

# HOTLINE

The Princeton Plasma Physics Laboratory is a United States Department of Energy Facility

## PPPL Honors Inventors at Dinner



*The inventors at the Patent Dinner are, from left, Charles Skinner, Scott Klasky, Margaret Lumia, Doug McCune, Kenneth Hill, Eliot Feibush, Manfred Bitter, Christopher Brunkhorst, Dana Mastrovito, Masayuki Ono, Andrew B.W. Bigley, Lewis Meixler, and John Desandro. A complete listing of the honorees and their inventions is on page 2.*

PPPL staff and their colleagues continue to come up with inventions with the potential to further plasma research and to assist individuals outside the scope of fusion. During Fiscal Year 2003, inventions ranged from a new process for creating visualizations of scientific data from experiments and simulations to a method to help eliminate feedback in hearing aids.

The Laboratory honored these inventors on June 22 at the twenty-second annual Patent Awareness Program Recognition Dinner at Princeton University's Prospect House. The 32 honorees, who had disclosed inventions during Fiscal Year 2003, were from the Research, Engineering, and

Technical staff of PPPL, as well as from other institutions that work in collaboration with the Lab.

"It's a pleasure every year to do this," said PPPL Deputy Director Richard Hawryluk, who presented certificates to the inventors. "This is a great opportunity for people from the Lab to get together and recognize each other's work."

Prior to the awarding of certificates, PPPL Committee on Inventions Chairman Lewis Meixler discussed the importance of patents. He noted that at last year's dinner for inventors, honorees included those at PPPL who developed the Miniature Integrated Nuclear Detection System

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## Inventions Disclosed in Fiscal Year 2003

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Feedback Elimination in Hearing Aides  
and Sound Systems

*Lewis Meixler*

Development of Thin Films for the Mitigation  
of Particulate Associated with Biological  
and Industrial Hygiene Hazards

*Charlie A. Gentile and Margaret E. Lumia*

Massively Parallel Interactive Data Language (MPIDL)

*Dana Mastrovito*

Out-board "Ohmic Induction" Coil  
for Low-Aspect-Ratio Toroidal Plasma Start-up

*Wonho Choe and Masayuki Ono*

Silicon/Nanocrystalline Diamond  
Electron Beam Transmission Window

*James E. Butler, Charles A. Gentile, and  
Robert F. Parsells*

Use of Multiple Frequency Pumps  
in Optimizing Pulse Compression

*Alexey Balakin, Gennady Fraiman,  
Nathaniel J. Fisch, and Vladimir Malkin*

Collaborative Scientific Visualization

*Eliot Feibush, Scott Klasky, and Doug McCune*

Radio Frequency Electric Field Pasteurization Chamber

*Andrew B. W. Bigley, Christopher Brunkhorst,  
and David J. Geveke*

Current Drive in a Ponderomotive Potential  
with Sign Reversal

*Nathaniel J. Fisch, Jean-Micael Rax,  
and Ilya Dodin*

Electrostatic Dust Detector

*Charles Skinner*

Contaminated Surface Cleaner

*Michael Anderson, John Desandro,  
Michael Kalish and James Kukon*

A New Instrument for Simultaneous Measurement of  
Toroidal and Poloidal Plasma Rotation Velocity Profiles

*Manfred Bitter, Kenneth W. Hill, S. G. Lee,  
Earl S. Marmor, John E. Rice, Lane Roquemore,  
and Brent Stratton*



*Above, enjoying the Patent Dinner celebration are, from left, Hilda and Scott Klasky with Doug McCune and his wife, Susan. Scott and Doug, both of PPPL, were two of the honorees. Below, from left are Andrew Bigley, from the U.S.D.A., his wife Kathryn, and PPPL's Chris Brunkhorst.*



## Hotline

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## Inventors

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(MINDS), which is designed to detect and identify particular nuclear materials that could be used by terrorists to make a “dirty bomb.” This project, led by PPPL engineer Charles Gentile, is supported by the U.S. Army and is now on its way toward commercialization. “I am happy to report that a New Jersey company associated with the commercialization of technologies for the Army has taken an option on a license to develop MINDS as a commercial product,” said Meixler.

Meixler’s remarks also focused on a recently published book, *Rembrandts in the Attic: Unlocking the Hidden Value of Patents*. In the book, authors Kevin G. Rivette and David Kline describe how corporations are using data mining techniques related to their competitors’ patents and other intellectual property, not just as legal tools, but as part of their business competitive strategy, explained Meixler. “Some companies have used patents to capture and defend their place in the market, but others have suffered huge losses because of their failure to appreciate the power of intellectual property protection,” he said. ●



At the patent celebration are, from right, honorees Charles Skinner, Manfred Bitter, and Kenneth Hill with guests.

