

## Energy Keynote, Jazz Band, Raffle to Enliven May 1 Awards Banquet

"Energy" is the keyword for this year's IEEE National Capital Area Awards Banquet on Saturday, May 1. The festive evening will start with live jazz music and end with a raffle drawing.

The Saints of Sound Jazz Quintet, which delighted attendees at the 2008 banquet, is returning for an encore performance. Also during the reception, regional science fair winners will exhibit and talk about their work.

A keynote talk on emerging areas of energy investment will be delivered by Barry K. Worthington, Executive

Director of the United States Energy Association.

After an awards ceremony recognizing the accomplishments of IEEE volunteers, science fair winners, and the 2010 IEEE Fellows, a drawing will be held for raffle prizes including an HP Mini Netbook ultra-portable computer.

For a link to online registration, sponsorship details, Netbook specifications and more information, see the banquet website at <http://ewh.ieee.org/r2/capitalarea/banquet.html>. Also see the Calendar, p. 3.



**STEM Education in Action**—Fourth, fifth and sixth graders at Waples Mill Elementary School in Oakton, VA are building and programming robots under the guidance of teacher Yvonne Forsbergh (right) and her assistant, Cameron Thurman (back left), an Oakton High School senior and a member of the award-winning Oakton Robotics team. IEEE Northern Virginia Section Chair Barry Tilton visited the class recently and he shares his impressions in his column on p. 7. (Photo by Barry Tilton)

### In This Issue

Awards Banquet .....	1
IEEE-USA Annual Meeting ...	1
Individualized Healthcare ...	1
Calendar of Events .....	3
Local Email Options .....	6
Ultrasound Research.....	7
NV Chair's Column .....	7
Nanotechnology Council ....	7

## IEEE-USA Speakers Encourage Engineers to Innovate

By Raj Madhavan, Guru Madhavan and Ata Atanasov

The 2010 IEEE-USA annual meeting was held in Nashville from March 7 to 11. The theme of the meeting was "The Gathering Storm: Are you Engineering the Solutions?" Many of the sessions and discussions were centered on science, technology, engineering and mathematics (STEM) education and continuing career development.

Two keynote addresses were particularly noteworthy. An address by Norman R. Augustine, former CEO of Lockheed Martin and Chair of the National

Academy of Sciences panel that conducted the 2005 study, *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*, stressed the need to increase America's talent pool by vastly improving K-12 mathematics and science education. Augustine also underscored the importance of producing a cadre of engineers who are great innovators and entrepreneurs.

Dr. William A. Wulf, former President of the National Academy of Engineering, provided a fascinating insider's view of events leading up to the *Gather-*

*ing Storm* report, and the reactions after its release, both from the general public and members of Congress.

The meeting's emphasis on networking and social development was very beneficial to the attendees, who had a chance to engage, collaborate and learn from each other. Best practices to train new volunteers were discussed, and the meeting offered an essential component that email or the Internet cannot provide: face time with others doing similar tasks.

The attendees also had an opportunity to see *IEEE-USA*, p. 6

## Back to the Future: Individualized Healthcare

By Debi Siering

Not very long ago, perhaps during your grandparents' or parents' childhood, the doctor made rounds by visiting patients at home. By the mid-20th century, urban sprawl had forced patients to go to a doctor's office or a clinic to receive medical attention. Now, in the 21st century, the health care system is undergoing a renaissance with a twist of modern technology added.

This spring in Washington, DC, as Congress voted on an historic health care reform bill, the American Medical Association and the IEEE Engineering

in Medicine and Biology Society convened the AMA-IEEE Medical Technology Conference on Individualized Healthcare.

Keynote speakers Drs. Jay Sanders and Joseph Kvedar, from Johns Hopkins and Harvard respectively, described a transformation of the health care system by personalized health care services. The keynote speakers emphasized that the medical community must bring the exam room to the patient. They suggested this can be accomplished by using current technologies such as the Internet, making

See *HEALTHCARE*, p. 6



## Officer Training Day

After two postponements for snow, intrepid IEEE volunteers met at the University of the District of Columbia on February 27 for the annual IEEE Section, Chapter and Affinity Group Leadership Workshop. (Photo courtesy of Anna Romaniuk)



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\*Washington, Northern Virginia, and  
Baltimore Sections

**ON THE WEB****eScanner Calendar of Events**

The calendar is available at [www.ieee.org/escanner](http://www.ieee.org/escanner). Check here for events submitted too late for print publication.

**IEEE National Capital Area Virtual Community**

Exchange ideas and participate in discussions with local IEEE members at [www.ieeecommunities.org/ncac](http://www.ieeecommunities.org/ncac).

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**Engineering in Medicine and Biology Society (W/NV)**

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**EDITORIAL POLICIES AND PROCEDURES****Calendar Announcements**

Please submit calendar items in the format used in the Calendar of Events. You can send email to [ncac-scanner@ieee.org](mailto:ncac-scanner@ieee.org). Events must have an IEEE or affiliate sponsor.

If possible, include a synopsis of the event and a biographical sketch of the presenter including academic background, current position, notable achievements, and IEEE and other professional affiliations.

**Articles**

Other contributions, such as reports on chapter events and other member activities, are most welcome. Please submit articles to the managing editor at [ncac-scanner@ieee.org](mailto:ncac-scanner@ieee.org).

**Advertising**

Contact the advertising manager about ad rates and to place advertising orders. Ads must be submitted by the deadline below.

**Deadlines**

The editor reserves the right to set policies and procedures necessary to provide members with a newsletter that is informative and timely. Deadlines must be strictly observed to keep the publication on schedule. If you are planning an event and have insufficient information by the deadline, please contact the managing editor. The deadline for the upcoming issue will always be published on this page.

