Laboratory in Illinois, the LHC will collide speeding protons or heavy atomic nuclei head-on, in an effort to produce new subatomic particles. Research at LHC will complement that at the \$500-million Relativistic Heavy Ion Collider now being built at BNL, which is to be commissioned in 1999, six years before the LHC.

"While physicists at RHIC are searching for the quark-gluon plasma which is thought to have existed shortly after the creation of the universe," said Gordon, "experimenters at the LHC will address the most fundamental unanswered problem of elementary particle physics: the mechanism that generates the masses of everything from the tiniest subatomic particles to entire planets."

— Kara Villamil

At BNL Forum, Gaffney Stresses Importance of Pine Barrens Research

"Protecting and preserving our open spaces and environmentally sensitive areas is critical to our future. If future generations are to enjoy the natural beauty of our respective areas, then efforts in that direction must begin today. And we can expedite that effort by discussing issues, exchanging ideas and concepts, and helping to learn from one another."

With these thoughts expressed during his welcoming remarks at the 1997 Pine Barrens Research Forum hosted by BNL October 30-31, County Executive Robert Gaffney, Chair of the Pine Barrens Commission (PBC), made clear the importance that he places on the Forum, which is a follow-up to the first such Forum held at BNL in October 1996.

Both the October 1996 and this October's Forums were sponsored by the PBC, together with the Long Island Groundwater Research Institute (LIGRI) from the State University of New York at Stony Brook and BNL. Coordinating the scientific aspects of the Forum was LIGRI Director, Henry Bokuniewicz.

The Lab, located close to the geographic center of Suffolk County, encompasses about 5,265 acres, of which almost two-thirds are undisturbed pine-barren woodlands. The Long Island Central Pine Barrens is a complex mosaic of pitch-pine woodlands, pine-oak forests, coastal plain ponds, swamps, marshes, streams and bogs. To protect these pine barrens is to protect open space and the drinking



Among the more-than-100 attendees at the 1997 Pine Barrens Research Forum held at BNL in October were: (from left) Jan Naidu, BNL; BNL Interim Director Peter Bond; County Executive Robert Gaffney, Pine Barrens Commission (PBC) Chair; Long Island Groundwater Research Institute Director Henry Bokuniewicz; and PBC Executive Director Raymond Corwin.

water for both present and future generations of Long Islanders.

While most of the research presented at the first Forum covered the Long Island Pine Barrens, the focus of this year's gathering was on learning how scientists from other pine barrens areas — which include the Albany Pine Bush Preserve, Cape Cod and Harvard Forest in Massachusetts, and New Jersey's Pinelands — have investigated vegetation patterns and cultural resources.

As Gaffney explained, "Protecting and preserving environmentally sensitive land is not a new concept. . . . But it is only over the past few decades that smaller, more-local units of government [have begun] to take up the cause. Here in Suffolk County, we've undertaken one of the largest preservation efforts ever attempted by a County in New York State — the protection of the 100,000-acre Central Pine Barrens."

During both the first and second

Forums, high school students from Long Island and New York State presented posters on research that they had conducted in the pine barrens on the BNL site and elsewhere on Long Island.

This research was made possible through the combined efforts of BNL's Office of Scientific Education and the Safety & Environmental Protection (SEP) Division, together with Suffolk Community College (SCC).

Studies by high-school students are expected to continue in 1998, and their results are to be presented during the 1998 Forum, which will cover cultural resources and educational opportunities within pine barrens.

Jan Naidu, SEP, who coordinated the 1997 Forum for BNL, along with John Black and Raymond Welch, SSC professors, advised many of the students in their work.

"These studies demonstrated that there is an excellent opportunity for students to do ecological work at BNL," said Naidu. "Also, Forum participants were toured around the Relativistic Heavy Ion Collider site, so they could see the remarkable regrowth of pines which now covers what were construction sites."

As Gaffney concluded in his remarks, "One of my goals, and I know it is one that all of you share, is to ensure that the world we leave to our children and grandchildren is a better one than we inherited. Forums such as this one today can only help us in achieving that goal." — Liz Seubert

Asbestos Abatement (cont'd.)

outcome. "We are delighted to have worked with Grace on this project," he said. "We believe our cooperation has led to a turning point in the important but, until now, rather overlooked science of asbestos abatement."

"The method that we have developed could be used in thousands of schools, office buildings, hospitals and other institutions around the country," Petrakis continued. "We also believe it could lead to the development of a family of innovative materials that chemically digest asbestos-containing materials, with potential applications for addressing asbestos in thermal insulation in DOE buildings, and other governmental and utility-industry facilities."