The Committee on Inventions includes C.Z. Cheng, David Cylinder, Philip Efthimion, Terry Greenberg, Richard Hawryluk, Stephen Jardin, Henry Kugel, Lewis Meixler (Chair), Carol Phillips, John Schmidt, Hironori Takahashi, Michael Williams, and Ed Winkler.

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# PPPL Joint Advanced Computing Projects Chosen

PPPL is part of two consortiums whose projects have been selected by the DOE Office of Fusion Energy Sciences for the Scientific Discovery through Advanced Computing (SciDAC) program. The principal investigator for each is from PPPL.

The two new SciDAC projects are: Center for Extended Magnetohydrodynamic (MHD) Modeling and Gyrokinetic Particle Simulations of Plasma Turbulence and Kinetic-MHD Physics, each of which will be funded at approximately \$1 million per year for the next three years.

The Center for Extended Magnetohydrodynamic Modeling is a consortium of PPPL, Science Applications International Corporation, the University of Wisconsin, the University of Utah, Utah State University, TechX Corporation, the University of Colorado, New York University, and Massachusetts Institute of Technology, headed by Stephen Jardin of PPPL. It is aimed at developing powerful simulation codes for studying the macroscopic dynamics of MHD-like phenomena in fusion plasmas, such as sawteeth, tearing modes, resistive wall modes, fast ion modes, disruptions, edge localized modes, and pellet fueling.

The Gyrokinetic Particle Simulations of Plasma Turbulence and Kinetic-MHD Physics project is a consortium of PPPL, the University of Colorado, the University of California-Irvine, the University of California-Los Angeles, Columbia University, and the University of Tennessee, led

by W.W. Lee of PPPL. The goal of this project is to develop gyrokinetic particle simulation codes to carry out simulations of turbulent transport to investigate plasma confinement properties of burning plasmas, such as ITER.

“We are very pleased that these two proposals in which the PPPL Theory Department and PPPL Computational Plasma Physics Group are playing a key role were the ones selected by the review committee. It makes it even more rewarding that we were able to line up such a great group of collaborators from other laboratories, universities, and industry. All of this talent will be needed to carry out the ambitious work that is promised in the proposals,” said Jardin.

Although the principal investigators of both proposals are from PPPL, the funding will be widely spread among all of the participants, with PPPL receiving less than 30 percent of the total funding.

These two projects were selected from a total of seven proposals following a rigorous process that involved three types of peer review: a review of the scientific and technical merit of the proposed research, a review of the relevance of the proposed research for burning plasmas, and a review of the computer science and applied math content. DOE Office of Science program managers recruited a total of 32 reviewers who selected the proposals that received the highest overall rankings when all the various types of reviews were considered. ●

## State Recognizes PPPL for Safety



*PPPL recently received two safety awards from the State of New Jersey. State officials gave the Lab a "Recognition Award" for achieving an Away-from-Work Lost Time incidence rate of 3.0 or less during calendar year 2003. The Lab also received a "Commissioner of Labor Award" for the National Spherical Torus Experiment Project for working three consecutive years, 2001 through 2003, without an Away-from-Work Lost Time injury or illness. With the awards, from left, are Jack Anderson, Jerry Levine, Joe Winston, Al von Halle, and Masa Ono.*

## PPPL Welcomes Students for Summer Programs

**T**his summer's National Undergraduate Fellowship (NUF) and Science Undergraduate Laboratory Internship (SULI) college students arrived at PPPL in June. The students participated in a one-week intensive course on plasma physics and fusion engineering before beginning nine weeks of research on various projects at PPPL and other institutions. At right are the NUF and SULI participants for 2004. Twenty will be at PPPL until the end of August. ●



# Moten Promotes Diversity and Increasing Hispanics at PPPL

**P** PPL Employment Manager Andrea Moten recently assumed additional responsibilities as the Lab's Diversity Officer and Hispanic Employment Program Coordinator.

## Diversity Officer

As Diversity Officer, Moten oversees the Laboratory's diversity efforts, including diversity training for staff and recruitment of diverse applicants. She works with management to ensure that the pools of applicants are diverse and that a fair search is conducted. Hiring scientists requires additional efforts on her part, such as attending conferences for minority students and professionals, and developing ties with institutions that serve minority and non-traditional students. For instance, Moten recently attended, along with PPPL's Phil Efthimion, the National Society of Black Physicists conference. There she met with physics students, recent Ph.D. graduates, and professionals.

"Attending conferences is a way to network and introduce the Lab to potential applicants," said Moten. She is also teaming up with a Brookhaven Lab colleague on diversity planning and recruitment.

Moten noted that diversity is broad. "We have to consider more than people of different ethnic groups, gender, and cultural background — there are also issues of age, abilities, religion, and sexual orientation," she said.

