



IEEE Pittsburgh Section



# Bulletin

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*All announcements for publication in a particular month's bulletin are due to the Editor by the 20th of the previous month. The accuracy of the published material is not guaranteed. If there is any error, please bring it to the Editor's attention. The Section's web site [www.ewh.ieee.org/r2/pittsburgh](http://www.ewh.ieee.org/r2/pittsburgh) has past issues of the bulletin and lots of other useful information*

## • *From the Chair*

Greetings, friends. I trust you are all doing well.

I am pleased to announce that Dr. James T. (Tom) Cain, a Life Fellow in our section and Professor at University of Pittsburgh, has received the IEEE Richard M. Emberson Award. This award is sponsored by the IEEE Technical Activities Board and was awarded to Dr. Cain for “valuable contributions to the Institute’s publications and for the advancement of Electrical and Computer Engineering in engineering curricula.” Dr. Cain has volunteered and tirelessly served IEEE and our section for many years. We extend our heartfelt thanks to Dr. Cain for all his service. Last month we congratulated long time section volunteer Gerry Kumnik on receiving the RAB Leadership Award.

Dr. Ralph Wyndrum, 2006 IEEE-USA president and President of the IEEE-USA Innovation Institute, visited our section on December 19, 2007 to discuss holding an innovation forum in Pittsburgh. We are still considering the issue, but since we are hosting the PES conference in 2008, we would likely hold the innovation forum in 2009 rather than 2008. We will be forming a committee to start planning the forum. Please let me know if you are interested in serving on this committee.

I am pleased to report that I have been contacted by members interested in starting local chapters of the Nanotechnology Society and the Lasers and Electro-Optics Society. If you are interested in assisting with the formation of these local chapters, please let me know and I will put you in touch with the appropriate people.

We have a number of new volunteers this year, but there are still open positions for next year. Our Section grows through the introduction of new ideas and different perspectives, and perhaps your contributions will make the difference. Please consider serving your Section and sharing your ideas.

Ralph Sprang  
Pittsburgh Section Chair  
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Engineering In Medicine & Biology Society  
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Women In Engineering – Chair: Jennifer Ploskina  
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### Committees

Consultants Network

Professional/Career Activities (PACE)  
Chair: Joe Kalasky, P.E. (see above)

Student Activities – Rajiv Garg, [rajivg@computer.org](mailto:rajivg@computer.org)

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2008 PES General Meeting Technical Program Chair – Dr. Kalyan Sen (Kal) [senkk@ieee.org](mailto:senkk@ieee.org) (724) 696-1611; General Chair - Dave Vaglia (see above)

## • *Women in Engineering (WIE) in Pittsburgh - Inaugural Meeting*

When: Thursday, January 10, 2008, 7PM  
Where: Soba Lounge, Ellsworth Ave, Shadyside  
Who: Anyone interested in promoting Women in Engineering  
Why: Plan 2008 Activities and Select Officers

Thanks to the support of the IEEE Pittsburgh Section's Executive Committee, and positive response from IEEE members in Pittsburgh, the Women in Engineering (WIE) affinity group for the Pittsburgh Section has been formed and sanctioned. Our first step as an affinity group is to have our inaugural meeting, plan for 2008 and select officers.

Anyone interested in attending the meeting is asked to contact Jennifer Ploskina at (412) 716-2066 or [jenniferploskina@eaton.com](mailto:jenniferploskina@eaton.com). If you are interested, but cannot attend due to schedule conflicts, please advise as well. Our goal is to promote women in engineering by cooperation with similar organizations such as the Society of Women Engineers (SWE) and Women in Nuclear (WIN). All are welcomed and encouraged to "move the needle" to make engineering a chosen profession for both men and women alike.

## • *"WHY NOT NUCLEAR?"*

Speaker: Joseph T. Cioletti, PE., Principal Engineer, Westinghouse Electric Company  
Date: Wednesday, January 23, 2008  
Time: Social 6:30 PM, Program 7:00 PM  
Place: Westinghouse Energy Center  
Cost: No Charge but RSVP Required by Wednesday January 16, 2008  
Sponsors: Power Engineering Society/Industrial Applications Society.  
Organizer: Dr. Kal Sen, P.E., [senkk@ieee.org](mailto:senkk@ieee.org) or 724-696-1611.



*Abstract:* Commercial nuclear power has always been a controversial topic in the media, especially since Three Mile Island and Chernobyl. Over the last several decades, changes throughout the industry have provided advancements in safety and operating efficiencies, making nuclear power a safe, economically viable and sound option for our energy future. The purpose of this presentation is to lay out the facts in a reasonable manner that shows a clear-cut case for expansion of nuclear power plants in the U.S.

*About the speaker:* Joe Cioletti's passions are connecting with people, technology and new market development. Joe is a Principal Engineer with Westinghouse Nuclear working on AP1000 Instrumentation and Control as well as being a speaker's bureau member. He holds BS and MS degrees in Electrical Engineering

from the University of Pittsburgh and is a registered Professional Engineer in the Commonwealth of Pennsylvania. He serves as secretary for the 2007 IEEE Pittsburgh section executive committee. Earlier this year he recently represented the SW PA region for the 2007 IEEE Washington, DC 'Fly-in' by meeting with congressional members on H1-B immigration issues. He is an inventor on 5 US patents. Joe also 'grew up' with nuclear – his father was an engineer at Westinghouse Bettis for nearly his entire 41-year career. [More Info...](#)

- ***A Biomolecular Detection Device Employing an Optofluidic Photonic Crystal for Resonant Fluorescence Emission Enhancement***

