

At PPPL THIS WEEK

MONDAY, OCTOBER 24

Google OnSite Training
All Day ♦ MBG Auditorium

TUESDAY, OCTOBER 25

Google OnSite Training
All Day ♦ B-318

PPPL Benefits Fair
10 a.m. - 2 p.m. ♦ LSB Lobby

PPPL Colloquium
4:15 p.m. ♦ MBG Auditorium

The Robotic Scientist: Distilling Natural Laws from Experimental Data, from Cognitive Robotics to Computational Biology

Hod Lipson (Cornell University)

[CLICK HERE FOR ABSTRACT](#)

THURSDAY, OCTOBER 27

Theory Seminar
10:45 a.m. - Noon ♦ T-169

Influence of Energetic Ions on Tearing Modes

Prof. Huishan Cai (University of Science and Technology, Hefei, China)

GFDL Events and Seminars
2 p.m. - 3 p.m. ♦ GFDL Smagorinsky Seminar Room

TBA

Dan Rudnick (UCSD)
www.gfdl.noaa.gov/events

(Gov't, Univ. or 2 other forms of I.D. needed)

FRIDAY, OCTOBER 28

PPPL Google Info Class
10 a.m. - 11 a.m. ♦ B-318

DIII-D Science Meeting
1 p.m. - 2:30 p.m. ♦ B-233

Benefits Fair
see page 4

Lab-Invented Nuclear Detector Device Earns Safety Accolades

By Gale Scott

Spinoffs from military technology have long benefited civilians, producing innovations ranging from fire-retardants to freeze-dried food. Now scientists at the U.S. Department of Energy's Princeton Plasma Physics Laboratory (PPPL) have turned that model on its head, making a civilian discovery available for defense use.

That technology is MINDS, which stands for "miniaturized integrated nuclear detection system," a software system designed for the nuclear energy industry that can also find "dirty bombs."

The device has been successfully tested in settings ranging from train stations to airports and major harbors, showing that it can accurately identify threat radiation within seconds without disrupting commerce.

As the U.S. Congress moves toward requiring greater security in the container shipping industry, MINDS could soon play a global role in scanning containers. With that in mind, Veritainer, an international container security device company in San Francisco, has entered a partnership with MINDCo, Incorporated, an entity marketing the software under an exclusive licensing agreement with Princeton University.

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The PPPL MINDS team, from left, includes Bill Davis, Charles Gentile and Kenny Silber.

Mounted on a crane at a shipping terminal, MINDS has been used to scan a cargo container in 20 seconds, instantly setting off an alert if it detects something suspicious.

“There’s been a lot of resistance to scanning all containers, but with MINDS it’s done seamlessly,” said Lawrence Alioto, executive vice president of Veritainer. For the scans to become widely accepted there has to be no interruption in the unloading process. “We’ve tested it at three ports and five terminals so far,” Alioto said, “It’s worked.” The potential market for the container terminal business alone is about 10,000 crane systems in use internationally, he said.

Next up is a handheld version of the system, currently in development, that could put MINDS into still more widespread use.

Another indication of MINDS’ potential is interest the system has elicited in Japan, according to Joseph Moran, chief financial officer of InSitech, the corporate parent of MINDCo. The company has gotten inquiries from organizations in Japan that are tracking contamination in the wake of the earthquakes that damaged nuclear power plants there.

“Interest tends to be event-driven,” Moran said, “but people who have tested MINDS love it.”

Sensitive enough to detect one-billionth the amount of radiation needed to make a weapon and smart enough to identify the radioactive element involved, MINDS has its origins in nuclear safety compliance.

“We used a progenitor of MINDS to decommission our tokamak in 1999,” said PPPL’s Charles Gentile, referring to an experimental fusion device once used at the Laboratory. Gentile led the PPPL team that invented MINDS. Before the defunct reactor could be cut into 10 ft by 12 ft chunks, sealed in concrete, and trucked to a government disposal site at Hanford, Washington, federal authorities required tests to accurately account for residual radioactive materials and show there was no longer any dangerous radiation. MINDS proved it could do the job. “We didn’t even have a name for it then, but we knew we were able to identify very low signals in an active environment,” said Gentile, head of tritium systems at PPPL.

After the attacks of Sept. 11, 2001, the U.S. Department of Homeland Security put out a request for systems that could be used to detect radioactive devices. Gentile and colleagues submitted a proposal for MINDS.

With funding from the DOE and the U.S. Army, the software was fine-tuned. That fine-tuning is an on-going process, Gentile said. The effort resulted in the 2005 licensing agreement with InSitech, a company that represents the

business interests of the U.S. Army’s Armament Research and Development Engineering Center, under an arrangement known as a partnership intermediary agreement. It is based at the Picatinny Arsenal in Dover, N.J.