## Hispanic Employment Program Coordinator

As the new Hispanic Employment Program Coordinator, Moten coordinates PPPL's support of the Department of Energy's nascent Hispanic Employment Plan and ensures that the plan is part of the work force planning process. The plan, approved by Energy Secretary Spencer Abraham, establishes a path for addressing Hispanic under-representation in the DOE by proposing methods to break down artificial barriers to the recruitment and hiring of Hispanics. According to statistics, Hispanics are not represented in the DOE work force in proportion to their numbers in the civilian work force.

Moten explained that the plan focuses on increasing outreach efforts to ensure that Hispanics are in the hiring

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**— Andrea Moten**

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**Andrea Moten**

pools and that efforts are made to target Hispanics for hiring at all levels. "This is a difficult challenge because we don't have that many job openings at PPPL now," she said.

Her present efforts are geared toward developing contacts and networking with other institutions so that as jobs open up, diverse applicants are encouraged to apply.

"Having diverse pools is the result of pre-work, that is, developing contacts, attending job fairs, and visiting educational institutions before we have job vacancies. Our goal is to show that PPPL is a great place to work prior to having openings so that institutions will send us their graduates or refer people to the Lab when positions are available," said Moten.

Moten, who has 15 years of experience in the field of human resources, has a bachelor's degree in business administration and an M.B.A. in management from Seton Hall University. She came to PPPL in 1998 after working for four years at Princeton University's Human Resources Office. In 2000, she received Professional in Human Resources and Equal Employment Opportunity certifications. Moten has been a member of PPPL's Director's Minority Advisory Committee for several years, serving as Chairperson for three one-year terms. ●

# Instructions for Charging Your Time to Projects

**A** key element of PPPL's cost accounting system is its "employee driven" labor charging system. Through this system, the individual employee determines how his or her time is charged to the Laboratory's various projects during the time period reported. The employee's supervisor reviews and approves the account entries to ensure reasonability and consistency with assignments made and time-off taken.

All employees must distinguish between their productive and non-productive time, tracking their productive time as accurately as possible to ensure the integrity of the Lab's labor charging system. "This is an obligation that the institution and the staff collectively have to the Department of Energy and is a condition for using the federal funds being provided," said Ed Winkler, PPPL Chief Financial Officer and Head of Business Operations. He noted that the Laboratory's supervisors are responsible for supporting this process and ensuring the accuracy of the labor charges made. Supervisors can support this process by providing staff with a charge number for every work assignment given.

PPPL Director Rob Goldston emphasized the need to submit accurate time reports in the Director's "A Commitment to Integrity" letter to all Laboratory staff last July.

## Benefits of Employee-Driven System

One of the principal benefits of having an "employee driven" labor charging system is to increase the accuracy of the Lab's labor cost charges to its various projects, which represent about 61 percent of the Lab's total costs. An individual employee can best determine how he or she allocated his or her total time during any given payroll period.

Time must be allocated to all projects supported, based on the total time worked during a given payroll period, including any uncompensated overtime worked. Uncompensated overtime is defined as time worked in excess of the standard 40-hour week, i.e., work performed on the employee's "personal time." For example, if a monthly employee worked 60 hours in a given week supporting two projects — 40 hours on Project A and 20 hours on Project B — the employee should charge 67 percent of the time to Project A and 33 percent of the time to Project B for a total of 100 percent.

"It would not be proper for the employee to charge 100 percent of his or her productive time (compensated time) to Project A and 0 percent to Project B (uncompensated overtime) because work on Project B occurred during the evenings or on weekends, i.e., during 'personal time,'" explained Winkler.

Questions about employee labor charging can be directed to Tony Bleach at ext. 3621, Marie Iseicz at ext. 2456, or Ed Winkler at ext. 2218. ●

## Spotlight



**Name:** John Semler

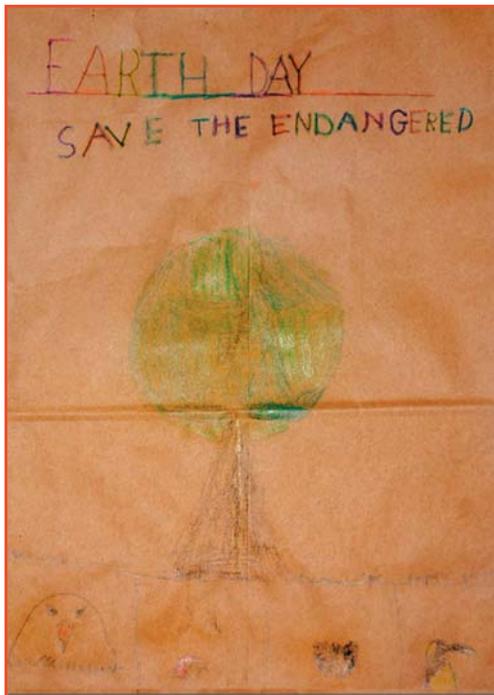
**Position:** Planner with the Work Control Center. Responsible for construction safety at the Coil Winding Facility for the National Compact Stellarator Experiment (NCSX) and for clearing the NCSX Test Cell in preparation of building the machine.

