Lessons Learned” Contributors Recognized, Awarded

On January 30 in Berkner Hall, five BNlers were honored with the Science & Technology Award, a $5,000 prize that may be won in any scientific or technical discipline other than engineering and computing. They are: Yu-Shin Ding, Chemistry Department; John Dunn, Biology Department; Yannis Semertzidis, Physics Department; Bo Yu, Instrumentation Division; and Yimei Zhu, Materials Science Department. Their accomplishments are described below.

Marsha Belford

Yu-Shin Ding

Diagnosis and treatment improvements within the field of nuclear medicine are driven by advances in radiotracer chemistry, and Yu-Shin Ding, a senior chemist who joined the Chemistry Department in June 1987, is being cited for five pioneering achievements that have moved the field of radiotracer chemistry and BNL’s positron emission tomography (PET) imaging program forward. In addition to being one of the most accomplished chemists in her field, Ding is known as a mentor of the next generation of radiochemists.

Recently, Ding developed a radiotracer for imaging the binding sites within the brain for nicotine, a chemical in ciga-

rette smoke thought to be responsible for addictiveness of smoking. In a study proposed to by the National Institute on Drug Ad-

ministration (NIDA), this new radiotracer will make it possible to investigate how these binding sites function to make the nicotine in cigarette smoke addictive.

John Dunn

As the first member of the BNL scientific staff to earn a sec-

ond Science & Technology Award, John Dunn, a senior mi-

crobiologist in the Biology Department who joined BNL in July 1972, is being cited for helping to improve the LL program and accomplishments all made within the last three years.

First, Dunn and his collaborators developed a safer, more broadly effective vaccine for Lyme disease. As tick-borne dis-

eases pandemize on Long Island. Now licensed to the Baxter Healthcare Corporation, this vaccine is one of the first to have been created by biotechnology. To make the recombinant vaccine antigen, Dunn and his colleagues first determined the sequence of OsAa, an outer surface protein, then crystallized it and deter-

mined its structure at the Na-

tional Synchrotron Light Source; next identified the parts of the protein that gener-

ate protective antibodies; and, finally, engineered a novel pro-

tein that elicited an immune re-

action against several of the Lyme disease bacteria.

Yannis Semertzidis

Cited for his work on experi-

ments 821 at the Alternating Gradient Synchrotron, Yannis Semertzidis, a physicist who joined the Physics Department in 1992, is being honored for being a leader and innovator in helping to carry out the precise measurement of the anomalous magnetic moment of the muon obtained at RHIC. As a result of his contributions and others, this experiment is cited for its sensitivity to new physics and, in fact, has yielded results that differ from the predictions of the Standard Model, a discrepancy that cannot be tested with more resolution until the Large Hadron Collider at CERN comes on line later this decade.

As the experiment was being carried out, “I served as the electrostatic qua-

drupole team leader. As such, he

and his team introduced a new design that quenched the low energy electron trapping, thus eliminating spurious back-
ground effects and making the operation of the quadrupoles re-

liable. They also succeeded in measuring the quadrupole elec-
tric field to better than 1 percent

Bo Yu

For developing detectors to perform charged-particle track-

ing and neutron and x-ray scat-

tering, Bo Yu, a physicist in the Instrumentation Division, is cited for using his fundamental understanding and intuitive grasp of the physics underlying these experiments to develop state-of-the-art detectors with unsur-

passed position resolution. Yu, who came to BNL in January 1992, is particularly well recog-
nized for his high position reso-

nance gas-based radiation de-

tectors.

At BNL, Yu’s detectors have been and are currently being used in heavy-ion experiments first at the Alternating Gradient Syn-

crotron (AGS) and now at the Relativistic Heavy Ion Collider (RHIC). Building on his experi-

cence with fixed-target heavy-

ion experiments at the AGS, Yu made significant contributions

Yimei Zhu

Although the transmission electron microscope (TEM) has existed for generations, it had provided mostly qualitative infor-

mation about the arrangement of atoms and defects in a sample, until Yimei Zhu, a se-

nior scientist in the Materials Science Department, advanced TEM techniques to provide quantitative information. Zhu is being cited for not only advancing transmission electron microscopy, but also applying the microscope’s new capabilities to the study of high-temperature superconductors (HTS), magnetic materials and other chal-

lenges in materials science.

Zhu, who joined BNL in Sep-


tember 1988, spent his first years at the Lab in studying mi-

croscopic and electronic de-

tectors that are important to HTS. Acknowledging Zhu’s accom-

plishments and potential in the

LSA Distinguished Lecture

Scientist-Author Carl Safina Talks on World Fisheries, 2/20

Prize-winning author and scientist Carl Safina will give a BSA Distinguished Lecture on Thursday, February 20, at 4 p.m. in Berkner Hall. The title of his lecture is “History and Destiny of World Fisheries.” The author will also sign copies of his two recently published books after the lecture.