Petrakis emphasized the teamwork at BNL that led to the discovery: He cited his current DAS colleagues Marita Allan, Bob Sabatini, Toshi Sugama and Ron Webster; former DAS staff Cahit Eylem, Joe Hriljac and Lawrence Kukacka; and Qing Zhu, formerly of the Physics Department. As well, he said, BNL's National Synchrotron Light Source (NSLS), Medical Department, Plant Engineering (PE) and Safety & Environmental Protection (SEP) Divisions, and Office of Technology Transfer all played crucial roles.

"This project succeeded because of the great enthusiasm and hard work of the people involved," said Petrakis. "I am grateful for the cooperation that we have had from DOE and from within the Laboratory. Our cooperation with the Grace team, led by Dave Myers, has been a great one, and we look forward to seeking new uses for this wonderful breakthrough."

Said Myers, "We recognized immediately that Brookhaven has many unique capabilities that could move this research along more effectively than if we had gone ahead alone."

Extensive Tests Performed

In full-scale tests performed with the new product, Grace and BNL have confirmed that the product's use would

reduce asbestos to less than one percent of treated fireproofing's weight, which is the Environmental Protection Agency's definition of non-asbestos materials.

The asbestos-neutralizing process was first evaluated in Medical's Inhalation Toxicology Laboratory, which was specially equipped to handle asbestos safely and within the requirements of state and federal environmental permits. The upgrades and environmental permit processes were greatly helped by Raj Yadav, PE; SEP's Gary Adams and Jeff Williams; and Pat Carr, Jim Hurst and C.R. Krishna of DAS, said Petrakis.

The process was then tested at a vacant four-story building in Virginia that had existing asbestos-containing fireproofing.

The treated materials were tested for fire resistance at the Underwriters Laboratories (UL) in Northbrook, Illinois, using UL's nationally recognized test procedures. Those tests demonstrated that treated fireproofing maintained the same fire rating on columns and beams as the originally installed material.

Although most of the efforts thus far have been centered around spray-applied fireproofing, laboratory tests

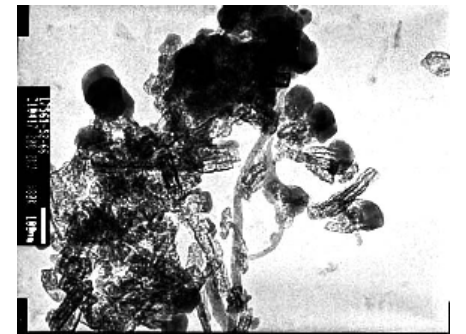


At left, a magnified image of asbestos-containing fireproofing taken through a BNL electron microscope. At right, the same material after treatment with the BNL-Grace process — the asbestos fibers have been chemically changed into amorphous minerals.

conducted by Grace and BNL have confirmed that the digestion process should also be effective with acoustical plasters.

Grace expects to receive six patents for the new asbestos-neutralizing process. Brookhaven has received one patent relating to the process and is applying for two others. Petrakis credited Margaret Bogosian and Mike Furey of the Office of Technology Transfer for their work in facilitating the CRADA and patent processes.

Brookhaven and Grace have also developed a new quantitative analytical method that detects chrysotile asbestos fibers in material containing as



little as 0.1 percent of the fibers. Development of the technique utilized the intense x-rays from the NSLS, as well as conventional laboratory instruments. — Kara Villamil

In Memoriam

The Bulletin has been informed that the following retirees have passed away recently:

Michael Lalosh, a BNL fire fighter for 17 years, died on October 28, at the age of 67. He had joined the Lab's Security & Plant Protection Division on May 23, 1966, and retired from the Safety & Environmental Protection Division on October 23, 1983.

Michael P. McKenna, whose BNL career spanned 34 years, died on November 11. He was 72 years old. He joined the Operations Group at the Brookhaven Graphite Research Reactor as a pile operator, on June 22, 1953. At his retirement on August 31, 1987, he was a technical associate I

with the Reactor Division. He is survived by his wife Frances, who retired from the Department of Applied Science in 1995.

Frederick H. Kuhn, whose career at BNL had spanned some 39 years, died on November 22. He was 76 years old. He had started at the Lab on August 2, 1948, as a technician in the Health Physics Department. When he retired on August 27, 1982, he was a technical supervisor in the Alternating Gradient Synchrotron Department. In 1987, he returned to the Lab for three months as a guest in the Accelerator Development Department. Having served in World War II and survived the bombing of Pearl Harbor, Kuhn was laid to rest in Arlington National Cemetery on December 11.