**Quote:** I came to PPPL 44 years ago to work in the Motor Pool, where I made deliveries, moved equipment, and helped out as needed. That was when Lyman Spitzer was still here and C-site was just opening up. Since I've been here I've worked at many locations, from the Rabbit Hutch on B-site, to the Maintenance Building, Vacuum Shop and the L-wing at C-site, to the TFTR [Tokamak Fusion Test Reactor] Test Cell at D-site. I've been involved in building many machines and in the TFTR D&D [Decontamination and Decommissioning] project. I learn something new every day and am constantly meeting new people at the Lab. I like the variety. When I started here, I had hoped I'd be here a long time, but I had no idea I would make a career of it.

**Other interests:** I enjoy camping and going to car races with my wife, Coletta. I've been interested in racing for 50 years, especially open-wheel racing — sprint cars and Indy cars. I've always been interested in mechanical things, whether it's a car or a fusion machine. In the 1970s, I had a race car with one of my brothers, who drove it, and we went to races all over the Northeast, from Vermont to Washington, D.C. My brothers and I used to take our families to the races and camp out when our children were young. Now that my son and daughter are grown, my wife and I like spending time with our 12-year-old granddaughter — who we've taken camping — and our 19-month-old grandson. ●

# PPPL Staff and Their Children Celebrate Earth Day

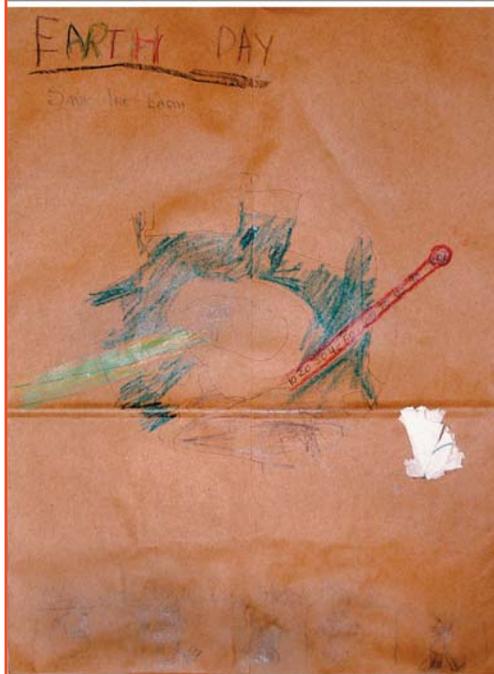
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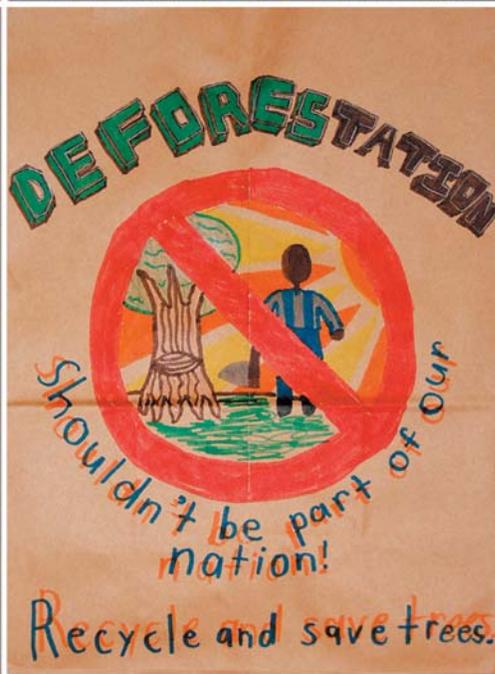
Brittany King



Brendan Carpe



Brandon King



To celebrate Earth Day, PPPL's Margaret King organized an environmental awareness project for children of Lab employees. Called the "Earth Day Groceries Project," the web-based educational endeavor encourages youngsters to team up with grocers to spread the message about Earth Day. King borrowed bags from Super Fresh Food Market in Plainsboro and invited PPPL staff to have their children decorate the bags with colorful environmental messages. Four children of PPPL'ers participated and their creations were displayed in the Laboratory's Lyman Spitzer Building Lobby during Earth Week and at the Mercer County Improvement Authority Earth Day Event at the Sovereign Bank Arena in Trenton. The decorated bags will be returned to Super Fresh for the store to hand out — filled with groceries — to shoppers in support of environmental awareness. The artwork above is the work of project participants Brandon and Brittany King, children of Margaret King, and Dylan and Brendan Carpe, children of Andy Carpe. For more information about the Earth Day Groceries Project, go to the web site: <http://www.earthdaybags.org/>. ●



Happy 4th