With now three patents issued on the software powering MINDS, the system is paired with radiation detection hardware like that made by Veritainer to find radioactivity and instantly reveals what kind of radioactive substance is responsible for the emanation. MINDS can detect — in seconds — if a radioactive signal is a threat. It can distinguish, for instance, between a signal from a medical isotope — tracer substances injected in a patient as part of cardiac stress test — from one coming from radiation used to sterilize food, or whether the radiation is a suspicious signal from Cobalt 60 or Cesium 137, substances that are likely candidates for use in weapons.

The system does that by comparing patterns of signals from radioactive particles known as radionuclides to those residing in a computer-based “library” showing patterns given off by less threatening radiation.

Background radiation is more common in the environment than most people likely think, Gentile said.

“There are a lot of medical isotopes used in tests and cancer treatments. Even the clays in kitty litter can give off radiation,” he said, as well as some slabs of granite and dyes used in pottery. Red colored Fiesta Ware dishes made in the 1940s have been found to contain traces of uranium, Gentile said. “MINDS can distinguish dangerous radiation from benign with a minimum of false positives,” Gentile said.

The U.S. Federal Laboratory Consortium in 2009 honored those involved in MINDS development with an “excellence in technology transfer” award for doing outstanding work in getting federally supported technology to the marketplace. The judging was done by a panel representing members of industry, state and local government, universities, and the federal laboratory system, of which PPPL is a member.

That was gratifying, but so is the work itself, he added. “We are working hard to find people who may be trying to damage our country. A dirty bomb could be devastating. I feel good about what we are doing.”

Researchers at PPPL, managed by Princeton University and funded by the DOE’s Office of Science, collaborate with scientists around the world to develop fusion as an energy source for the world. Fusion is the process that powers the Sun and other stars. In the interior of stars, matter is converted into energy by the fusion, or joining, of the nuclei of light atoms to form heavier elements. ■

Fire Prevention Demos Take Lab by Storm

PPPL employees became “firefighters” on October 13, donning gear and using fire extinguishing equipment to put out flames during the Fire Prevention Week demonstrations and displays hosted by the PPPL Site Protection Division. The Division set up demos and displays in the Lobby and Lyman Spitzer Building circle driveway.

Clockwise from top right: PPPL’s Cassandra Pugh (left) suits up to fight fires with PPPL firefighter Sean Galie; PPPL’s Bob Reed (right) checks out equipment with Ashley White; PPPL firefighter John Mazukewicz (left) shows PPPL’er Kyron Jones how to operate a hose to put out a fire in a mock house; and PPPL’s Maureen Abbott (left), overseen by Galie, quenches the flames created for the demos. The event also included several fire safety displays and information.



New Google Apps Users MUST Change Passwords

P PPL is in the process of implementing a new web-based password management system. All ***NEW*** Google apps users, who have not already visited the helpdesk and set their Google password, must use this new service.

“The Information Technology Division (ITD) recommends that all users who have not already established a password for Google Apps do so no later than Friday, October 28,” said Marc Cohen, systems administrator at PPPL. “If users do not change their passwords, they will not be able to use Google Apps, and will not have access to any new e-mail starting on Monday, October 31.

Detailed instructions on changing your password are provided at <http://www.pppl.gov/google-info/>. Once changing your password, the ITD strongly encourages you to visit PPPL’s Google Apps Learning Center at <https://sites.google.com/a/pppl.gov/pppl-learning-center/>. The Learning Center is composed of numerous resources designed to help you become acquainted with Google Apps.

For more information, please visit <http://www.pppl.gov/google-info/> or send an e-mail to google-info@pppl.gov or attend one of the final information sessions on Friday, October 28, at 11 a.m. in B-318. ■

Benefits Fair

for 2012 Benefits Open Enrollment

PPPL

Tuesday, October 25

10 a.m. to 2 p.m.

Lyman Spitzer Building

Talk with the vendors and representatives from HR.
Register to win door prizes.

PARTICIPATING VENDORS

Aetna	PayFlex
Bank of America (Mortgage Programs)	Princeton Federal Credit Union
Bright Horizons (Backup Care Advantage Program)	Princeton HealthCare System
Carebridge	Prudential Life Insurance
Employee Child Care Assistance Program (ECCAP)	TIAA-CREF
Medco (Prescription Drug)	Transportation and Parking Services
MetLife	UnitedHealthcare
NJ Manufacturers	Vanguard
	Vision Services Plan (VSP)

2012 Benefits Open Enrollment Period begins Monday, October 17, and ends Friday, November 18, 2011. November 18 is the last day for making any benefits changes.

There will be no Confirmation Period this year due to the extended enrollment period.



PRINCETON
UNIVERSITY

**Benefits
and Work Life**

New Assignments at Site Protection Division

The Site Protection Division is pleased to announce several new assignments.

Jamie Alkhateeb

Emergency Planning & Training Coordinator

Wes Foraker

Driver/Operator

Sean Galie

Driver/Operator

JAMIE ALKHATEEB, an officer at PPPL since 2005, has been selected as the new Emergency Planning and Training Coordinator. In his new role, Jamie will be taking his experience as a Driver/Operator and Acting Captain to enhance emergency planning and preparedness at PPPL.

Some of his new duties will involve improving emergency response policies and procedures, conducting drills and training programs for officers and staff, and completing risk assessments that enumerate the dangers here at PPPL.

WES FORAKER and SEAN GALIE, Emergency Services officers at PPPL since 1980 and 2008, respectively, have been assigned as Platoon Driver/Operators. As Driver/Operators, these officers directly assist the Platoon Captains with oversight and direction of the platoons, and ensure the safe and effective performance of these platoons, especially during emergencies.

The new Driver/Operators will also manage the platoons in the absence of the Captain. Both Wes and Sean bring a wealth of emergency services expertise to PPPL from other fire, EMS, and local government agencies.

We are pleased that Jamie, Wes, and Sean have agreed to serve PPPL in these higher-level emergency services positions. These new assignments will help us to continue our growth and achieve our goal of meeting the evolving threats to PPPL. Their “can-do” attitude and professionalism will help lead the Site Protection Division in providing the best possible services to help keep everyone here at the Laboratory safe and secure. ■



Jamie Alkhateeb



Wes Foraker



Sean Galie

PPPL Site Access Reminders for ALL VISITORS

The Site Access Notification Form is required for all visitors to PPPL. When hosting a visitor to PPPL for any reason (casual or business), remember to submit the online Site Access Notification Form found on the PPPL Employee Services Home Page (<http://www-local.pppl.gov/SiteAccess.html>). This form should be submitted a day or two in advance of the visit; the form is transmitted to Security Booth 6 and will help ease access for your visitor.

TIP: Provide your cell phone number or the name/ number of an Alternate Host, in case you are away from your office when your visitor arrives.

Hosts of visitors who arrive at PPPL when Booth 6 is closed should always have the visitors check in at the Communications Center in Room LSB-131. Employees who forget their badges and arrive at PPPL when Booth 6 is closed should also check in at the Communications Center.

Never allow anyone to "piggyback" or "tailgate" on your badge. It poses a security and safety risk to all personnel and it is prohibited.

Questions and suggestions pertaining to Site Access and ID Badges should be directed to the Site Protection Division (ext. 3208).

COLLOQUIUM

THE ROBOTIC SCIENTIST: DISTILLING NATURAL LAWS FROM EXPERIMENTAL DATA, FROM COGNITIVE ROBOTICS TO COMPUTATIONAL BIOLOGY

HOD LIPSON

Associate Professor, Cornell University

Tuesday, October 25

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

M.B. Gottlieb Auditorium, Lyman Spitzer Building

Coming to PPPL **October 31st.**



www-local.pppl.gov/google-info/

REMEMBER TO CHANGE YOUR PASSWORD



MONDAY, Oct. 24



Baked Chicken Cordon Bleu with Lyonnaise Potatoes

Deli: Chicken Salad Hoagie

SOUP DU JOUR: ROASTED CORN & RED PEPPER CHOWDER

TUESDAY, Oct. 25



South of the Border Fajita Wrap with Spicy Chicken, Vegetables or Beef

Deli: Polynesian Shrimp Salad

SOUP DU JOUR: GARLIC CHICKEN BROTH WITH SPINACH

WEDNESDAY, Oct. 26



"Pasta Your Way"

Deli: Turkey Cobb with Bacon

SOUP DU JOUR: BAKED POTATO WITH BACON

THURSDAY, Oct. 27



Baked Maryland Style Crab Cake with Salad Greens and Cusabi Dressing

Deli: Roasted Eggplant+ Stacker

SOUP DU JOUR: MEGA VEGETABLE

FRIDAY, Oct. 28



Orange Chicken Stir Fry over Steamed Brown Rice

Deli: Chef's Salad Wrap w/Spinach

SOUP DU JOUR: SHRIMP & MUSHROOM BISQUE

MENU SUBJECT TO CHANGE WITHOUT NOTICE

[CLICK HERE FOR FULL WEEKLY MENU](#)

WEEKLY

Editor: Patti Wieser ♦ Copy Editor /Graphic Design: Gregory Czechowicz
Photography: Elle Starkman ♦ Web: Chris Cane

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Deadline for submissions is noon on Thursdays. Send to: pwieser@pppl.gov ♦ Comments: commteam@pppl.gov

PPPL WEEKLY is archived on the web at: <http://www.pppl.gov/ppplweekly.cfm>