Last Call for Carolers

The BNL Choral Group will present its annual Christmas Concert in the cafeteria in Berkner Hall at the special Holiday Luncheon scheduled for Friday, December 19 (see menu on page 3). Please note the change from the previously announced date of December 18.

The last two rehearsals for this concert will be held at noon sharp in Berkner Hall on Monday, December 15, if it is raining — or, if the weather is fine, then around 12:30 p.m. after the "BNL 50" photograph (see notice, page 4) — as well as on Thursday, December 18.

For more information, call Kara Villamil, Ext. 5658, or Liz Seubert, Ext. 2346.

Give Science Toys As Holiday Gifts

Purchase science toys and gadgets for holiday gift-giving during the one-day sale next Friday, December 19, from 10 a.m. to 3 p.m. in the Berkner Hall auditorium. Sponsored by the Museum Programs of the Public Affairs Office, the sale features limited quantities — so shop early! For more information, call Ext. 4495.

Amateur Radio

The BERA Amateur Radio Club will next meet at noon on Thursday, December 18, in the lounge of the Recreation Building. Election of new officers and the holiday party are on the agenda. All BERA members and licensed amateur-radio operators are invited to attend. For more information, call Chris Neuberger, Ext. 4160, or Nick Franco, Ext. 5467.

Free Pizza!

The BERA MicroComputer Club will be having its annual "soft sector" holiday pizza party at noon on Thursday, December 18, at Alfredo's Pizzeria on Route 25 in Ridge. All employees who are potentially new members are invited to join this free celebration to learn about the club.

Call Steven Stein, club president, Ext. 5694, to make reservations. For more information about the club, check its web site at www.bnlmcc.bnl.gov.

Berkner Cafeteria

Holiday Luncheon

Friday, December 19

Prime Rib
Yorkshire Pudding
Mashed Potatoes
Vegetable Medley
Holiday Dessert
Fountain Beverage
\$6.95

Bowling

Purple & White League

11/13: R. Larsen 246/212/661 scratch series, R. Raynis 233/202/614 scratch, J. Zebuda 223/216/600 scratch, S. DiMauita 216/209, B. Mullany 205/195/192, Don King 216/202, M. DiMauita 196/191/189, T. Dilgen 182/181, R. Eggert 234, E. Meier 248, P. Wynkoop 229, Doug Fisher 212, B. Tozzie 205, W. Rasmussen 204, Donna King 194, J. Addressi 192, P. Callegari 190, K. Batchelor 189, J. McCarthy 187, N. Besemer 183, A. Wynkoop 182, T. Mehl 179, P. Manzella 178, M. G. Meier 176, Dollie Johnson 172.

Red & Green League

11/18: J. Cuccio, Sr. 278/209/645 scratch series, J. LaBounty 256/204/634 scratch, S. Haskel 236/203, R. Mulderig, Sr. 212/202/610 scratch, G. Mack 203/201, E. Meier 246, B. Guiliano 245, O. Mirjah 229, R. Mulderig, Jr. 222, K. Koebel 219, H. Dawson 214, R. Larsen 213, D. Fisher 201.

Two Corrections to the Bulletin of 12/5

Left-Handed Compliment?

John Marburger and Martha Krebs were *not* shaking left hands upon the selection of Brookhaven Science Associates (BSA) as BNL's next contractor: The half-page photo on the cover of last week's Brookhaven Bulletin was inadvertently flipped, as many readers immediately called to our attention when the paper hit the newsstand.

The Bulletin regrets the error and thanks all those who reported the problem. The photograph in its correct orientation is printed above.

Apologies to Hank Grahn

Though the back of his head was clearly seen (front row, second from left) in the picture on page 2 of last week's Bulletin, Hank Grahn's name was nowhere to be found in the stories on BSA's selection and introduction — this despite the fact that BSA President and the Lab's next Director, John



Marburger, had just announced that Grahn has not only been named BNL's Assistant Director for Finance & Administration, but also BSA's Financial Officer. The Bulletin sincerely apologizes for this inadvertent omission.

Hank Grahn, who is pictured below (fourth from left), has been BNL's Associate Director for Administration since 1987. He began his Lab career in 1958 as an accounts payable clerk, but moved to Associated Universities, Inc., in 1962 as a junior auditor.

