

# HOTLINE

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

## PPPL Inventors Honored at Dinner



*The inventors at the Patent Dinner are, from left, Martin Peng, Nathaniel Fisch, Joel Hosea, John Schmidt, Allen Boozer, Hyeon Park, Elizabeth Foley, Nevell Greenough, Yevgeny Raitses, Leonid Zakharov, Keith Rule, Gennady Shvets, Robert Woolley, and Geoff Gettelfinger. See inside for complete listing of honorees and their inventions.*

**G**alileo reportedly got one for a contraption related to pumping water. Samuel Hopkins of Philadelphia and George Washington received theirs, respectively, for a process for making fertilizer and for a fertilizer spreader. And in Fiscal Year 1999, three inventors from PPPL — Keith Rule, Geoff Gettelfinger, and Paul Kivler — were awarded one for their invention of the Drum Bubbler Tritium Processing System. What did they all receive? Patents for their inventions.

To honor inventors who received patents, applied for patents, and disclosed inventions during Fiscal Year 1999, the Laboratory held the eighteenth annual Patent Recognition Dinner at Princeton University's Prospect House in June. The thirty-five inventors recognized are from the Research, Engineering, and Technical staffs of the Laboratory, as well as from other institutions that work in collaboration with PPPL.

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## Patents Issued in Fiscal Year 1999

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Drum Bubbler Tritium Processing System  
*Keith Rule, Geoff Gettelfinger, and Paul Kivler*

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## Patents Applied for in Fiscal Year 1999

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Method and Apparatus to Produce and Maintain a Thick, Flowing, Liquid Lithium First Wall for Toroidal Magnetic Confinement DT System Reactors  
*Robert D. Woolley*

Energetic Ions for Sterilization  
*John A. Schmidt*

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## Inventions Disclosed in Fiscal Year 1999

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Ion Heating in FRC by Application of Rotating Magnetic Fields  
*Samuel A. Cohen*

Stabilization of FRC Plasmas against Internal Modes by the Application of Rotating Magnetic Fields  
*Samuel A. Cohen*

Plasma Production of Ultraviolet Light for Sterilization  
*Douglass S. Darrow and Philip Efthimion*

Direct Coupling of Electron Bernstein Waves  
*Philip Efthimion, J.C. Hosea, Gary Taylor, and R. Majeski*

Segmented Cathode Hall Thruster  
*Nathaniel J. Fisch and Yevgeny Raiteses*

A Variable-Frequency RF Source for Plasma Heating Equipment

*Nevell L. Greenough*

Fast Compression of Laser Beams to Overcritical Powers  
*V.M. Malkin, G. Shvets, and N.J. Fisch*

Cavity Ring Down (CRD) Interferometry for Microplasma  
*Hyeon K. Park and Elizabeth J. Foley*

Current Sheet Plasma Confinement Device  
*Stephen F. Paul*

Method of using Superconducting Tiles to Form a Surface that Approximates that of a Solid Superconductor  
*Wayne Reiersen and Allen Boozer*

Advanced MagLev Configuration  
*John A. Schmidt*

Two-layer Stream Liquid Metal Protection for the First Wall of the Tokamak-reactor  
*Leonid E. Zakharov, Nikolai Gorelenkov, and Roscoe White*

The First Wall Device for Absorption of Non-localized Thermal Energy/Particle Flux from High Temperature Mirror-machine Plasma with use of B-directed Electromagnetic Propulsion of Liquid Metal  
*Leonid E. Zakharov, Dennis Mansfield, and Robert Woolley*

The First Wall Device for Absorption and Transmission of Non-localized Energy/Particle Flux from High Temperature Tokamak Plasma with use of J-directed Electromagnetic Propulsion of Liquid Metal  
*Leonid E. Zakharov, Dennis Mansfield, and Robert Woolley*

Lithium Breeder Device for Heat/Material Exchange in Intensive Flux of Fusion Neutrons  
*Leonid E. Zakharov, Evgeni Muraviev, and Robert Woolley*

## HOTLINE

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Device for Absorption and Transmission of Intensive Localized Thermal Energy/Particle Flux from High Temperature Tokamak Divertor Plasma with use of Electro-magnetic Propulsion

*Leonid E. Zakharov, Martin Peng, and Robert Woolley*

Device for J-directed Electromagnetic Propulsion of a Free-surface Liquid Lithium Stream along a Guide Plate in Tokamaks

*Leonid E. Zakharov and Robert Woolley*

Device for B-directed Electromagnetic Propulsion of a Free-surface Liquid Lithium Stream along a Guide Plate in Mirror-machines

*Leonid E. Zakharov and Robert Woolley*

Device for Intensive Heat/Material Exchange Driven by J-directed Magnetic Propulsion in the Conducting Fluid Contained in a Closed Volume and Embedded in the Toroidal Magnetic Field of a Tokamak

*Leonid E. Zakharov and Robert Woolley*

Environmentally Clean and Compatible Tokamak Fusion Lithium-deuterium Reactor with Plasma Facing Liquid Lithium Stream and with Lithium Breeder both Driven and Controlled by J-directed Electro-magnetic Propulsion