**July-August issue deadline:**  
**June 1, 2010**

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# calendar of events

## Saturday, May 1, 2010

### Career Survival for Engineers and Scientists in the 21st Century

- Sponsors:** IEEE-USA, Baltimore Section, Northern Virginia Section, Washington Section, National Capital Area Consultants' Network
- Speakers:** Ed Perkins, Past Chair, IEEE-USA Career and Workforce Policy Committee (CWPC); Dr. Henry Lindborg, Chair, IEEE-USA CWPC; Dr. Tarek Lahdhiri, co-chair, CWPC Subcommittee on Career Issues; and Murty Polavarapu, IEEE-USA Coordinator for Region 2
- Time:** 8:00 am to 2:00 pm
- Place:** Virginia Tech Advanced Research Institute, 4300 Wilson Blvd., Suite 750, Arlington, VA
- Directions:** See [www.ari.vt.edu/ari\\_directions.html](http://www.ari.vt.edu/ari_directions.html).
- More Info:** This career workshop will provide practical and powerful strategies to maximize your career talents, presented in a positive and entertaining way, with practical exercises. Topics will include adapting to globalization, developing a career strategy, conducting a job search, future employment trends for engineers, and taking advantage of IEEE-USA's resources and programs.
- Cost:** IEEE members \$20, student members \$10, unemployed members \$10, non-members \$30. (Pay at door, cash or check.)
- Contact:** Please register by 12:00 noon on Friday, April 30 at [http://meetings.vtools.ieee.org/meeting\\_view/list\\_meeting/2062](http://meetings.vtools.ieee.org/meeting_view/list_meeting/2062). For questions, contact Murty Polavarapu at [murtyp@ieee.org](mailto:murtyp@ieee.org) or 703-367-1497.

## Saturday, May 1, 2010

### Computer Society Virtual Meeting

- Sponsor:** Computer Society
- Speaker:** TBA
- Time:** Sound checks & socializing 11:00 am; presentation & discussion 12:00-1:00 pm
- Place:** IEEE Island 2, TCDL classroom, Second Life ([www.seconlife.com](http://www.seconlife.com))
- More Info:** The Computer Society holds monthly meetings on first Saturdays in the Second Life virtual community. Meeting topics may be administrative, social or technical. To participate, you must create a Second Life avatar. For a description of how to join the meetings, see the Second Life page on the Computer Society's website at [http://ewh.ieee.org/r2/wash\\_nova/computer/cms/](http://ewh.ieee.org/r2/wash_nova/computer/cms/).
- Contact:** Tom Starai at [starai@ieee.org](mailto:starai@ieee.org).

## Saturday, May 1, 2010

### IEEE National Capital Area Awards Banquet

- Sponsors:** Washington and Northern Virginia Sections
- Speaker:** Barry K. Worthington, Executive Director, United States Energy Association
- Time:** Reception 6:00 pm; dinner 7:00 pm; keynote address followed by awards ceremony 8:00 pm
- Place:** Crowne Plaza Hotel, 8777 Georgia Ave., Silver Spring, MD

- Directions:** From the Silver Spring Metro station (Red line), walk northeast on Colesville Rd. for two blocks, turn left onto Georgia Ave. and walk two blocks to the hotel on the right (total distance 0.2 mile).  
From the Washington Beltway (I-495), take Exit 31 (Georgia Avenue South). The hotel is the first high-rise on the left as you come into downtown Silver Spring, about 1 mile from the I-495 exit.
- More Info:** See story, p. 1, and <http://ewh.ieee.org/r2/capitalarea/banquet.html>.
- Cost:** \$75 per person (after April 19). Reservations are required by April 26.
- Contact:** Shelly Werner-Hood at [ssw@photon.com](mailto:ssw@photon.com) or 703-842-3823.

## Wednesday, May 5, 2010

### The NASA/Northrop Grumman Radar Partnership

- Sponsor:** Geoscience and Remote Sensing Society
- Speaker:** Dr. James B. Garvin, Chief Scientist, NASA Goddard Space Flight Center
- Time:** Refreshments 3:00 pm, program 3:30 pm
- Place:** NASA Goddard Visitor Center, 8800 Greenbelt Rd., Greenbelt, MD
- Directions:** From Washington, take the Baltimore-Washington Parkway (Route 295) North to Greenbelt Rd. (Route 193). Drive East on Greenbelt Rd. for approximately 2.5 miles. Turn left onto ICESat Road (formerly Soil Conservation Rd.). Turn left at the Visitor Center. See [www.nasa.gov/centers/goddard/visitor/home](http://www.nasa.gov/centers/goddard/visitor/home).
- Cost:** Free
- Contact:** James C. Tilton at [james.c.tilton@nasa.gov](mailto:james.c.tilton@nasa.gov).

## Monday, May 10, 2010

### Washington Section Administrative Committee Meeting

- Time:** 6:45 pm
- Place:** American Association for the Advancement of Science (AAAS), 1200 New York Avenue NW, Washington, DC
- Directions:** Use the 12th Street entrance. The AAAS building is one block from Metro Center (Red, Orange and Blue lines).  
Street parking is free after 6:30 pm (no parking 4:00-6:30 pm). There is a pay parking lot at the intersection of 9th St. and New York Ave., and a parking garage at 14th St. and New York Ave.  
See map at [www.aaas.org/dcwest.pdf](http://www.aaas.org/dcwest.pdf).
- More Info:** All interested IEEE members are welcome. A video link is available at [www.ieee.org/washsec/video1.html](http://www.ieee.org/washsec/video1.html).
- Contact:** RSVP to Monica Taysing-Lara at [m.taysinglara@ieee.org](mailto:m.taysinglara@ieee.org) or 202-725-2225.

## Tuesday, May 11, 2010

### Automated Freight Transportation Systems at Intermodal Port Facilities

- Sponsor:** Land Transportation Committee of the IEEE Vehicular Technology Society and American Society of Mechanical Engineers

- Speaker:** Dan Reiss, Automated Terminal Systems
- Time:** 11:30 am
- Place:** American Public Transportation Association, 11th Floor Conference Room, 1666 K Street NW, Washington, DC
- Directions:** Take the Metro to Farragut North station (Red Line, use K Street exit) or Farragut West station (Orange and Blue lines, use 17th Street exit).
- More Info:** All interested persons are invited. Membership in ASME or IEEE is not required.
- Cost:** \$20 cash at the door for lunch.
- Contact:** Please make lunch reservations by 4:00 pm, Friday, May 7 by sending an email to [vts.ltc.dc@gmail.com](mailto:vts.ltc.dc@gmail.com) or by calling Karl Berger at 703-803-7917.

## Tuesday, May 11, 2010

### ◆ The Art of Consulting, Part 5: Back Office Functions - Health Benefits (Lessons Learned)

- Sponsor:** National Capital Area Consultants' Network
- Speaker:** John Draper, Business Manager, Arius
- Time:** 6:30-8:30 pm
- Place:** University of Maryland, A.V. Williams Building, Room 2460, College Park, MD
- Directions:** From the north or I-495, take Route 1 South. Approx. 2 miles south of the Beltway, turn right onto Campus Drive, then immediately take Paint Branch Drive and the A.V. Williams Building will be on the right. Parking is free after 4:00 pm in most lots, but read the signs carefully! See [www.parking.umd.edu/themap](http://www.parking.umd.edu/themap).  
From the College Park Metro Station (Green line), take the free UM campus shuttle, get off at the first stop, walk back for a hundred yards, turn left onto Paint Branch Drive and look for the second building on the right. See shuttle schedule at [www.transportation.umd.edu/routes/schedules/CollegeParkMetro.pdf](http://www.transportation.umd.edu/routes/schedules/CollegeParkMetro.pdf).
- More Info:** See Diamond story, p. 5. IEEE members, student members, and guests are welcome. Sandwiches and drinks will be served.
- Cost:** \$20.
- Contact:** Please register by 12:00 noon on Monday, May 10 at [http://meetings.vtools.ieee.org/meeting\\_view/list\\_meeting/2046](http://meetings.vtools.ieee.org/meeting_view/list_meeting/2046). For questions, contact Rick Collins at [ieee.e-mail@arius.com](mailto:ieee.e-mail@arius.com).

## Wednesday, May 12, 2010

### Northern Virginia Section Administrative Committee Meeting

- Time:** 6:00-8:00 pm
- Place:** Olive Garden Restaurant, 8133 Leesburg Pike (Tysons Corner), Vienna, VA
- Directions:** From I-495, take Route 7 West (Exit 47A) toward Tysons Corner. Turn left at Gallows Road. Parking garage is behind the restaurant.
- More Info:** All interested IEEE members are invited to attend.
- Contact:** Dan Cross-Cole at [dcrosscole@devry.edu](mailto:dcrosscole@devry.edu) or 703-527-8072.



CALENDAR, from p. 3

**Thursday, May 13, 2010****Money: How It Is Created, and How We Got Into This Mess**

**Sponsor:** Life Members  
**Speaker:** Dr. Zalman Shavell, Economist  
**Time:** 12:00-1:00 pm  
**Place:** Tysons Pimmit Regional Library, 7584 Leesburg Pike, Falls Church, VA  
**Directions:** The library is located on Route 7 (north side) between I-495 and I-66. From I-66, exit onto Route 7 West (Exit 66 to Tysons Corner), proceed through the third traffic light (Tysons Station Shopping Center), and turn at the second right beyond the light. For additional directions and bus information, see [www.fairfaxcounty.gov/library/branches/ty/direct.htm](http://www.fairfaxcounty.gov/library/branches/ty/direct.htm).  
**More Info:** This presentation will look at the processes that are used to create money and how money markets function, and contrast the roles of various participants in this process and the effects of their participation on its outcome. It will then look at how the money markets were perverted in ways that have contributed to our current situation.  
**Contact:** Marty Lichtenstein at [mglichtenstein@ieee.org](mailto:mglichtenstein@ieee.org) or 571-926-9560.

**Tuesday, May 18, 2010****◆ Nanoparticles and the Immune System**

**Sponsor:** Women in Engineering  
**Speaker:** Dr. Marina Dobrovolskaia, Nanotechnology Characterization Laboratory  
**Time:** Networking & food 6:30 pm; presentation 7:00 pm  
**Place:** Martin Luther King Jr. Memorial Library, 901 G St. NW, Washington, DC  
**Directions:** Take the Metro to the Gallery Place-Chinatown station (Red, Yellow and Green lines) and use the 9th St. and G St. exit. There is no public parking at the Library. The closest paid parking lots are at 8th Street between G and H streets (PEPCO building) and H Street between 9th and 10th Streets. Metered parking is also available.  
**More Info:** See Diamond Story, p. 5.  
**Contact:** Please RSVP by 12:00 noon on May 18 to Varetta Huggins at [vhuggins@ieee.org](mailto:vhuggins@ieee.org).

**Thursday, May 20, 2010****◆ The Smart Grid and Its Opportunities and Challenges**

**Sponsors:** Power and Energy Society, Industry Applications Society  
**Speaker:** Dr. Saifur Rahman, Virginia Tech Advanced Research Institute  
**Time:** Refreshments at 6:00 pm; presentation at 6:30 pm  
**Place:** Virginia Tech Advanced Research Institute, 4300 Wilson Blvd., Suite 750, Arlington, VA  
**Directions:** From Ballston Metro Station (Orange Line), turn right at top of escalator then left on the street. Proceed two blocks towards Macy's, turn right and walk one block to Ballston Point at the intersection of Wilson Blvd. and Glebe Road.

If driving, see [www.ari.vt.edu/ari\\_directions.html](http://www.ari.vt.edu/ari_directions.html). There is a parking garage in the building with a \$1 charge for 3 hours. After 6:00 pm, there is limited street parking.

**More Info:** See Diamond story, p. 5. A light dinner buffet will be served, followed by the program. All interested persons are invited.  
**Cost:** Free for IEEE members, \$10 for guests.  
**Contact:** RSVP by 5:00 pm on Wednesday, May 19 to Susanne Dreier at [shdreier@ekfox.com](mailto:shdreier@ekfox.com) or 703-267-9543.

**Tuesday, May 25, 2010****Risk Management**

**Sponsors:** Computer Society, American Society for Quality (ASQ) Section 509 Software SIG, Society for Software Quality (SSQ)  
**Speaker:** Mark Witczak, Out of Nowhere  
**Time:** Networking & pizza 6:30 pm; program 7:00-8:00 pm  
**Place:** Videoconference with two local sites: (1) MITRE Corp., Building 2, Conference Room 1N100, 7515 Colshire Drive, McLean, VA, and (2) FDA, Bldg. 66, Room G512, 10903 New Hampshire Ave., Silver Spring, MD  
**More Info:** All interested IEEE members and guests are invited. Pizza and soda will be provided. If you cannot attend at either location, select telephone dial-in when you register and provide your Skype user ID.  
**Contact:** Advance registration required by 12:00 noon on Monday, May 24 at [www.asq509.org/ht/d/DoSurvey/i/26913](http://www.asq509.org/ht/d/DoSurvey/i/26913). If your plans change, please email [ankums@mitre.org](mailto:ankums@mitre.org) to cancel your reservation.  
**Important:** To RSVP for FDA (Silver Spring), please indicate citizenship. If not a U.S. citizen, please provide your job title, employer, and address. Allow two business days for registration before the meeting.

**Saturday, June 5, 2010****Computer Society Virtual Meeting**

**Sponsor:** Computer Society  
**Speaker:** TBA  
**Time:** Sound checks & socializing 11:00 am; presentation & discussion 12:00-1:00 pm  
**Place:** IEEE Island 2, TCDL classroom, Second Life ([www.secondlife.com](http://www.secondlife.com))  
**More Info:** For a description of how to join the meetings, see the Second Life page on the Computer Society's website at [http://ewh.ieee.org/r2/wash\\_nova/computer/cms/](http://ewh.ieee.org/r2/wash_nova/computer/cms/).  
**Contact:** Tom Starai at [starai@ieee.org](mailto:starai@ieee.org).

**Monday, June 7, 2010****Washington Section Administrative Committee Meeting**

**Time:** 6:45 pm  
**Place:** American Association for the Advancement of Science (AAAS), 1200 New York Avenue NW, Washington, DC  
**Directions:** Use the 12th Street entrance. The AAAS building is one block from Metro Center (Red, Orange and Blue lines). Street parking is free after 6:30 pm (no parking 4:00-6:30 pm). There is a pay parking lot at the intersection of 9th St. and New York Ave., and a parking garage

at 14th St. and New York Ave. See map at [www.aaas.org/dcwest.pdf](http://www.aaas.org/dcwest.pdf).

**More Info:** All interested IEEE members are welcome. A video link is available at [www.ieee.org/washsec/video1.html](http://www.ieee.org/washsec/video1.html).  
**Contact:** RSVP to Monica Taysing-Lara at [m.taysinglara@ieee.org](mailto:m.taysinglara@ieee.org) or 202-725-2225.

**Wednesday, June 9, 2010****Resurgence of U.S. Nuclear Power**

**Sponsor:** Life Members  
**Speaker:** Paul J. Nelson, Power Engineer  
**Time:** 12:00-1:00 pm  
**Place:** Tysons Pimmit Regional Library, 7584 Leesburg Pike, Falls Church, VA  
**Directions:** The library is located on Route 7 (north side) between I-495 and I-66. From I-66, exit onto Route 7 West (Exit 66 to Tysons Corner), proceed through the third traffic light (Tysons Station Shopping Center), and turn at the second right beyond the light. For additional directions and bus information, see [www.fairfaxcounty.gov/library/branches/ty/direct.htm](http://www.fairfaxcounty.gov/library/branches/ty/direct.htm).  
**Contact:** Marty Lichtenstein at [mglichtenstein@ieee.org](mailto:mglichtenstein@ieee.org) or 571-926-9560.

**Wednesday, June 9, 2010****Northern Virginia Section Administrative Committee Meeting**

**Time:** 6:00-8:00 pm  
**Place:** Olive Garden Restaurant, 8133 Leesburg Pike (Tysons Corner), Vienna, VA  
**Directions:** From I-495, take Route 7 West (Exit 47A) toward Tysons Corner. Turn left at Gallows Road. Parking garage is behind the restaurant.  
**More Info:** All interested IEEE members are invited to attend.  
**Contact:** Dan Cross-Cole at [dcrosscole@devry.edu](mailto:dcrosscole@devry.edu) or 703-527-8072.

**Tuesday, June 15, 2010****◆ Amtrak Passenger Fleet Update**

**Sponsor:** Land Transportation Committee of the IEEE Vehicular Technology Society and American Society of Mechanical Engineers  
**Speaker:** Dick Bruss, P.E., Program Director, Capitol Acquisitions, Amtrak  
**Time:** 11:30 am  
**Place:** American Public Transportation Association, 11th Floor Conference Room, 1666 K Street NW, Washington, DC  
**Directions:** Take the Metro to Farragut North station (Red Line, use K Street exit) or Farragut West station (Orange and Blue lines, use 17th Street exit).  
**More Info:** Dick Bruss, a long-time LTC member, will discuss Amtrak's rolling stock fleet, the current acquisitions programs and activities with states as a result of PRIIA Section 305 legislation. See Diamond story, p. 6.  
All interested persons are invited. Membership in ASME or IEEE is not required.  
**Cost:** \$20 cash at the door for lunch.  
**Contact:** Please make lunch reservations by 4:00 pm, Friday, Feb. 5 by sending an email to [vts.ltc.dc@gmail.com](mailto:vts.ltc.dc@gmail.com) or by calling Karl Berger at 703-803-7917.



**Thursday, June 17, 2010****◆ Variable Frequency Drive Harmonics Causes and Mitigation Techniques**

- Sponsors:** Power and Energy Society, Industry Applications Society
- Speakers:** Jeff Fehr, ABB Inc.; and Rob Schwarz, Havtech Corp.
- Time:** 6:00-8:00 pm
- Place:** Virginia Tech Advanced Research Institute, 4300 Wilson Blvd., Suite 750, Arlington, VA
- Directions:** From Ballston Metro Station (Orange Line), turn right at top of escalator then left on the street. Proceed two blocks towards Macy's, turn right and walk one block to Ballston Point at the intersection of Wilson Blvd. and Glebe Road.  
If driving, see [www.ari.vt.edu/ari\\_directions.html](http://www.ari.vt.edu/ari_directions.html). There is a parking garage in the building with a \$1 charge for 3 hours. After 6:00 pm, there is limited street parking.
- More Info:** See Diamond story, p. 6. A light dinner will be served before the program. All interested persons are invited to attend.
- Cost:** Free for IEEE members and non-members who bring a completed membership application form. \$10 for non-members.
- Contact:** RSVP by 5:00 pm on Wednesday, June 16 to Susanne Dreier at [shdreier@ekfox.com](mailto:shdreier@ekfox.com) or 703-267-9543.

**Tuesday, June 22, 2010****Computer Society Meeting**

- Sponsors:** Computer Society, American Society for Quality (ASQ) Section 509 Software SIG, Society for Software Quality (SSQ)
- Speaker:** TBA
- Time:** Networking & pizza 6:30 pm; program 7:00-8:00 pm
- Place:** Videoconference with two local sites:  
MITRE Corp., Building 2, Conference Room 1N100, 7515 Colshire Drive, McLean, VA  
FDA, Bldg. 66, Room G512, 10903 New Hampshire Ave., Silver Spring, MD
- More Info:** All interested IEEE members and guests are invited. Pizza and soda will be provided. If you cannot attend at either location, select telephone dial-in when you register and provide your Skype user ID.
- Cost:** Free
- Contact:** Advance registration required by 12:00 noon on Monday, June 21 at [www.asq509.org/ht/d/DoSurvey/i/26913](http://www.asq509.org/ht/d/DoSurvey/i/26913). If your plans change, please email [ankums@mitre.org](mailto:ankums@mitre.org) to cancel your reservation.  
To RSVP for FDA (Silver Spring), please indicate citizenship. If not a U.S. citizen, please provide your job title, employer, and address. Allow two business days for registration before the meeting.

**Saturday, June 26, 2010****◆ Technical Tour of NIST's Neutron Reactor Complex**

- Sponsor:** Nuclear and Plasma Sciences Society
- Time:** 9:30 am
- Place:** NIST Research Reactor Complex, National Institute of Standards and Technology (NIST), 100 Bureau Drive, Gaithersburg, MD
- Directions:** From the Capital Beltway (I-495), take I-270 North to Exit 10 (Quince Orchard and Clopper Rd.). Turn right at the light; then left at the next light.
- More Info:** This site visit will include a tour of the reactor facility, a history and an overview of the neutron research activities conducted at NIST. (The tour is nearly identical to IEEE's February 2009 tour.) IEEE members and their guests are welcome, however space is limited. Lunch at a local restaurant will follow the site visit. See Diamond story, p. 6.
- Contact:** To meet security requirements, advance registration is required by Tuesday, June 14. To register, please call Harry Sauberman at 703-323-0948 (home) or 703-868-3457 (cell). Or contact him at [hsauberman@ieee.org](mailto:hsauberman@ieee.org) with your (and your guest's) full name, gender and nationality. All attendees must bring a photo ID. Non-citizens must bring a passport and green card.

## diamond stories

**Tuesday, May 11, 2010****◆ The Art of Consulting, Part 5: Back Office Functions - Health Benefits (Lessons Learned)**

The National Capital Area Consultants' Network presents a new installment in the Art of Consulting series. The speaker will address lessons learned in the efforts of a small company to obtain health care insurance in Maryland. How to obtain health insurance, some of the options available, and a detailed description of the method chosen for a company of two people will be discussed. In particular, the advantages of Maryland's Comprehensive Standard Health Benefit Plan and how it relates to using a Health Savings Account (HSA) will be described. An HSA is a great way to not only pay for health expenses with pre-tax dollars, but also to provide a secondary retirement savings account.

**John Draper** is the business manager at a small consulting company, Arius, Inc., which provides board level design and manufacturing services for communications, control and signal processing to Fortune 1000 companies. Prior to Arius, Inc., Draper worked for Northrop Grumman as a communications consultant to the U.S. Navy for 20 years.

**Tuesday, May 18, 2010****◆ Nanoparticles and the Immune System**

Today, Nanotechnology is finding growing applications in industry, biology and medicine. The clear benefits of using nanosized products in various biological and medical applications are often challenged by concerns about the lack of adequate data regarding their toxicity. One area of interest involves the interactions between nanoparticles and the components of the immune system. Nanoparticles can be engineered to either avoid

immune system recognition or to specifically inhibit or enhance the immune responses. This presentation will review reported observations on nanoparticle-mediated immunostimulation and immunosuppression, how manipulation of particle physicochemical properties can influence their interaction with components of the immune system, and discuss challenges with immunological characterization of engineered nanomaterials.

**Marina Dobrovolskaia** is a Scientist at the Nanotechnology Characterization Laboratory (NCL), National Cancer Institute. Dr. Dobrovolskaia directs characterization related to the nanomaterials' interaction with components of the immune system. In animal models and in vitro, she develops and conducts assays to support preclinical characterization of nanoparticles and monitors acute or adverse effects related to the immune system.

Prior to joining the NCL, Dr. Dobrovolskaia worked as a Research Scientist at the Department of Immunology at a GLP-operated contract research organization in Richmond, VA. She has been supervising the design, development, and validation of bioanalytical ligand-binding assays to support pharmacokinetic and toxicity studies in a variety of drug development projects. Her areas of expertise include cell signaling, innate immunity, immunogenicity, and analytical methodology. She received her M.S. degree in biology and microbiology from the Kazan State University in Russia and her Ph.D. in biological sciences from the N.N. Blokhin Cancer Research Center of the Russian Academy of Medical Sciences in Moscow.

**Thursday, May 20, 2010****◆ The Smart Grid and Its Opportunities and Challenges**

The concept of the smart grid originated from the desire to make the grid—from the power station to the

end-use appliance—smarter, safer, reliable and more cost-effective using advanced sensors, communication technologies and distributed computing. A smart grid will look more like the Internet, where information about the state of the grid and its components can be exchanged quickly over large distances. It will also allow integration of new sustainable energy sources, such as wind, solar, off-shore electricity, etc. There are five attributes of the smart grid that need to work interactively for this concept to be a reality. These are: Technology, Standards, Cyber Security, Policies and Incentives, and Public Awareness.

At present there are efforts from various vendors globally to develop technologies which will become building blocks of this grid. At the same time, standards are being developed that can make technologies from different vendors interoperable so that many players will be able to participate giving customers a broad choice. Since much of the data related to the smart grid will reside on the Internet and it will carry personalized information, there are significant concerns about data integrity and privacy. Also, there must be policies and regulations in place that will encourage participation by creating a differential pricing structure for the electricity consumed, which will discourage peak load growth. Whether all of these will take root will depend on the end user finding value in participating in this opportunity. And this will depend on two things—awareness and incentives—which are interrelated. The public must be made aware of the benefits and challenges of participating including up-front investments.

**Saifur Rahman** is the director of the Advanced Research Institute at Virginia Tech where he is the Joseph Loring Professor of electrical and computer engineering. He also directs the Center for Energy and the Global Environment at the university. He is a Fellow of the IEEE and a member of the IEEE-USA Energy Policy Committee. He served as a program director in engi-

See DIAMOND STORIES, p. 6



## Local Email Options Include IEEE-USA News

A new local opt-in mailing list ([ncachairs-ieee-usa@ieee.org](mailto:ncachairs-ieee-usa@ieee.org)) will be used to disseminate information about IEEE-USA activities in building careers and shaping public policy.

Only members of the new list can post announcements. If you would like to be included, please send an email to Murty Polavarapu at [murtyp@ieee.org](mailto:murtyp@ieee.org). You can opt out at any time.

There is a separate [ncachairs@ieee.org](mailto:ncachairs@ieee.org) list for volunteers to spread the word about local chapter and section activities (non-IEEE-USA). You can opt in for this list also by sending an email to Murty Polavarapu at [murtyp@ieee.org](mailto:murtyp@ieee.org). The use of

any IEEE email lists is subject to the policy available at <http://elecomm.ieee.org/email-aup.shtml>.

Separately, the IEEE Northern Virginia and Washington Section Executive Committees have approved a motion to distribute *What's New @ IEEE-USA's Eye On Washington* communications to all section members. This newsletter highlights important federal legislative and regulatory developments that affect U.S. engineers and their careers. In addition to this biweekly newsletter, subscribers receive legislative bulletins and action alerts on IEEE-USA priority issues, including: retirement security, employment benefits, research and development funding, computers and information policy, immigration reform, intellectual property protection, and privacy of health and medical information.

You can change your *IEEE-USA Eye On Washington* subscription status by using the forms at <http://www.ieeeusa.org/communications/emailupdates/default.asp>.

## PerMIS'10 Workshop

The 2010 Performance Metrics for Intelligent Systems (PerMIS'10) workshop will be on September 28-30. It will be the tenth in a series dedicated to defining measures and methodologies of evaluating performance of intelligent systems. PerMIS'10 will emphasize the key role of performance assessment in developing intelligent systems that can co-exist with humans towards improving the quality of our lives intertwined with automation.

Selected papers from PerMIS'10 will be considered for publication in a special issue of the *International Journal of Intelligent Control and Systems*. An NSF poster session is also being planned with travel support for students. For details, see [www.nist.gov/mel/isd/permis2010.cfm](http://www.nist.gov/mel/isd/permis2010.cfm).



### Postdoctoral Associate Center for Energy and the Global Environment

Virginia Tech Advanced Research Institute (ARI) and the Bradley Department of Electrical and Computer Engineering invite applications for a Postdoctoral Associate. The applicant will mainly work on proposal writing, conducting research and assisting graduate students with research in the areas of electric power, alternate energy, smart grid and cyber-physical systems focused on energy domains. The successful candidate will support the director of ARI's Center for Energy and the Global Environment with coordination of related research efforts at partner institutions, as well as supporting program development and identification of new research funding opportunities. Please visit [www.ari.vt.edu](http://www.ari.vt.edu) for further information.

All candidates must apply on-line at [www.jobs.vt.edu](http://www.jobs.vt.edu) and search for posting number 0100155. Application reviews will begin May 1. The position will remain open until filled.

Virginia Tech has a strong commitment to the principle of diversity and, in that spirit, seeks a broad spectrum of candidates including, women, minorities and people with disabilities. Individuals with disabilities desiring accommodations in the application process should notify Robert Brown at the Advanced Research Institute, 703-387-6025, by the application review date.

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### HEALTHCARE, from p. 1

"electronic house calls," and having patients participate in and take responsibility for the monitoring and maintenance of their health.

In order for personalized medicine to be successful, the doctor and patient must move from periodic evaluations to continuous assessment. No longer will doctors compare an individual to an agglomeration of statistical data, but rather they will use a baseline of the patient's own data to assess and treat a particular condition. This requires ongoing interactions between the patient and health care providers to accurately collect, monitor, share and evaluate the patient's data.

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### IEEE-USA, from p. 1

portunity to get to know the IEEE President-Elect candidates via a welcome dinner forum.

The Washington and Northern Virginia Sections had good representation at the meeting. The Section, PACE and GOLD chairs participated in discussions and attended several interesting sessions.

It is our opinion that the Washington Section should expand the focus of our current activities to inform our membership that the benefits of being an IEEE member are not only to be part of a professional body, but also to be part of

changing the national conversation. This in turn could provide our Section with a basis to tune our activities to engage and energize our membership with new challenges and opportunities in grassroots communications, policy activism, and K-12 education—all discussed in various sessions of the annual meeting.

More information about the meeting and crisp summaries of various sessions can be obtained at <http://ieee-usa.blogspot.com>. Videos are available at [www.ieeeusa.org/calendar/conferences/annualmeeting/2010/video/default.asp](http://www.ieeeusa.org/calendar/conferences/annualmeeting/2010/video/default.asp).

### DIAMOND STORIES, from p. 5

neering at the National Science Foundation between 1996 and 1999.

Dr. Rahman is currently serving as the vice president for new initiatives and outreach for the IEEE Power and Energy Society and is a member of its governing board. In 2006, he served as the vice president of the IEEE Publications Board, and a member of the IEEE Board of Directors. He is an IEEE Distinguished Lecturer and in that capacity he has spoken on renewable energy, electric power system planning, intelligent power grid, environment and critical infrastructure protection related topics in over 20 countries in Asia, Europe, Africa, Australia and North America. He has published over 400 technical papers and presentations in the areas of his interest.

### Tuesday, June 15, 2010

#### ◆ Amtrak Passenger Fleet Update

Amtrak's car and locomotive fleet is aging, with much of the equipment nearing or at the end of its useful life. A fleet plan is being created to develop long-term plans to replace old rolling stock with new, modern equipment. Amtrak has begun the procurement process for new electric locomotives as well as long-distance single level passenger cars. In addition, PRIA (Passenger Rail Investment and Improvement Act) Section 305 legislation was passed to establish the "Corridor Equipment Pool Committee" to "...design, develop specifications for and procure standardized next-generation corridor equipment." This follows work begun by S4PRC (State for Passenger Rail Coalition) to develop such standards.

Dick Bruss has been with Amtrak over 33 years and is currently Program Manager for the Long Distance Single Level procurement. He began his career with Pullman Standard in Chicago in the field service dept, working primarily on NYCTA's R46 subway car project. He joined Amtrak in 1976 initially in Running Maintenance and two years later, moved into the Equipment Engineering area. Bruss was one of the primary engineers responsible for the electrical design when Amtrak converted its fleet to Head End Power.

He has been involved with nearly all types of Amtrak passenger cars and several types of locomotives, in system design and integration, developing maintenance procedures and particularly writing specifications for components, systems and vehicles, both overhauls and

new. More recently he was involved in project engineering roles, leading Amtrak's procurement of the initial order of P42's, F59PHI's and Surfliners, all of which were within budget, delivered on time and went into service immediately after commissioning. He has been active in APTA PRESS committees as well as FRA RSAC. He spent several years on the state corridor (S4PRC) activities. Most recently he led the effort to write the specifications for Corridor Bi-Level and Long Distance Single Level passenger car types.

### Thursday, June 17, 2010

#### ◆ Variable Frequency Drive Harmonics Causes and Mitigation Techniques

Variable frequency drives, in conjunction with our mechanical counterparts, are a great way to save pump and fan transport energy, and to eliminate DC power conversion losses for vertical transportation. However, the rectifier front end of these devices, and other devices such as uninterruptible power supplies, produce voltage and current harmonics on the power system. In excess, these harmonics can result in conductor overheating and shortened equipment life and interfere with proper operation of emergency generators.

The presentation will discuss what the harmonics are, and how they are produced, when and why to be concerned, how harmonics affect the complete power system and option to mitigate or reduce them.

### Saturday, June 26, 2010

#### ◆ Technical Tour of NIST's Neutron Reactor Complex

The National Institute of Standards and Technology (NIST), through its Center for Neutron Research (NCNR), operates a 20 MW nuclear research reactor at its Gaithersburg, MD facility. The device is the second largest research reactor in the U.S. It has been in routine use since 1969 and supports a broad range of neutron research activities including diffraction analysis, inelastic scattering analysis, activation analysis, depth profiling, interferometry and fundamental physics measurements. Additional information can be found at [www.ncnr.nist.gov/whatwedo.html](http://www.ncnr.nist.gov/whatwedo.html).



## Ultrasound Researcher Targets Heart Disease, Myofascial Pain

On March 22, the Engineering in Medicine and Biology Society chapter partnered with George Mason University's IEEE Student Branch to host an evening lecture by Dr. Siddhartha Sikdar on "New Functional Applications of Ultrasound Imaging."

Dr. Sikdar, a professor at the university, is a guest researcher with the Rehabilitation Medicine Department at the NIH Clinical Center and recent recipient of the NSF Career award. His talk focused on the ongoing research at his Biomedical Imaging Lab.

Two areas of research the lab is investigating are early detection of cardiovascular disease, and the study of a specific form of chronic pain, Myofascial Pain Syndrome.

Cardiovascular disease is a leading killer of Americans. A common test for blockages in arteries relies on measuring increased blood flow velocities using Doppler ultrasound. Doppler imaging suffers from the limitations of being highly operator dependent and requiring clear vessel visualization. On the other hand, clinicians have traditionally used the stethoscope to detect blockages by listening for sounds (or "bruits") produced by turbulent blood flow. *Auscultation*, the art of listening to sounds using a stethoscope, is subjective and can only detect bruits that reach the skin surface.

