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**Tuesday, May 7: EXCOM Meeting**

**Meeting starts at 5:30PM At TECO Plaza**

**Register online at <http://time2meet.com/fwcs-excom/index.html>**

**Open to all FWCS Members**

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**IEEE USA's Free E-Books**

IEEE-USA's Free E-Books to Members in April & May Highlight Technology Management & Keys to an Enjoyable & Rewarding Career

WASHINGTON (9 April 2013) - ...In May, IEEE-USA E-Books will offer "Launching Your Career: Lifelong Learning - Your Key to an Enjoyable and Rewarding Career," by former IEEE-USA President John Meredith.

This book is a guide for engineering students or new engineers just about to begin their careers. It offers a number of practical ideas that can help make lifelong learning a priority in pursuing an exciting and rewarding career.

To purchase IEEE members-only products, and to receive the member discount on eligible products, members must log in with their IEEE Web account.

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IEEE-USA advances the public good and promotes the careers and public policy interests of more than 206,000 engineering, computing and technology professionals who are U.S. members of IEEE.



**FERC Would Expand Security Standard for Energy Grid**

WASHINGTON, April 19 (UPI) -- A dozen new requirements for cybersecurity controls would help ensure the protection of the U.S. electrical grid, the Federal Energy Regulatory Commission said. FERC announced it was moving to strengthen cybersecurity standards through 12 requirements under the Critical Infrastructure Protection Reliability Standards.

"(The proposal) also would use a new, tiered approach to identifying and classifying bulk electric system cyber assets that is a step toward applying CIP protections more comprehensively to better assure protection of the bulk electric system," the agency said

[James Clapper](http://www.upi.com/topic/James_Clapper/), (http://www.upi.com/topic/James\_Clapper/) the top U.S. intelligence official, told the Senate Intelligence Committee last month that a major cyberattack on the United States posed a more grave and immediate threat than terrorism.

U.S. Rep. Patrick Meehan, R-Pa., chairman of the House Subcommittee on Cybersecurity, said "the gravest threat of state-sponsored cyberattacks comes from Russia, Iran and particularly China."

FERC said it was seeking public comment on the proposed CIP revisions for the next 60 days

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**IEEE USF Student Branch  
Spring Banquet**

On April 13<sup>th</sup>, the IEEE student branch hosted their Spring Banquet. Students, Professors, IEEE FWCS members, and their friends and families got together to recognize graduating seniors and the accomplishments IEEE USF has had over the past school year. We had an outstanding turnout of 48 guests. During the banquet next year’s officers were announced. Here are the following elected 2013-2014 IEEE USF Officers:

- Chair - Kenneth Almirol
- Vice Chair – Soufiane Daoudiya
- Secretary - Anne Carpenter
- Treasurer – Michael Miller
- S-PAC Chair – Ryan Gittens
- EXPO Chair – David Marcus
- Projects Chair – Sean Murphy
  - Projects Committee – TJ Ross, Younes Zamroudi, and Allen Gonzalez
- Membership Chair – Valerie McManus
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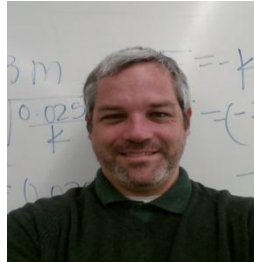
David Touvell  
IEEE USF Chair



**2013 Lignell Award Corrections**

The 2013 Lignell award winners were printed incorrectly in the April edition of the Signal newsletters.

Listed Below is the 2013 Lignell Award recipients.



Chris Hart (Wharton HS)



Cindy McDermott (Wesley Chapel HS)



Kevin Diez (Gaither HS)



**Obama Praises Future Scientists at  
White House Science Fair**

*Projects range from a new cancer test to a bicycle-powered water purifier (by Pat Wingert)*

WASHINGTON—With the third annual White House Science Fair as his backdrop, Pres. Barack Obama announced plans Monday to recruit one million new science, technology, engineering and math mentors from the private and public sectors to inspire many more students to pursue advanced educations and careers in those fields.

Saying he is taking an “all-hands-on-deck approach” to STEM (science, technology, engineering and mathematics) education, Obama said that in addition to recruiting an “army of new teachers in these subject areas,” the country needs “to give the millions of Americans who work in science and technology not only the kind of respect they deserve but also new ways to engage young people.”

The administration said it hopes to make the new mentoring initiative, part of the White House’s Educate to Innovate campaign, as common among STEM professions as pro bono work is among legal firms.

*Continued on page 6*



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### *Tampa LabCorp Tour*

- Speaker: Thomas Herman, PhD, Technical Director
- Location: Florida Division, Main Facility, 5610 West La Salle Street, Tampa, FL 33607  
(Can be accessed by turning north at the west limit of Cypress street)
- Date: Wednesday, 22 May 2013
- Time: 4.00 PM – 5:30 PM
- Register: <http://time2meet.com/fwcs-emb/index.html>
- Cost: Free of Charge to attend!  
Space limited to the first 20 registrants, so please RSVP online !!!
- Questions: Please contact john.west@ieee.org

Have you ever wondered what happens to the samples that were taken when your doctor prescribes a blood test, like a CBC-Complete Blood Count, Blood Glucose, and Blood Enzyme tests to name a few, or takes a sample for culture? If you would like to see how samples are processed then this tour is for you.

If you have ever had your blood drawn at a LabCorp facility, then your samples were delivered here or to one of the 150 LabCorp sites throughout the state, for testing. The Tampa facility processes samples from Florida, Mexico, and the Caribbean, and mostly within a 24 hour period.

With scientific expertise in esoteric testing, genomics, and clinical and anatomic pathology, LabCorp performs more than one million tests on more than 400,000 samples each day, and annually examines in excess of 10 million cytology and 2 million surgical pathology samples. LabCorp is a pioneer in applying advances in medicine and science to laboratory testing, with more than 35 years of experience in serving physicians and their patients.

LabCorp operates a sophisticated laboratory network, with corporate headquarters in Burlington, NC, and over 28,000 employees worldwide. Their 220,000 clients include physician offices, hospitals, managed care organizations, and biotechnology and pharmaceutical companies.

The headquarters for the Florida Region, the Tampa LabCorp facility processes over 30,000 samples on a 24/7 schedule using sophisticated and sensitive automation equipment from companies like Siemens, Beckman-Coulter, Sysmex, and others, each with specialized infrastructure and utility requirements.



### *IEEE USF Student Branch – Region 3 SoutheastCon.*

On April 5<sup>th</sup>-6<sup>th</sup>, the IEEE student branch attended and competed at this year’s Region 3 SoutheastCon in Jacksonville Florida and our Students did an excellent job representing the University of South Florida.



Below are the participants and results of the competitions:

Robotics Team (18 out of 52) - Shawn Gicka, TJ Ross, Sean Murphy, Joshua Browne, Daniel Ashley, and Bobby Leda

Website (2nd Place) - Palan Seemangal

Ethics Team (3rd Place) - Robert Orcutt, Santiago Torres, and Michael Miller

Software Team - David Touvell, Daniel Yordanov, and Palan Seemangal

T-Shirt - Khaled Mougharbel



Date: Tuesday, June 11, 2013

Time: Registration: 8:00 A.M. Seminar: 8:30 A.M. - 12:30 P.M.

Speaker: Dr. Ralph E. Fehr III, P.E., Electrical Engineering Department, University of South Florida

Location: Sand Pearl Resort, 500 Mandalay Ave. Clearwater  
 In conjunction with the Florida Electric Cooperatives Association (FECA)

Cost: \$100 Members, \$150 Non-Members, \$25 IEEE Student Members

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This seminar examines the causes of harmonics in a power system, the effects of harmonics on power system components, and means of mitigating those effects. Both the utility and the customer perspectives will be addressed. Graphical methods will be used to illustrate concepts to keep the mathematical complexity of this somewhat complicated topic to a minimum.

Speaker Bio: Dr. Ralph Fehr earned his B.S.E.E. degree from the Pennsylvania State University, his M.E.E.E. concentrated in Power from the University of Colorado at Boulder, and his Ph.D. from the University of South Florida. He has been employed in the electric power industry for over 20 years, has done consulting work on power systems, and has conducted a wide variety of power-related training courses worldwide. Dr. Fehr has contributed numerous articles to various trade magazines, and has authored Industrial Power Distribution, published by Pearson Prentice Hall. He is currently a member of the Electrical Engineering faculty at the University of South Florida and is a registered professional engineer.



**Obama Praises Future Scientists at White House Science Fair (continued from page 3)**

Ten education nonprofits and major technology companies, including SanDisk, Cognizant and Cisco Systems, have committed to become the founding members of a multiyear mentoring effort called US2020 that aims for 20 percent of each company’s workforce to commit to 20 hours a year to mentoring work by the year 2020. The 10 founding companies also pledged to provide more than \$2 million in private money to fund the program’s launch.

Before announcing the new mentoring initiatives, Obama went booth to booth through the science fair, staged inside the White House as well as in the sunny but windy Jacqueline Kennedy Garden on the South Lawn. The student exhibits featured the innovative work of about 100 winners of national and regional science, technology, engineering and math competitions held throughout the country. Many of the projects were completed with the help of mentors and after-school programs offered by schools.

Students, ranging in age from eight to 19, showed off projects that included a cost-efficient method of transforming algae into biofuel by 2013 Intel Science Talent Search winner Sara Volz, 17, of Colorado Springs, Colo., as well as 16-year-old Jack Andraka’s breakthrough pancreatic cancer test that he developed after identifying a key protein, mesothelin, produced by pancreatic tumors. The discovery won Andraka, of Crownsville, Md., first place in the 2012 Intel International Science and Engineering Fair.

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## Obama Praises Future Scientists at White House Science Fair (continued from page 6)

During his speech Obama mentioned that Andraka repeatedly requested space from research labs to pursue his experiments but was turned down nearly 200 times. “Finally, with the help of some folks at Johns Hopkins, he got the research facilities that he needed, developed a pancreatic cancer test that is faster, cheaper and more sensitive than the test that came before it—which is not bad for a guy who is just barely old enough to drive.”

Noting that Monday was also the 43rd Earth Day, Obama gave “a special shout-out to all of the young people...who focused their attention on how to harness cleaner forms of energy and how to create more energy efficiency.” These inventions included a wind turbine small enough to mount on a roof, a bicycle-powered [water](#) decontamination system capable of filtering out *Escherichia coli* and other dangerous pathogens from contaminated water, and an inexpensive press capable of transforming biomass waste (like banana peels and peanut shells) into compressed cooking fuel to combat deforestation—the latter, a winner of the Siemens We Can Change the World Challenge.

Kiona Elliott, 18, of Oakland Park, Fla., said her group’s pedal-power project was inspired by a fellow student who told them about the water contamination crisis she saw as a volunteer in Haiti after the 2010 earthquake. “We live in Florida and we have hurricanes here all the time,” Elliott said. Because big storms are often accompanied by power outages, they decided their system should be powered manually.

Obama seemed particularly charmed by the “COOL Pads” designed by the three youngest exhibitors who were the Grade K–3 Regional Winners of the 2012 Toshiba and National Science Teachers Association ExploraVision competition. The boys’ winning proposal used temperature sensors placed throughout football players’ bodies that detect overheating and respond by activating ice packs in the “COOL Pads” under the shoulder pads to prevent heat stroke.

The prototype, designed by brothers Evan and Alec Jackson, 10 and eight respectively, and their friend Caleb Robinson, eight, all of McDonough, Ga., also included a wearable soft pouch of Gatorade and an extra long straw so players could hydrate without leaving the field. “They can drink any flavor they want, and they don’t have to go to the sidelines for Gatorade,” said Evan Jackson. “It would also be good for firefighters, hockey players, NASCAR racers and the military.” The boys admit that they don’t have the technological know-how quite yet to make a working version of their proposal—they’re only in the third and fourth grades—but luckily, at their age, all they needed was a really good idea and a prototype to win their competition. “We hope to build it in 20 years,” Robinson said.

During his remarks in the East Room later that afternoon, Obama made a point of mentioning the COOL Pads to wide receiver Victor Cruz of the New York Giants, who was in the audience as an invited guest, adding, “It could work.”

More importantly, Obama said, these kids are excited about science, and now the challenge is to mentor that interest. “Think about that,” he said. “If you’re inventing stuff when you’re in third grade, what are you going to do by the time you get to college?”

Obama added that his goal is to “reach a level of research and development that we haven’t seen since the height of the space race.” In the meantime, he said, the science fair is a reminder that the country needs to celebrate “the outstanding contributions that scientists and engineers and mathematicians are providing to us every single day. And we want you to know that you’ve got a whole country behind you as you pursue your dreams. And your success is going to be our success as well.”