Date: Monday, Jan. 28, 2007  
Time: 4:00-5:00 PM  
Location: G39 Engineering Sciences Building, West Virginia University  
Speaker: Dr. Jeremy Dawson, West Virginia University  
Contact: RSVP not required; contact Matt Valenti for directions: [valenti@ieee.org](mailto:valenti@ieee.org)

The detection of biomolecules through the use of fluorescence emission has become commonplace in performing environmental and biomedical diagnostics for counter-bioterrorism, DNA/protein identification and classification, agricultural sciences, and many other applications. Fluorescence emission methods offer excellent sensitivity and low detection limits for a wide range of fluorescent label/molecule combinations. However, the 'bench-top' nature of diagnostic systems that employ these methods does not lend well to sample analysis outside of a dedicated laboratory. The combination of optics and microfluidics into *optofluidic* systems has provided a means of creating portable integrated platforms for performing fluorescence emission analyses in fieldable systems. Photonic crystal (PhC) materials enable the application of optical bandgap engineering in optofluidic systems, further enhancing their utility and range of function. A photonic bandgap can be formed in a photonic crystal material by periodically varying the refractive index in 1, 2, or 3 dimensions, creating a nanoscale lattice structure that is analogous to the atomic structure found in homogenous crystalline materials. The design and fabrication of this engineered lattice, as well as the controlled introduction of lattice defects, allows the unique properties of 2-dimensional PC structures to be exploited in a variety of optical biosensor designs. This seminar will present the design of a photonic crystal-based sensor for selective biomolecule detection using an enlarged air hole microcavity tuned for resonance with a fluorescing biomolecule. This novel approach to biosensing is based upon photonic crystal defect structures that are engineered to act as waveguides, optical resonant cavities, and microfluidic flow channels. Simulation results indicating 10-15x fluorescence emission intensity enhancement will be discussed, as well as initial fabrication methods used to achieve PhC structures in silicon and gallium nitride substrates.

**Dr. Jeremy Dawson** is an Assistant Research Professor in WVU LCSEE and Physics. He leads the photonic crystal sensor research efforts undertaken as part of the WVNano Initiative spearheaded by WVU. Dr. Dawson has an extensive background in micro- and nanofabrication methods and integrated optics and MEMS/NEMS device design.

## • ***Engineer's Week 2008 - Call for Volunteers***

Once again the IEEE will have a demonstration table for Engineer's Week 2008 at the Carnegie Science Center on Saturday, February 16. The event table is a fun and effective way for the IEEE to communicate to our youth that electrical engineering can be both enjoyable and challenging. Volunteers are needed to take a turn at the table for about 1 hour each. If you are interested, please reply with the time slot you would like by February 10. The 1-hour slots will begin with the first at 10 AM.

The demonstrations by the IEEE and other engineering societies and companies will take place from 10 AM to 5 PM. In addition to ours, there will be over 60 exhibits by other local technical societies. They expect more than 600 engineers and over 4500 children and adults to attend. The volunteers get an E-Week T-shirt, free admission, free parking, and \$2 off coupon for family members.

In general, the idea is to get the children involved. The IEEE table will be setup about 8 AM including some signage and pamphlets on careers in electrical engineering. We will demonstrate some simple electrical circuits: hands on items for the children. Do you have other ideas? Something you would like to demonstrate? Please bring it with you.

A Volunteer Orientation will be held in February at the Carnegie Science Center with details provided in a future Bulletin. The orientation is helpful but not required. Pizza and soft drinks will be provided.




*To volunteer to help with the IEEE table for 2008 Engineer's Week, just email [tom.dionise@ieee.org](mailto:tom.dionise@ieee.org), and you will be given more details and included in future mailings.*

## • ***Robot Car Race - Call for Volunteers***

The Pittsburgh section of the IEEE will be having its annual *IndEEE 500 cm* Robot Car Race at the Carnegie Science Center on Saturday, February 16, 2008. We need volunteers to help the 8<sup>th</sup> grade students build and program their cars. We also need laptop computers to do the programming with the students. The teachers and students have been very appreciative of your work in the past and look forward to the race.

The program starts at noon and is over by 4:30 PM. Please let me know if you are interested in helping out this year. Please contact Rajiv Garg at [rajivg@computer.org](mailto:rajivg@computer.org).

Volunteers: print the discount coupon below for your family to attend National Engineers Week.



**National Engineers Week**  
**February 15-16, 2008**


Join the celebration! Explore the exciting and fascinating world of engineering. Admission includes exhibits, Buhl Digital Dome, submarine and SportsWorks®.

[www.CarnegieScienceCenter.org](http://www.CarnegieScienceCenter.org)

Tickets subject to availability. Not valid with other discounts, online purchases, BODIES...The Exhibition, Omnimax films or laser shows. This voucher cannot be replaced if lost or stolen.

Discount valid only on February 15-16, 2008

**\$2 off**  
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Limit to four (4) per coupon



**CARNEGIE  
SCIENCE  
CENTER**

One of the four Carnegie Museums of Pittsburgh

- ***IEEE-USA Challenges Pgh. Section to Host an Innovation Forum***

Ralph. W. Wyndrum, CEO IEEE-USA Innovation Institute challenged the IEEE Pittsburgh Section to host an Innovation Forum for the Pittsburgh Region during his talk on December 19 at the University of Pittsburgh. Ralph explained the IEEE-USA founded the Innovation Institute, homed in Washington DC, to advance the preparation of leaders responsible for the innovation of new products and services, through a formal program of courses, workshops, mentoring and networking. