

## IRB Manager Ready To Assist Researchers

The Division of Research recently announced a new manager for the university's Institutional Review Board, or IRB, a committee formed to help protect the rights and welfare of human subjects in research projects.

**Joseph Smith**, who started in February, will maintain the policies and procedures of the board, provide training for researchers on federal regulations and assist with questions.

The IRB approves the initiation of and conducts annual reviews of student and faculty research, which covers any project that collects data through interaction or intervention with an individual. That includes clinical research and projects obtaining or accessing private identifiable information, Smith says. The board



follows federal regulations, so it is important that researchers check with staff to see if their research requires board review.

"It's best that investigators contact us if they are unsure," Smith says. "With just a phone call or e-mail, we can help determine if they need to submit a protocol."

Previously, Smith was an IRB analyst with the University of Maryland, Baltimore School of Medicine, where he reviewed protocols, enforced regulations and conducted training. He is a certified IRB manager and has a master's degree in applied professional ethics.

## The Power of Super Batteries New Technology Could Hit the Road by 2019

**IMAGINE THAT**, in the not-so-far distant future, Maryland rights its economy to become a teeming manufacturing center of next-generation "super batteries," with state officials having the enviable task of deciding how many factories they want built to churn out these 21st-century power supplies for vehicles.

It's not a far-fetched vision, says **Gary Rubloff**, the Minta Martin Professor of Engineering and director of the **Maryland NanoCenter**. Next-generation batteries based on novel nanotechnology devices developed at the University of Maryland could take as little as 10 years to appear in cars, Rubloff says. These modern batteries will be capable of storing enough electricity to eliminate the need for hybrid cars, which rely on gasoline as a backup.

The need to end America's dependency on oil has become a national security issue as well as an economic and environmental imperative that President Barack Obama has vowed to address. Rubloff believes a multidisciplinary team of university researchers is poised to put Maryland at the forefront of finding a solution to this problem because they are focusing on electrical energy storage, an area often overlooked in the rush for renewable energy sources.

Renewable energy sources "are not very useful if you can't store the electricity between the time it is captured and the time it is needed," Rubloff says.

Batteries on the market now can store energy from auxiliary solar panels to help light and heat a home. A much more powerful battery, however, is needed for more ambitious use



of new energy sources linked to a regional power grid, says **Sang Bok Lee**, associate professor of chemistry and biochemistry.

Rubloff and Lee are experimenting with nanowire structures—so small that 10 billion could fill 1 square centimeter. They have found several ways to exploit the honeycomb patterns of nanoscale pores in aluminum oxide in order to build new types of battery and capacitor devices. They can store a lot more energy, deliver more power and recharge faster than existing devices can.

The researchers said they foresee arrays of billions of their nanowires in super batteries that could power vehicles for long distances. Hybrid cars typically can travel 100 miles before dipping into gas reserves or needing to recharge for several hours. Lee says they hope to have a super battery that can power a car for 300 miles and take as little as five minutes to recharge at an electric station along the highway.

With \$4-per-gallon gasoline prices still fresh on consumers' minds, auto makers are racing to deliver the most fuel-efficient, electric cars—a mission that could lead to a very green future for Maryland.



Maryland researchers Sang Bok Lee (l) and Gary Rubloff are working on innovative nanowire technologies.

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## THE FEDERAL CORNER

### UPDATE FROM THE OFFICE OF FEDERAL RELATIONS

President Barack Obama has signed into law the \$787 billion economic stimulus package, which has positive implications for university researchers. The university frequently works with the federal agencies in the box below.

The ambitious legislation includes billions of dollars in spending and tax credits for research and development projects related to renewable energy, environmental resto-

ration, national parks, cleaner cars and other energy efficiency programs.

The bill identifies the necessity to help transform the economy through investments in science and technology. Thus, federal research and development funding has emerged as a strong part of this new stimulus legislation.