## *Miracle Microbattery? "Breakthrough" Is Promising, But Cycling and Safety Are Still Issues*

POSTED BY: Dave Levitan / Thu, April 18, 2013

Can I interest you in a microbattery with a power density better than the best supercapacitors—2000 times higher than other microbatteries—and energy density rivaling conventional lithium-ion batteries? Yes? Thought so.

A team of researchers at the University of Illinois report on a Li-ion microbattery composed of "three-dimensional bicontinuous interdigitated microelectrodes," and a [University press release](#) and a variety of media coverage has essentially decided the battery can save the world. While it is certainly impressive and may eventually fit a range of applications, there are still problems with the idea, and as of now it mainly exists in a paper in *Nature Communications*. It could take a while to go from the lab to your cell phone.

To the miracle claims: "The most powerful batteries on the planet are only a few millimeters in size, yet they pack such a punch that a driver could use a cellphone powered by these batteries to jump-start a dead car battery—and then recharge the phone in the blink of an eye." Whew!

Sounds great, right? I emailed Paul Braun, one of the researchers involved, and asked what the catch is. He said that though this battery can charge at speeds resembling capacitors, "a capacitor usually can be cycled millions of times. We have a long way to go in this regard. Almost all Li-ion batteries exhibit capacity fade with cycling, including our system." He added that this isn't a direct replacement for a capacitor, but "rather this is best for systems where the high energy density is particularly useful. Because of the 3-D structure, we can also provide capacitor-like power, but a million cycle life is quite unlikely."

The architecture of the batteries allows very short electron and ion transport distance; the entire fuel battery cell has a volume of 0.03 cubic millimeters. The design does yield impressive performance; as the press release says, "imagine juicing up a credit-card-thin phone in less than a second." The cycling question is definitely up in the air, though: in the paper, the authors write that the battery cell retained 64 percent of its initial energy after only 15 cycles, losing about 5 percent with each "low-rate" cycle. And the BBC reports (in one of the few appropriately skeptical pieces on the tech) that as the technology is scaled up for use in larger applications safety could become an issue thanks to the use of small amounts of a combustible liquid electrolyte.

I also asked Braun about manufacturing and if costs would be prohibitive, but he said the process would actually be relatively simple. "The key will be developing a manufacturing process which is compatible with both the battery and the device one wishes to power," he said.

Don't expect that all our devices will stay powered for a month after a one-second charge anytime soon, but there is clearly a lot of promise here. In the paper, the authors say the microbatteries could have a wide range of applications, "from medical implants to remote sensor networks."



# New System Makes It Easy to Report Copyright Infringement

By AMANDA DAVIS 19 April 2013

Anyone spotting unauthorized use of IEEE's intellectual property on a website or blog has always been encouraged to report it. And doing so is now much easier by completing an [online form](#) found in the IEEE Xplore digital library or simply by sending an e-mail to [infringement@ieee.org](mailto:infringement@ieee.org).

IEEE's IP can be infringed upon in a number of ways. For example, IEEE conference or journal papers and standards can be posted without authorization, or the IEEE name or logo can be misused. IEEE's legal and compliance department, along with marketing, sales, and product design review each report of infringement. If they decide IEEE's IP is being misused, the legal department sends the website's owner a notice asking that the content be removed.

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In 2012 alone, unauthorized IEEE content was removed from nearly 40 websites and 20 blogs. And misuse of the content is on the rise, according to Jon Wiggins, the legal department's attorney specializing in IP. "Advances in technology and increased production of high-quality IEEE content have made infringement a more pressing problem," he says. "We realized we could not detect all instances of piracy by ourselves—we needed help from the larger IEEE community."

In addition to the new reporting system, the department uses various alert services and relies on reports from other members of the publishing community. It also uses Contributor/Digimarc digital content protection software. This scans hundreds of millions of Web pages daily to find unauthorized reposting of IEEE content, and sends take-down messages to the website owners on behalf of IEEE.

Additionally, the IP Misuse Strategy team, which includes staff members from various IEEE departments, was formed last year to find new ways to protect IEEE intellectual property.



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May 2013 Calendar of Events (For more information see P. 1) *inside this Signal...*

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28	29	30	1	2 <i>PES/IAS EXCOM Village Inn 6am</i>	3	4
5	6	7 <i>IEEE EXCOM TECO Plaza 5:30pm</i>	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22 <i>EMB LabCorp Tour, 4:30pm</i>	23	24	25
26	27	28	29	30 <i>PES/IAS EXCOM Village Inn 6am</i>	31	1