*Leonid E. Zakharov, D. Mansfield, E. Muraviev, R. Woolley, Yu.L. Igitkhanov, S. Krasheninnikov, S.V. Mirnov, A.I. Morozov, V.S. Mukhovatov, G.V. Pereverzev, S. Putvinskii, and P.N. Yushmanov*

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## Patent

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PPPL Committee on Inventions Chairperson Lewis Meixler, who served as master of ceremonies at the dinner, delved into the history of patents during opening remarks. “The granting of patents may have begun as early as the 15th century. In 1474, in the Republic of Venice, the council passed an ordinance recognizing the exclusive rights of inventors to their inventions, and thereafter patents were regularly issued in Venice. The astronomer Galileo received a patent in 1594 for an invention related to pumping water,” said Meixler.

Before the U.S. Federal Government was established, individual states and the colonial governments made some grants to inventors as early as 1641. In 1790, Congress passed an act and placed the complete power to grant patents in a committee consisting of the Secretary of State, the Secretary of War, and the Attorney General. The first U.S. Patent, issued on July 31, 1790, went to Samuel Hopkins for a process for making fertilizer. President George Washington, Attorney General Edmund Randolph, and Secretary of State Thomas Jefferson signed the patent. At the time, Jefferson examined all patent applications personally and applicants simply described their inventions and submitted a fee.

Noting that a copy of the first patent was in the dinner program, Meixler invited everyone to look at the patent awarded in 1999 to PPPL inventors. “You can see a copy of the patent for the Drum Bubbler invention, but it was not signed by Bill Clinton, Madeline Albright, and Janet Reno,” he quipped.

By 1836, new rules established the “examination” system, the Patent Office, and a Commissioner of Patents, and granted the patent office the power to refuse patent



**Lewis Meixler serves as master of ceremonies at the Patent Dinner.**

applications. “That system is pretty much in effect today,” Meixler said.

He discussed how the age of technology is bringing about “remarkable changes” in the types of inventions being patented to include, for instance, methods for doing business and on-line business models.

Throughout the centuries, ideas have spawned inventions as varied as fertilizer formulas and plasma production of ultraviolet light for sterilization, but the purpose behind patents remains constant — to protect inventors by granting them an exclusive right that prevents others from making, using, or selling the invention for a limited period of time.

Following the remarks, PPPL Deputy Director Rich Hawrylyk presented certificates to the inventors.

Special thanks go to the Committee on Inventions: C.Z. Cheng, David Cylinder, Philip Efthimion, Richard Hawryluk, Steve Jardin, Henry Kugel, Lewis Meixler, Carol Phillips, John Schmidt, Michael Williams, Ed Winkler, and Ken Young, as well as to Terry Greenberg for her efforts in organizing the recognition dinner. ●

# Carroll Receives Education and Outreach Award

**F**ormer Science Education Program Head Diane Carroll recently received a Special Award for Education and Outreach for the year 2000. Carroll is one of three recipients of the newly created award given by Fusion Power Associates (FPA). The other honorees are Don Correll of the Lawrence Livermore National Laboratory and Carol Danielson of General Atomics.

In a letter to Carroll announcing the award, FPA President Steve Dean said, “Your dedication and efforts to explain the fusion message to students, teachers, and the general public has been a great service to our program and to our country. We take great satisfaction in being able to provide some small recognition of your many contributions to this cause.”

The awards were part of the FPA’s annual meeting and symposium in July at the University of California at San Diego.

Carroll, who is presently on long-term assignment as Executive Director of the Invention Factory Science Center in Trenton, said, “What a nice surprise! I am extremely grateful to Fusion Power Associates. So many people at PPPL have worked hard to spread the word about fusion and to support our education programs. Everyone has been extremely generous in providing opportunities for high-school students and undergraduates to do internships here and in participating in programs in the schools and in the community. The Science Education staff — Pam, James, Chris, and Andrew — have been creative and have shown real leadership in providing these opportunities and partnerships. They



*Diane Carroll*

continue to establish a model of what a Laboratory can do in education and outreach.”

Added PPPL Director Rob Goldston said, “This award is certainly well deserved, and is the result of a lot of hard work by Diane, by the Science Education team currently under the leadership of Pam Lucas, and by a large number of enthusiastic people around the Laboratory. Congratulations to Diane and to everyone who has worked hard (and enjoyed) our science outreach activities.” ●

## It's Picnic Time!

**A**ll staff are invited to one of four picnics at the home of Rob and Ruth Goldston. The barbecues are scheduled for August 8, August 15, September 12, and September 19, from 4-7 P.M. Please remember to R.S.V.P. via e-mail to “humanres@pppl.gov” as soon as possible. If you are unable to attend on the date included on your invitation and would like to select another date, please note that in your e-mail. The picnics are intended for PPPL staff, Department of Energy-Princeton Group staff, and long-term visitors. Unfortunately, family members cannot be accommodated at this time. ●