Grahn returned to the Lab's staff in 1965, when he became an assistant administrator within the Physics Department. In 1968, he was promoted to the Administrative Officer for Physics. The next year, he became the Lab's Budget Officer. In 1976, Grahn was named Assistant Director for Financial Management, the position in which he served the Lab until his 1987 promotion.



332nd Brookhaven Lecture

(cont'd.)

After earning his 1989 Ph.D. in physics from the University of Frankfurt, Germany, Kinder-Geiger spent several months in 1990 as a research associate at GSI, Darmstadt, Germany. He then did research and taught at Duke University, 1990-91. He was a University of Minnesota research associate until 1993, and then served as a research associate and program participant at the Institute for Theoretical Physics, University of California, Santa Barbara, for six months. In addition, he was a fellow at CERN, Switzerland, 1994-96.

Kinder-Geiger's first links with BNL were as a Physics Department research collaborator for a few weeks in 1992 and 1995. He took up his present position in April 1996. At the Lab, his research focuses primarily on high-energy nucleus-nucleus collisions, but he is also interested in particle physics phenomenology and fundamental questions of QCD field theory.

After the lecture, all are invited to join Kinder-Geiger for discussion and refreshments. Those wishing to dine with the speaker at a restaurant off site may call Isabell Harrity, Ext. 2524, before noon on Wednesday, December 17.

— Liz Seubert

BNL's United Way Campaign Joins the Jet Set!



Jets football fans ate their hearts out on December 3, when Ken Schroy (third from left), a former New York Jets strong safety, who played 1976-85, passed an autographed football to BNL's United Way Campaign Chair Ann Emrick, while Assistant Campaign Chair Tirre Farmer (left) and United Way Representative Bob Sewell looked on. By courtesy of the United Way, the football was one of the prizes drawn for from the pledge cards sent in by BNL donors — and Ove Dyling, Plant Engineering Division, scored the touchdown! As of December 9, the total of donations received for this year's fund was \$88,500 — so the winning goal of \$90,000 is very near. Keep those pledges coming, please!

Toy Drive: Final Week

Toy donors have one more week to bring in new toys or gifts for needy children, infants through teenagers, to make those children's holidays happy ones. Bring your donations to the BERA Sales Office, Berkner Hall, weekdays, 9 a.m. to 1:30 p.m. by Friday, December 19.

For more information, call Andrea Dehler, Ext. 3347, or M. Kay Dellimore, Ext. 2873.

BNL Food Drive
pickup all next week

No time to shop? Send personal checks to: BNL Food Drive, c/o Rita Kito, Bldg. 460, or Donna Wadman, Bldg. 129.

Volleyball

Standings as of December 5

| League I | | League III | |
|------------------|-------|----------------------|-------|
| Bikers & Spikers | 21-3 | Silver Bullets | 18-0 |
| Rude Dogs | 17-7 | Group Sets | 15-3 |
| Set to Kill | 13-14 | Just 4 Fun | 13-8 |
| Scared Hitless | 11-13 | Upton Ups | 7-11 |
| ReTurners | 1-26 | Six Samurai | 5-10 |
| League II | | Just In Time | 5-13 |
| Spiked Jello | 21-3 | NWO | 0-18 |
| Safe Sets | 18-6 | Open League | |
| Monday Nite Live | 17-7 | Spikers | 19-11 |
| Jao-About-That | 15-9 | Shank, Carry & Throw | 16-11 |
| Undecided | 12-12 | Death Volley | 15-15 |
| Nuts & Bolts | 7-17 | Pass, Set & Crush | 11-16 |
| Fossils | 5-19 | Far Side | 11-19 |
| Setups | 1-23 | | |

Volleyball Tournaments

The Volleyball League has scheduled two separate one-night volleyball tournaments: the first on Monday, December 22, and the second on Monday, December 29. Play starts at 5:30 p.m. both nights.

These tournaments are open to all interested volleyball players — team members or not. Teams will be formed with the participants who are present.

During the round-robin tournaments, matches will be timed. The format for the December 22 tournament will be reversed mixed six: that is, the net will be lower and only women will be allowed to spike and block. The format for December 29 will be open, with regular net height.

To register for one or both nights, contact Rich Wagener, Ext. 5886 or e-mail wagener@bnl.gov.

Sick of Flu Season? Get a Free Flu Shot!

The Occupational Medicine Clinic is offering free flu shots to all BNL employees. To find out more about the advantages of getting a flu shot or to make an appointment for one, call Ext. 3670.

Arrivals & Departures

Arrivals
Kenneth A. Erickson ... Applied Science
Nathan T.B. Stone Physics

Departures
This list includes all employees who have terminated from the Lab, including retirees:
John Carter Env. Restoration
Salim Massoud AGS
Thomas Serpe Plant Eng.
Jeanne R. Wysocki Biology

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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 complete list of all job openings; use a TDD system to access job information by calling (516) 344-6018; or access current job openings on the WorldWide Web at <http://www.bnl.gov/JOBS/jobs.html>.

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

POSTDOCTORAL RESEARCH ASSOCIATE - Trained in macromolecular crystallography, with experience in protein chemistry and/or molecular biology. Knowledge of computer modeling is desirable. Will join the ongoing research to determine the three-dimensional structures of superantigens, zinc endopeptidase proteins and complexes of these with their inhibitors. Can use x-ray diffraction data-collection at BNL's National Synchrotron Light Source. Contact: S. Swaminathan, Biology Department.

POSTDOCTORAL RESEARCH ASSOCIATE - Trained in physics, nuclear engineering or related field, to join the Microbeam Radiation Therapy Project at the National Synchrotron Light Source. Experience in x-ray detection techniques, dosimetry, Monte Carlo simulations and computer software/hardware is required. Tasks will include: developing hardware and controls for the irradiation system, the imaging system for subject's positioning, and dosimetrical procedures; carrying out Monte Carlo simulations of photon and electron transport; and ongoing preclinical studies. Contact: F. Avraham Dilmanian, Medical Department.

POSTDOCTORAL RESEARCH ASSOCIATE - Trained in physical chemistry or chemical physics, with experience in nucleation and skills in computer modeling. Must have the ability to apply a broad knowledge of physics and chemistry to fundamental studies of particle-formation processes in the atmosphere. Will represent atmospheric particle transport and transformation processes in existing regional-to-global-scale chemical transport and transformation model. Must have ingenuity and a fair amount of independence in translating process-level understanding into efficient computer-based algorithms suitable for application in the model. Contact: Robert McGraw, Department of Applied Science.

POSTDOCTORAL RESEARCH ASSOCIATE - Trained in chemistry, engineering or physics, to design and construct an instrument for chemical characterization of single aerosol particles. Will produce an instrument, based on laser ablation time-of-flight mass spectroscopy, that can be used to investigate micrometer-to-nanometer particles and serve as a laboratory research tool, as well as be incorporated in the air-borne field program at BNL. Contact: Dan Imre, Department of Applied Science.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees.

NS4073. MULTI-TRADE SUPERVISOR - Will be responsible for first-line supervision of multi-trade work effort in the Operations & Maintenance Division. Plans, coordinates and supervises all work of the group. Directs employees on jobs, including assignment, training, scheduling, grievance handling and technical direction. Maintains records and reports. Supplies technical assistance and information as requested. Requires extensive experience in supervising, coordinating and planning, and knowledge of the applicable construction and maintenance trades. Reports to the General Supervisor of Buildings Maintenance. Plant Engineering Division.

DD3142. ADMINISTRATIVE/SECRETARIAL POSITION - Requires an AAS degree in secretarial science or equivalent and significant previous experience, as well as a high level of proficiency, in performing complex administrative secretarial functions. A comprehensive knowledge of Lab procedures, excellent organization and communication skills, and knowledge of WordPerfect, Microsoft Word, Excel Spreadsheets and IPAP are also required. Will provide administrative secretarial support to the RHIC Associate Project Head for Detectors and the RHIC Project Office. Duties will include, but are not limited to, performing correspondence, providing telephone support, making travel arrangements, arranging for reimbursements, and coordinating reviews, meetings, conferences and general communication with RHIC detector collaborations. RHIC Project.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates.

MK5033. CHEMISTRY ASSOCIATE POSITION - (temporary appointment) Requires a bachelor's degree in chemistry or equivalent, several years' relevant experience, knowledge of chemical properties, practical principles of chemistry, strong interpersonal skills and computer literacy. Oracle, UNIX and MS ACCESS experience highly desirable. Will be responsible for developing, evaluating and identifying chemical properties to assure data integrity for site-wide computerized chemical-inventory tracking system, physical identification of chemicals delivered on site and application of bar-code labels. Safety & Environmental Protection Division.