(continued on page 2)
Yu-Shing Ding (cont’d.)

Another recent success is Ding’s development of a complemen-
tary new route to synthe-
size the anti-seizure drug, 
viny-GABA (GVG), which will shortly be deployed in clinical tri- als for treating cocaine addiction. Applying this new method, Ding was able to label GVG with car-
bon-11. Because it has a 20.4-hour half-life, carbon-11 labeled GVG will be useful in imaging the effectiveness of this treatment.

Catachol-O-methyltransferase (COMT) is an enzyme that is found in elevated levels in breast-
cancer patients, and Ding was the first to develop a radiolabeled form for imaging COMT. Recently approved imaging studies of breast cancer patients will underway presently, to help under-
stand the disease at the molecu-
lar level, including the role of this enzyme. Ding has also de-
voped a rapid way to synthe-
size carbon-11 labeled GVG so that it can be imaged in brain-
cancer and melanoma patients.

John Dunn (cont’d.)

Dunn is also noted for per-
forming the first semi-compre-
prehensive, quantita-
tive analysis of the messenger RNA (mRNA) of human blood platelets, which help blood clot. Dunn and his team perfected methods to handle and amplify small quan-
tities of platelet mRNA, which will enable the molecular analy-
sis of blood diseases including platelet defects.

Third, Dunn and company extended what is called the genome signature-tag approach. For the analysis of data from the large systems biology studies of mouse and human organs, Dunn was the first to use a newly discov-
ered restriction enzyme that in-
cluded in the genome signature-tag specific-
ities of platelet mRNA, which will enable the molecular analy-
is of blood diseases including platelet defects.

SEMERTIZDID (cont’d.)

accuracy, which permitted verifi-
cation of the calculated val-
ues. Helping the kicier magnet team with one of the con-
tacts of the design of the kicier magnet used for the direct in-
jection of the muon beam into the E821 storage ring, Semert-
izdik achieved the goal of 0.1 ppm for the effect of the magnetic field generated by re-
sidual eddy currents 20 to 700 microsecond after injection.

Next, he designed a laser sys-

tem to measure the 0.1 ppm variation in the magnetic field, and his measurements of the magnetic field due to the eddy currents showed a systematic error well below 0.1 ppm. Selected to be the analysis coordinator for the data taken in 1997 and 1998, Semertizdik overcame one of the largest systematic errors by developing an ingenious ap-
proach. For the analysis of data taken in 2006, he has further reduced the systematic errors deeply, especially in over-
coming one form of systematic error. Expanding on the E821 experiment, he has proposed a new, very sensitive method to search for electric dipole mo-
ments in storage rings.

Bo Yu (cont’d.)

to high-accu-

racy position detec-
tor sub-
systems in the PHENIX experiment and is a key con-
tributor to the PHENIX and STAR upgrades.

Outside the Lab, for ex-

ample, his devices are em-

ployed in neutron scatter-

ning. Studies of protein crystal struc-
ture at Los Alamos National Laboratory, and his neutron-detector concepts will be em-

ployed in instrumentation planned for the Spallation Neutron Source, now under construction at Oak Ridge Na-

tional Laboratory. By advanc-
ing concepts that he originally employed in x-ray scattering, Yu has developed conceptual designs of muon-

tracking chambers for the AT-

LAS physics experiment em-

phasis at the Large Hadron Col-

lision, now under construction at CERN in Switzerland.

In addition to developing de-
tectors for physics, his expertise and experience has been sought by other fields. Most recently, his help has been enlisted for developing devices for positron emission tomogra-

phy imaging of small animals, and gamma-ray spectroscopy for homeland security.

Yimei Zhu (cont’d.)

TEM field, DOEs Office of Science significantly ex-

panded his re-

search program and awarded BNL funding in new nanoscience.

Zhu made outstanding con-

tributions in two areas. First, he developed a new convergent-

electron detection method that he pioneered, which he and his colleagues applied to produce the first quantitative value for the charge distributions in compli-

cated crystals, and to improve the resolution when imaging defects in crystals. Second, Zhu developed new analytical meth-

cods for retrieving phase of the electron-wave in electron ho-

lography and Lorentz micro-

copy, which were applied to produce reliable quantitative measurements of parameters in fundamental materials.

