PPPL PRINCETON PLASMA PHYSICS LABORATORY
A Collaborative National Center for Fusion & Plasma Research
U.S. DEPARTMENT OF ENERGY
WEEKLY
May 12, 2014

At PPPL THIS WEEK

WEDNESDAY, MAY 14

PPPL Colloquium
4:15 p.m. ◆ MBG Auditorium
Mikhail Lomonosov - Father of Russian Science
Robert Crease, Stony Brook University
Vladimir Shiltsev, Fermi Nat'l Lab

SATURDAY, MAY 17

Girl Scout STEM Fair
8 a.m. - 4 p.m. ◆ Labwide

UPCOMING EVENTS

May 21
PPPL Colloquium
4:15 p.m. ◆ MBG Auditorium
N.J. as U.S. Electronics Center
Benjamin Gross, The Sarnoff Collection

May 26
Lab closed
Memorial Day Holiday

May 28
PPPL Colloquium
4:15 p.m. ◆ MBG Auditorium
Future Projections of Climate Change: An Update from IPCC AR5IPCC AR5 WG1 Report
Claudia Tebaldi, NCAR

June 11
PPPL Colloquium
4:15 p.m. ◆ MBG Auditorium
Magnetic Reconnection
Vassilis Angelopoulous, UCLA

June 18
PPPL Colloquium
4:15 p.m. ◆ MBG Auditorium
Nuclear Winter
Alan Robock, Rutgers University

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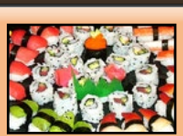
Bike Team **page 3**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PPPL Advisory Committee member Cowley elected to United Kingdom's Royal Society

By John Greenwald

The Royal Society, the United Kingdom's national academy of science, has elected plasma physicist Steven Cowley to fellowship in the 354-year-old academy, whose ranks have included Isaac Newton, Charles Darwin and Albert Einstein.

Cowley, chief executive officer of the UK Atomic Energy Authority and a professor in Britain's Imperial College, earned his doctorate in 1985 as a graduate student in the PPPL-based Princeton Program in Plasma Physics, a division of the Princeton University Department of Astrophysical Sciences. He joined the PPPL research staff from 1987 to 1993 and is currently a member of the PPPL Advisory Committee, which meets twice a year to help support and guide the mission of the Laboratory.

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Steven Cowley
(Photo courtesy royalsociety.org)

New Strategic Plan outlines PPPL's mission and goals

by Jeanne Jackson Devoe

Every staff member at PPPL will soon receive a glossy publication with a photo of the NSTX center stack on the cover that outlines the Laboratory's mission and major goals over the next five years.

The 16-page Strategic Plan gives an overview of the Laboratory's mission and outlines seven major initiatives, five of which are centered on magnetic fusion research and two of which are focused on plasma physics research.

Lab Director Stewart Prager said the publication "is a great way to succinctly inform the PPPL staff and other informed

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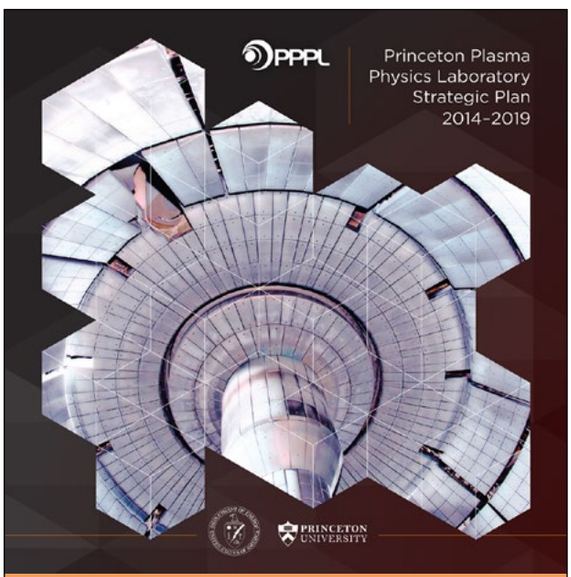

All staff members at PPPL will soon receive a copy of PPPL's Strategic Plan, which outlines the Lab's mission and goals for the next five years.