NAME OF THE AGENCY	FY 2009 FUNDING
National Science Foundation	\$3 billion
National Institutes of Health	\$10.4 billion (including a \$400 million transfer from the Agency for Healthcare Research and Quality, or AHRQ)
Department of Energy	\$2.0 billion (including \$1.6 billion for Science and \$400 million for the Advanced Research Project Agency-Energy, or ARPA-E)
National Institute of Standards and Technology	\$580 million (including \$180 million for a competitive research facilities construction program)
National Oceanic and Atmospheric Administration	\$280 million
NASA Science	\$400 million
NASA Aeronautics Program	\$150 million

Look to the Federal Corner for more information regarding higher education and the federal government. If you have a specific matter you would like to see discussed in this column, please contact Rae Grad, director of federal relations, at [rgrad@umd.edu](mailto:rgrad@umd.edu).

## NEWS You Can Use

### FROM THE OFFICE OF RESEARCH ADMINISTRATION AND ADVANCEMENT

#### Submitting Packages to Grants.gov

While most application packages sent to Grants.gov are now Adobe form packages, Grants.gov recently has had enormous problems with connectivity. Some application packages sent to ORAA on the deadline date were not submitted successfully. In addition, universities nationwide have been unable to access the Grants.gov site on popular deadline dates. Although some agencies have accepted late submissions, a growing number will not.

#### Submission Survival Tips

- Start early!
- Attend Grants.gov training and be sure to follow the directions in the FOA.
- Use Adobe Reader 9.0 to download, save and complete your application. Opening forms with other versions of Adobe can lead to file corruption.
- Use the NIH checklist found at [www.umresearch.umd.edu/ORAA/esubmission/esystems.html](http://www.umresearch.umd.edu/ORAA/esubmission/esystems.html)
- Double-check your application for common errors before submitting: Is the credential field in the senior/key person form completed for each PD/PI? Is the organization field for every senior/key person completed? Are all attachments in PDF format?
- Keep attachment names short. Do not use spaces in file names and avoid the use of special characters. The underscore is an acceptable separator to make the file name easier to read (e.g., [Smith\\_des\\_methods012.pdf](#)).

In the coming months, we will continue to introduce you to new faculty and research scientists in the Maryland research community.



**Jean Dryden** is an assistant professor in the archives specialization within the iSchool. Her dissertation topic focused on how copyright laws affect posting archival holdings on the Internet. She is interested in researching how institutions handle copyright issues.



**Michael Faulkender** is an assistant professor of finance. Faulkender's research focuses on corporate finance, primarily in risk management, liquidity and executive compensation. He also was a fellow at the FDIC Center for Financial Research from 2004-05.



**Keguro Macharia** is an assistant professor of English. His research focuses on how sexuality and race shaped the Black diaspora. Macharia, a native Kenyan, is a member of the Concerned Kenyan Writers collective, formed in the aftermath of post-election violence in 2008.



**Qin Wang** is an assistant professor of food nanotechnology. Her research focuses on the design, characterization and evaluation of natural polymers. Among other projects, she is pursuing the development of nanosensors for food safety evaluation.



**Ian White** is an assistant professor of bioengineering. His research focuses on developing tools for the diagnosis and study of disease at the molecular level using integrated biosensors. The objective is a low-cost device that can perform complex molecular biology analyses.

## Predicting success: Study examines what keeps women, minorities in science, math and engineering majors

For years, schools and universities have been experimenting with initiatives such as mentoring and summer science camps to fill a gap of women and minorities in the fields of science, technology, engineering and mathematics (STEM). Unfortunately, there is only anecdotal evidence of their effectiveness.

"They're often done with little or no theory or research base," says **Robert W. Lent**, professor and co-director of the counseling psychology program in the Department of Counseling and Personnel Services, recently ranked No. 1 in graduate-level programs in its category by *U.S. News & World Report*.

Lent received a \$472,000 grant from the National Science Foundation to survey and follow students from September 2008 to 2011 to find out what predicts who will adjust well to and remain within STEM fields. The study will follow students during their first two years in college, when they are most likely to change majors, Lent says.

Although more women are choosing engineering majors, about 80 percent of engineering students at many universities are still male, Lent says.

The first cohort of students in this study involves 840 engineering students from the University of Maryland, Morgan State University and Virginia Tech. Lent also plans to follow a second cohort of students who start their freshman year next fall at the three universities, plus two additional historically black colleges.

Lent is studying both male and female students of various ethnic backgrounds to find out how important variables are depending on the gender or race of the student. The findings, Lent says, will be used to create a multidisciplinary network of educators, psychologists and engineers who can work on ways to get and keep more women and minorities in STEM careers.



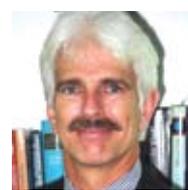
Robert W. Lent

## FACULTY AWARDS & HONORS

The American Geophysical Union selected three University of Maryland professors as Fellows for 2009. The union is a worldwide society of 50,000 researchers, teachers and students who share research to promote a better understanding of Earth and space. Designation as a Fellow is granted to less than one-tenth of one percent of the society's membership.



**ANTONIO BUSALACCHI**, a professor of atmospheric and oceanic science, conducts research on the role of tropical ocean circulation in the climate system. He is director of the university's Earth System Science Interdisciplinary Center, which investigates how the physical systems of the Earth—involving land, water and atmosphere—interact with living things.



**RUSSELL DICKERSON** is a professor and chair of the atmospheric and oceanic science department. His research focuses on the multidisciplinary areas of atmospheric chemistry and air pollution, specifically photochemistry and global biogeochemical cycles. One project involves studying the amount of tropospheric ozone in the Baltimore-Washington area.



**RICHARD WALKER**, a professor of geology, conducts research on the geochemical evolution of the Earth's crust and mantle as well as the origin and evolution of early solar system materials. He also studies the use of isotopes as tracers of Earth surface processes such as continental weathering and the movement of toxic metals through the environment.

## UPCOMING EVENTS & CONFERENCES

DIVISION OF RESEARCH SEMINAR SERIES

### CISE: Program Priorities and New Challenges

Featured speaker is Jeannette Wing, assistant director for Computer & Information Science and Engineering (CISE) at the National Science Foundation.

Thursday, March 12, 11 a.m. to noon

Stamp Student Union, Juan Ramon Jimenez Room

RSVP to [vpr@umd.edu](mailto:vpr@umd.edu) by March 9

### Successful Fulbright Applications

Featured speaker is Maria Bettua, assistant director, Council for International Exchange of Scholars.

Wednesday, March 25, 2 to 4 p.m.

Marie Mount Hall, Maryland Room

RSVP to [vpr@umd.edu](mailto:vpr@umd.edu) by March 20

### Successful Foundation Funding: Making the Connection and Writing the Winning Proposal

Featured speaker is Anita Plotinsky, consultant and former director of the Foundation Center for Washington, D.C.

Tuesday, April 21, 8:30 a.m. to noon

6137 McKeldin Library, Special Events Room

RSVP to [vpr@umd.edu](mailto:vpr@umd.edu) by April 15

For more information on any of these events, e-mail [geronimo@umd.edu](mailto:geronimo@umd.edu)



RESEARCH@MARYLAND

CONNECTING the UNIVERSITY of MARYLAND RESEARCH COMMUNITY

#### Office of the Vice President for Research

2133 Lee Building

University of Maryland

College Park, MD 20742-5121

[www.umresearch.umd.edu](http://www.umresearch.umd.edu)

The Division of Research publishes **RESEARCH@MARYLAND** several times per semester. Its goal is to better inform and connect the research community at the University of Maryland. Your comments and suggestions are welcome. Please e-mail them to Anne Geronimo, Division of Research, at [geronimo@umd.edu](mailto:geronimo@umd.edu).

Produced by University Publications for the Division of Research  
Mel Bernstein, vice president for research

Executive Editor: Anne Geronimo  
Writer: Susan Gvozdias  
Art Director: Jennifer Paul