In establishing and operat-
in its new Center for Func-

tional Nanomaterials, BNL will employ Zhu’s expertise and ex-

perience with TEM in the study of materials on the nanoscale. To advance nano-

scale structural analysis, Zhu is working as part of a team as-

sembled by DOE to propose the development of new gen-

eration nanoscopy microscopes having even higher spatial resolution.

Get to Know Your Lab!

Money Matters Healthline Lecture Series, 2/25

‘When Illness Strikes: A Legal Update’

On Tuesday, February 25, at noon in Berkner Hall, a Healthline Lecture on ‘Money Matters — When Illness Strikes: A Legal Update’ will be facilitated by George Boach, Esq. Topics covered will include the most up-to-

date changes in the Medici-


card system, the financial im-

pact of catastrophic illness in caring for elderly parents and loved ones, and basic estate planning.

Roach, the attorney in charge of BNL’s Benevolent Aid So-

ciety of Suffolk County’s Se-

nior Division, has been with BNL for the past 24 years, deal-

ing exclusively with the problems of the elderly and the elderly poor.

Defensive Driving

A six-hour defensive driving course will be held on Saturday, March 22, 2003, 9 a.m. to 3 p.m., in Berkner Hall, Room 204. To regis-


ter, send a check for $25 per person, made out to Empire Safety Council, care of Scott Zambrini, P.O. Box 670, Montauk, NY 11756. Include your telephone number in case you need to be contacted. No checks will be refused after March 14.
BNL's Conference & Meetings Services is set to introduce new software that will help provide faster and more efficient services to those who reserve meeting space. Called a meeting room viewer and scheduling tool, the new software will be available from the BNL and the Staff Services Division home pages and will be available starting late February.

"This software is fast and easy to use, and it will be a very positive change," says Ruth Cordes, Conference & Meetings Supervisor. "For example, users will be able to see the reservations of all conference rooms in one view, and thus find and reserve available rooms very quickly. The person reserving the room will then receive an e-mail confirmation of the reservation." Comas and her colleagues, Patricia Carillo, Brendan Hanlon and Brenda Ward, provide services for conferences and meetings held at BNL, the Brookhaven Center, the Medical Large Conference Room, and the Hamilton Seminar Room in the Chemistry Department. Services include scheduling conference rooms, setting up and breaking down meeting equipment and furniture, providing audio/visual equipment, and delivering coffee breaks and cold lunches on site.

On Monday, February 26, at 10:30 a.m., Comas will introduce the new software to BNL customers at Berliner. The software presentation will be followed by a presentation by representatives of Flik International Corp., BNL's food service contractor, of seasonal care products. "I look forward to the transition to the new software, and I am confident that the users will agree that it has many benefits," Comas says. — Patrice Pages

Preparing to unveil new software this month that will allow users to see the reservations for all conference rooms in one view, are (from left) Staff Services Division's Patricia Carillo, Conference Supervisor Assis-.

Music Club Music Coming Soon!

February 15, 8 p.m.

Tobacco Walker

The BNL Music Club and the East End Songwriters Guild present this month’s Tobacco Walker Songwriter. This event will begin with a “Songwriters-in-the-Round” followed by a concert featuring singer-songwriters Cathy Kieger and Terry Winchell. Tickets cost $8 in advance and $10 at the door. For more information, see www.bnl.gov/bera/activities/music.

Kerry Kearney Band, Guests

March 1, 8 p.m.

The BNL Music Club and the Long Island Blues Society will present Kerry Kearney’s Band to perform “The Gathering of the Slides.” Michael Falzarano, Kate Daly, Little Toby Walker, and Amy Helm will be featured as special guests.

Long Island Weather of 2002 — Mild and Warm, No Hurricanes, Light Snowfall

B

The summer brought sunny weather statistics in 1949.

It was a particularly mild, with four days reaching above 60°F in January and February. The entire winter of 2001-2002 brought only 5.5 inches of snow, the second lowest seasonal snowfall since the Lab started recording weather statistics in 1949.

The summer brought sunny skies, with rainfall well below average. Precipitation for the entire year, however, was 52.07 inches, above the average of 48.8 inches. Higher than average rainfall came late in the year, in September through December.

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Jenny Cassella, ext. 2873. "Also, while several hurricanes came into the coast, none af-

For the meeting’s time and location, see notice at left.

BERA will again be sell-
ing daffodils to benefit the American Cancer Society. A bunch of ten fresh-cut flow-

Cool! That’s how mete-

orological and environ-

In light of the present-

The temperature reached 96.5 F in January and February. The average annual temperature of 2002 was a warm year, with an average high daily temperature of 54.9°F, beating the 1991 record of 51.8°F! One record-low daily tem-

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BERA Ski Trip to Camelback

BNL Seasonal Snowfall

Winter 1948-49 — Winter 2002-03

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