Acting on the Results of the 2013 Safety Culture Survey

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Strategic Plan

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readers of the Lab mission and strategy in one booklet." He said he hopes the booklet will "foster feedback from the staff on how to make the strategy even better, which we very much welcome."

John DeLooper, head of Best Practices and Outreach, worked on the project with Director of Communications Kitta MacPherson. They based the idea in part on a similar publication for employees at the Pacific Northwest National Laboratory (PNNL).

"This is a way for everyone to know where we're heading so staff can all contribute to the success of the Laboratory," said DeLooper, who worked on the project with Director of Communications Kitta MacPherson.

Some PPPL staff members also indicated they would like a clearer sense of the overall mission of the Laboratory during a review by a Vision of Excellence Award team in September of 2012 and other forums. "We're trying to be responsive," DeLooper said.

Two missions

The Strategic Plan outlines PPPL's two missions. The first is to "develop the scientific understanding and the key innovations that will lead to an attractive fusion energy source for all nations." The second is to "conduct first-class, world-leading research along the broad frontier of plasma science and technology, and provide the highest quality of science education."

PPPL has core capabilities to support the DOE mission through its "highly skilled workforce and extensive scientific and engineering capabilities," according to the mission. These include research in plasma and fusion energy sciences through the National Spherical Torus Experiment Uprade (NSTX-U), the Lithium Tokamak Experiment (LTX), the Magnetic Reconnection Experiment (MRX) and through PPPL's contributions to ITER, the huge international fusion experiment being built in Cadarache, France.

PPPL offers "large-scale user facilities and advanced instrumentation," according to the publication, through its "unique engineering capabilities," in numerous areas related to the design and construction of fusion facilities. In addition, the publication notes that PPPL has collaborations with facilities across the country and around the world.

PPPL's mission comes at a time when the need for "clean, safe, limitless energy available to all nations" is especially critical, the publication states. And fusion research is now at a point where scientists could move ahead "much more rapidly" to develop a demonstration power plant in 20 to 25 years, the publication states, noting that "Other nations recognize these points and are responding aggressively."

Seven initiatives

The publication outlines the goals of PPPL, which are divided into seven initiatives. It begins with the initiative to continue research on the National Spherical Torus Experiment Upgrade (NSTX-U) with the goal of establishing a fusion nuclear science facility (FNSF), while tackling key physics issues facing ITER.

PPPL is continuing to contribute to the construction of ITER by contributing to diagnostics, overseeing the purchase of 75 percent of the electrical power system, and supporting the design of in-vessel coils, according to the Strategic Plan. The Lab will offer its engineering expertise to ITER to solve "key design issues." At the same time, PPPL is looking ahead to the fusion nuclear science facility (FNSF) through a roadmap for fusion that includes design studies.

PPPL is also working on solutions to the "interface between the hot fusion plasma" and the surrounding material" – a key challenge in developing fusion energy. Possible solutions could be found through research into liquid metals as the first wall and a magnetic divertor, the publication states.

Another major focus of the Laboratory is its work to develop computer codes on large-scale "super computers" that can simulate the behavior of plasmas during fusion, according to the Strategic Plan.

Researchers will continue investigating 3-D magnetic fields, such as those found in a stellarator, which provide "steady-state, disruption-free magnetic confinement," the publication explains. This could include a quasi-symmetric stellarator, such as PPPL's QUASAR.

PPPL also intends to "establish a center of excellence in plasma astrophysics" with Princeton University, a goal that was carried out with the establishment of the Center for Heliospheric Physics, a joint project with the University's Department of Astrophysical Sciences. The Princeton/Max Planck Society Center in Plasma Physics is also focused on both astrophysics and fusion physics.

Finding new applications for plasma science

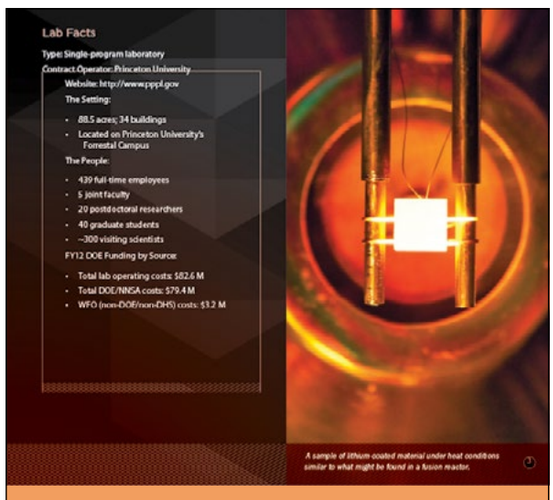
Finally, PPPL plans to continue to develop plasma science and related applications in fields such as plasma-based nanotechnology; a plasma mass filter that could be used to clean up large amounts of radioactive waste; an advanced liquid centrifuge; X-ray spectroscopy; and other applications.

The Laboratory also has done extensive research outside of the Department of Energy through the DOE's Work for Others program. PPPL has submitted a number of proposals to NASA for plasma technologies that could be used in space that may fall under this program, according to the publication.

The Strategic Plan also notes that PPPL is developing a comprehensive "campus plan" for its facilities, which include more than 30 buildings.

The Laboratory also has an active environmental program that has significantly reduced greenhouse gases and cut its energy and water use. PPPL's Lyman Spitzer Building was certified a LEED-Gold building in 2011.

All of these activities, said DeLooper, involve "a tremendous effort. "A lot of the staff is supporting the science folks," he said, "and they're all playing a vital role in carrying out the mission."



The Strategic Plan includes facts and figures, as well as photos by PPPL photographer Elle Starkman, like this one of a sample of lithium-coated material under heat conditions similar to what might be found in a fusion reactor.

Cowley

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"I am, of course, absolutely delighted by the fellowship — and a bit overawed," Cowley said of his election to the Royal Society. "At PPPL I learned to be a physicist. Indeed, my greatest influence has been Russell Kulsrud," who served as Cowley's thesis adviser. "I remember with great clarity days spent in the theory seminar room with Russell, Carl Oberman and Ernie Valeo (two Kulsrud colleagues and Cowley mentors) writing on the blackboard and arguing fiercely. It doesn't get any better than that."

Played a leading role

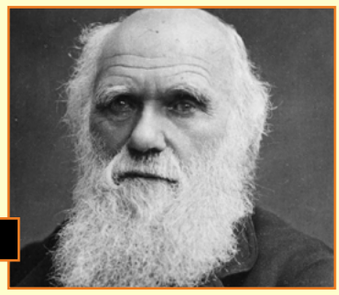
In announcing Cowley's election, the Royal Society noted that "he has played a leading role in developing the multi-scale approach to computing the plasma turbulence in fusion experiments." This approach, which employs analysis of a small section of the plasma to model the turbulence in the plasma as a whole, "will be central to the successful development of fusion power," the academy said.

Cowley was among 60 newly elected scientists to the Royal Society, which has numbered some 1,450 fellows and foreign members since its creation in 1660.

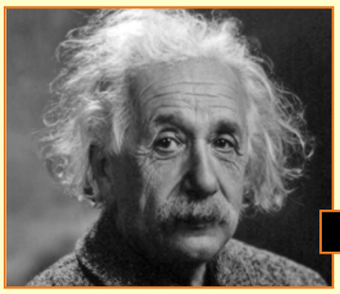
THE ROYAL SOCIETY

Many scientific luminaries have been members of the Royal Society.

ISAAC NEWTON



CHARLES DARWIN



ALBERT EINSTEIN

Celebrate National Bike Month and join the Federal Bike to Work Challenge by joining one of PPPL's teams and competing against teams from DOE headquarters, PNNL labs and hundreds of other federal facilities. All you have to do is agree to bike to work four times during the month of May. (People who live far away can drive to a site closer to the Lab and bike from there). To sign up go to http://tinyurl.com/k6huwz7 or contact Rob Sheneman, rshenema@pppl.gov with any questions.

PPPL Welcomes New Employees!