DD4077. METAL WORKER MAINTENANCE A - (term appointment) Under minimum supervision, constructs and installs a variety of metal equipment needed in plant maintenance such as sinks, gutters, ventilating hoods, stands, hangers, etc. Lays out own work, and makes own patterns from prints, sketches or verbal instructions. Sets up and operates machine tools,

Time Capsule Countdown

Souvenir Paperweights Now on Sale

With the burial of the 50th-anniversary time capsules scheduled for 4 p.m. next Tuesday, December 16, the time-capsule project committee is busy collecting the BNL mementos suggested by employees and divisions and departments for inclusion within these historic glass vessels.

In the meantime, BNLeers can buy souvenirs of the upcoming occasion: triangular German crystal paperweights which were designed and created by BNL's Barry Lafler, the scientific glassblower and glass artist who will vacuum-seal the time capsules during the December 16 ceremony. The hand-cut and fire-polished paperweights feature the Lab's 50th-anniversary logo.

This memento is available for \$10 each at the BERA Sales Office, Berkner Hall, weekdays, 9 a.m. to 1:30 p.m.

If you plan to attend the time-capsule ceremony but haven't made your reservation, call April Donegain, Ext. 2459.

All-Employee Photo Rescheduled For Monday, December 15

Because of yesterday's rainy street (*not* on the field), and carpooling is still advised.

weather, the "BNL 50" human-formation photograph has been rescheduled: It will be taken at noon on Monday, December 15, on the field next to Police Headquarters, Bldg. 50.

Just in case, the rain date is Tuesday, December 16. Again, check for an all-employee e-mail or listen for all-employee voice mail for last-minute instructions.

On Tuesday, parking will be in the Brookhaven Center lot across the

BNL 50

So again, all BNLeers are invited to be in the first group shot ever attempted in the Lab's 50 year history. Show up on the field with as many coworkers and friends as you can round up, decide whether you want to be a B, N, L, 5 or 0 — and smile!

You'll be making history and the cover of the last Bulletin of 1997! The Lab will only be 50 once, so show your Lab spirit and be there!



Here Comes Santa Claus!

For the 15th consecutive year, Santa Claus (Lieutenant Chuck LaSalla) and his Elf (Firefighter Frank Palmeri Jr.) will be coming to Upton town, to wish everyone happy holidays and distribute candy canes along with good cheer, compliments of the Fire/Rescue

Group of the Safety & Environmental Protection Division.

The merry crew will make their rounds of the labs, shops and offices on site beginning at 9:30 a.m. on Wednesday, December 24. While they will try to visit every building, if they have missed yours in the past (perhaps because you were naughty instead of nice) or if you have a certain time that you would like Santa to make his appearance at a gathering with your coworkers, then make your reservation by calling the North Pole, Ext. 2351.

and tinsmithing machines, and also performs benchwork in the fabrication and finishing of metal or associated products. Performs layout, preparation, measurement, assembly and installations. Performs necessary brazing, welding, and silver soldering incidental to the job. Makes own templates, sharpens tools, and performs maintenance incidental to operation of machines. Plant Engineering Division.

DD3146. TECHNICAL POSITION - (term appointment) Requires an AAS degree in a technical field or equivalent, and experience in wiring, and in the use of basic machine and power tools and electronic instruments. Must be able to work from wiring diagrams, mechanical drawings and sketches. RHIC Project.

DD4548. SCIENTIFIC ASSOCIATE POSITION - Requires an MS or equivalent experience in physics or engineering, or comparable training. Will coordinate the operation and development of the two NSLS microfabrication beam lines. Knowledge of LabView programming, MS Office applications, and basic mechanical and electronic skills highly desirable. National Synchrotron Light Source Department.

DD5091. REGISTERED NURSE POSITION - Requires experience in phlebotomy, monitoring EKGs, blood pressure and pulse, ordering supplies, laboratory work and recordkeeping. Experience in brain imaging and a BS/BA degree in nursing is desirable. Will participate in imaging studies with radioactive tracers, act as a patient advocate and assist in primate studies. Must be highly organized to work rapidly and accurately within a restricted time frame. Flexibility in work hours is also required. Medical Department.

DD6456. P&GA CLERK B, SCANNING POSITION - (term appointment) Under direct supervision and administrative direction, performs routine scanning, indexing and electronic filing and CD creation functions, including preparing documents for scanning, keyboarding of indexed fields, inspecting scanned images to ensure quality and legibility, and generating or duplicating electronic files or CDs containing scanned images and indices. Required qualifications include experience working with a personal computer and keyboarding skills. Experience with scanning and indexing desirable. Information Services Division.