Dr. Sikdar's group has been developing a new method called Doppler Vibrometry, a technology that combines the simplicity of auscultation with the ability of Doppler ultrasound to quantify motion deep inside the body. This method relies on detection of the blockage by quantifying tissue vibrations associated with vascular sounds produced by turbulent blood flow. Since Doppler vibrometry relies on measurements from tissues surrounding arteries with blockages, it is less dependent on operator skill to visualize small blood vessels. Further, because ultrasound scattering from tissues is almost a thousand times stronger than scattering from blood, Doppler vibrometry can be more sensitive than Doppler velocity imaging. In addition, quantifying

the turbulence can lead to a better understanding of functional hemodynamic significance of arterial blockages.

A second area of the lab's research focuses on musculoskeletal applications of ultrasound imaging. Ultrasound is uniquely suited for musculoskeletal applications, because of the ability to perform real time interactive imaging in an office-based setting. One ongoing project is studying the mechanisms of myofascial pain syndrome, which is a chronic muscle pain syndrome that affects almost nine million people in the United States, yet is poorly understood.

In this syndrome, pain is associated with "trigger points" which take the form of palpable tender nodules in muscle. The lab is developing methods to study the physical properties of these nodules and the associated vascular environment by using ultrasound imaging, elastography and Doppler imaging. Elastography is a method for characterizing tissue mechanical properties by externally inducing vibrations at low frequencies and imaging using ultrasound. The nodules, being stiffer, vibrate with a lower amplitude compared to surrounding muscle, which can then be imaged using ultrasound.

Doppler imaging has shown some unique abnormalities in the vascular environment of symptomatic trigger points, suggesting a possible link between tissue properties and blood flow. These objective imaging measures can confirm and complement subjective clinical examination. This research would help establish objective diagnostic criteria, appropriate preventive and therapeutic strategies, and outcome measures of treatment efficacy for myofascial pain syndrome.

The Lab's research in cardiovascular disease and myofascial pain syndrome comes at a time when ultrasound devices are becoming increasingly mobile with a falling price point making them increasingly suitable for use in a physician's office. These factors will no doubt keep this an exciting area to keep an eye on. For additional information, please contact Dr. Sikdar at [ssikdar@gmu.edu](mailto:ssikdar@gmu.edu).

## Northern Virginia Section

### Robotics Class Gets Kids Excited About Engineering

By Barry Tilton, P.E.  
Chair, Northern Virginia Section

As I have mentioned in the last two issues, IEEE and the current administration have placed a great deal of emphasis on STEM over the last year. This is very important as a national policy matter from the perspective of the IEEE leadership and members, as the young children attending grade school right now will have to take over as our technical workforce in 10-12 years, as the majority of the current crop of scientists and engineers retire. If those children are nearly as intelligent, creative, enterprising and technically focused as the members of Ms. Yvonne Forsbergh's robotics class at Waples Mill Elementary School in Oakton, Virginia are, then we are going to be in good hands.

When I was in elementary school way back in the early 1970s, I remember playing outside in the yard after school with no idea what my possible professional future might be. Not these kids! This group of fourth through sixth graders is building and programming robots, as well as studying the mechanical, electrical and software underpinnings that make the devices possible.

Ms. Forsbergh and her assistant in the class, Cameron Thurman—a senior at Oakton High School and himself a member of the award winning Oakton Robotics team sponsored by IEEE Northern Virginia—teach the class once a week for an hour. They pick one aspect or component of the robot to focus on, and then allow the students to program and observe what does and doesn't work with the units—all the while teaching math



and science concepts in an entertaining and immediately useful way.

I had the opportunity to sit in on the class a few weeks back as the teams of 3 or 4 students worked with their LEGO robots—teaching them how to turn on command, and installing optical and pressure sensors for

later activities. I was given the opportunity to interrupt the class for a few minutes to talk about the function engineers and scientists play in society, and to advocate for the kids continuing in programs such as the LEGO class. The kids, who listened intently; are excited, engaged, and well on their way to learning about the practical aspects of the kinds of technology we have available to us as a society.

They are also very much out-of-the-box thinkers. For example, during my visit I explained that scientists discovered by observation that many plants turn brown when the days grow short and temperatures drop. I asked the group how an engineer could respond to the problem of keeping plants green longer, and one of this amazing group immediately volunteered that we should combine the DNA of the subject plants with some that didn't change.

According to Ms. Forsbergh, there are more programs like hers opening up in local schools. She mentioned efforts at McNair and Cardinal Forest Elementary Schools. I hope to have the opportunity to visit these activities sometime later in the year. Meanwhile, Ms. Forsbergh plans to expand the Waples Mill program to include more basic classes for kindergartners through third graders beginning after the spring break.

## Nanotechnology Chapter Holds Inaugural Meeting

The newly formed Northern Virginia and Washington chapter of the IEEE Nanotechnology Council held its first technical meeting on February 4. The



Dr. Fritze

Dr. Fritze described the Carbon Electronics for RF Applications (CERA) program sponsored by DARPA to develop the material

synthesis techniques for graphene and to develop high frequency devices with this revolutionary material. Significant progress has been achieved in a very short time by three teams headed by IBM, HRL Laboratories and UCLA, with other academic and government laboratories as team members. The timeliness of the topic was underscored by the IBM announcement on the following day about the 100GHz cutoff frequency demonstration (*Science*, Feb. 5, 2010).

The meeting was cosponsored by the Electron Devices Society and Microwave Theory and Techniques Society chapters. If you would like to be get involved in the Nanotechnology Council chapter activities, please contact Murty Polavarapu at [murtyp@ieee.org](mailto:murtyp@ieee.org). The chapter website is at [www.ieee.org/go/ntc\\_nca](http://www.ieee.org/go/ntc_nca).

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