DRINA DURYEA
Help Desk Technician
Information Technology

JEANINE GRAU
Travel/Account Specialist
Business Operations

STANLEY REECE
Janitor
Engineering & Infrastructure

Guest Corner

Acting on the Results of the 2013 Safety Culture Survey

By **Jerry Levine** - Head, PPPL Environment, Safety, Health and Security

As all of you know, the Laboratory has been conducting safety culture surveys for the last several years, and these are now being done on a quarterly basis. In late January, Stewart Prager sent out a note summarizing the results of the 2013 survey and a link to the detailed analysis report (http://www-local.pppl.gov/esh/Special%20Reports/PPPL%20Quarterly%20Safety%20Culture%20Surveys%20-%20First%20Year%20-%20Final%20Report%20-%20Dec%202013%20-%20FINAL.pdf). In his note, the director said that the survey results reflected an overall positive assessment of our safety culture, but he also noted areas for improvement, including some lack of praise for working safely, a perception that the Lab does not focus enough on learning from adverse events, and the fact that there does not appear to be a clear line between acceptable and unacceptable safety behavior.

Recently, the Safety Champions Committee and the Safety Review Committee evaluated the 2013 survey results and presented a set of recommendations to the PPPL ES&H Executive Board to address the survey statements that received the highest unfavorable response rates. These recommendations included:

1. Disseminating more information to the staff on the level of effort going into incident investigations and demonstrating that everyone's inclusion in the process of making the Laboratory safer, even if only by being notified of what has taken place, is important.
2. Increasing upper-management presence in the field and shop environments to reduce the perception that upper-management's appearance is, or will be, associated only with blame or punishment.
3. Publishing the consequences (to the Lab and to individuals) of safety violations and increasing communication on this issue.
4. Holding the Safety Forum, or several sessions of a shorter forum, and requiring attendance to demonstrate the Laboratory's commitment to safety.
5. Instituting mandatory small-group safety meetings for both office and field workers.
6. Reinforcing the importance of, and participation in, STOP.
7. Publicizing and/or rewarding positive safety behaviors and successes.
8. Creating a peer review process for post-incident action items, and evaluating the items for priorities, timeliness, and communication requirements.
9. Standardizing the incident-investigation process, especially regarding interviews, to focus on root causes.
10. Expanding the Lessons Learned program to include more PPPL events (even minor ones), and assigning actions on a broader scale.
11. Considering "effectiveness reviews" after actions from smaller incidents have been closed for a period to determine if lessons have been learned.

Both committees also considered the positive responses to the surveys and felt the general confidence of the Laboratory population was understandable and warranted.

The Safety Division and I have drafted a set of action items (assigned to individuals with due dates) to address these recommendations, and have asked the committees to review and comment on them. Once their comments have been incorporated, these action items will be acted upon and tracked. Details on these action items will be presented in the next issue of the ESH&S Newsletter.

As you can see, Laboratory management considers your input on these surveys to be important, takes the input seriously, and is acting upon that input. Your participation will help continue to make PPPL a safe and healthful place for us to work. Thank you all!

Check Out New Items in the Plasma Hutch!

4 GB FLASH DRIVES	**$12.00**
UMBRELLAS	**$14.50**
KEYCHAINS	**$ 5.00**

Also ceramic mugs, notebooks, pens and all your favorite PPPL clothing!

THE PLASMA HUTCH IS OPEN ON FRIDAYS FROM 11:30 A.M. YOU CAN ALSO PICK UP AN ORDER FORM OR DOWNLOAD ONE FROM THE HR WEBSITE AT HR.PPPL.GOV AND SEND IT VIA EMAIL TO KIM KASTROMARINO AT KMASTROM@PPPL.GOV.

COLLOQUIUM

MIKHAIL LOMONOSOV - FATHER OF RUSSIAN SCIENCE

ROBERT CREASE, STONY BROOK UNIV.
VLADIMIR SHILTSEV, FERMI NAT'L ACC. LAB

Wednesday, May 14

4:15 p.m. (Coffee/Tea at 4 p.m.) • MBG Auditorium

Girl Scout STEM Fair Volunteers Needed!

Many volunteers are still needed to help make the Girl Scout STEM Fair at PPPL on May 17 from 8 a.m. to 4 p.m. a success. Please volunteer an hour or two of your time. Contact Theresa Gillars, tgillars@pppl.gov, ext. 3512 if you can help out.

Volunteers are needed for the check-in/info desk, registration, snack/lunch helpers, younger Scout group leaders, older Scout workshop volunteers, group escorts, tour guides and the Plasma Hutch.

Thank you!

Site Protection Division • TIP • OF • THE • WEEK •

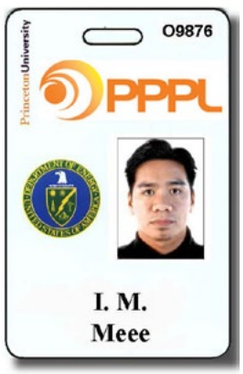
ID BADGE REGULATIONS

All individuals on site are required to display their ID Badge conspicuously, photo side out, in a location above the waist and on the front of the body. (Deviations may be permitted for health or safety reasons.) One thing to keep in mind is that the PPPL ID Badge is the property of the U.S. government and is issued to authorized personnel for PPPL business purposes only.

Here are some additional reminders:

- Protect the security badge against loss, theft, or misuse and report a lost, stolen or misused badge to Site Protection.
- Maintain the security badge in good condition; protect its integrity by ensuring the badge is not altered, photocopied, counterfeited, reproduced or photographed for any reason other than official government business.
- Return the security badge to the SPD Badge Office when it is no longer valid or required, or when requested by SPD.
- Remove or cover the badge when you are not on site.
- Please address any questions or concerns on this topic to Badge@pppl.gov.

Thank you for your support in keeping the Laboratory safe and secure.



BROCK Café at PPPL Menu

BREAKFAST ..... 7 a.m. • 10 a.m.
CONTINENTAL BREAKFAST ..... 10 a.m. • 11:30 a.m.
LUNCH ..... 11:30 a.m. • 1:30 p.m.
SNACK SERVICE ..... until 2:30 p.m.

*— **MARK GAZO**, Chef Manager*

	MON. 12 MAY	TUE. 13 MAY	WED. 14 MAY	THU. 15 MAY	FRI. 16 MAY
					
COMMAND PERFORMANCE CHEF'S FEATURE	Ota- Ya Sushi Bar	Eggplant Parmesan served with Pasta and Garlic Bread	Build Your Own Burrito served with Beans & Rice	Penne Pasta with Peas in a Pink Vodka Sauce	Asian Grilled Salmon served with Fried Rice
EARLY RISER	The XL Steak, Onion and Cheese Omelet with Home Fries	Banana Walnut Pancakes with Crispy Bacon	Eggs Benedict	Marcus McGriddle French Toast with Sausage, Egg & Cheese	The Philly Pork Roll, Potatoes, Egg and Cheese on a Kaiser Roll
COUNTRY KETTLE	Lentil Sausage Soup	Creamy Corn & Vegetable Soup	Curried Chicken & Rice Soup	Louisiana Gumbo Day	Maryland Seafood Chowder
GRILLE SPECIAL	Super Sloppy Joe on a Kaiser Roll with Deviled Potato Salad	Boardwalk Sausage & Pepper Torpedo	Grilled Peanut Butter, Banana and Honey on Raisin Bread w/ Fruit Salad	Teriyaki Chicken Steak Wrap with Peppers & Pineapples with Fries	Scrambled Egg, Broccoli, & Cheddar on Torpedo served with Home Fries
DELI SPECIAL	Open-Faced Chunky Egg Salad on Naan	Picante Roast Beef Sandwich with Lime & Garlic on a Kaiser Roll	Italian Antipasto Sandwich	Shrimp Louie Wrap with Hard Cooked Egg	Greek Chicken Souvlaki Pita
PANINI	Aunt Bee's Pork Chop Sandwich with Sweet Slaw & Chili Sauce	Shrimp Quesadilla with Peppers, Onions & Feta Cheese	Chicken & Mushroom Quesadilla	Veggie Burger Pocket	Cheeseburger with Tomato, BBQ Sauce, Cheddar & Bacon on Ciabatta

MENU SUBJECT TO CHANGE WITHOUT NOTICE

VEGETARIAN OPTION

CLICK HERE FOR A PRINTABLE WEEKLY MENU

WEEKLY

Editor: **Jeanne Jackson DeVoe** ◆ Layout and graphic design: **Gregory J. Czechowicz**
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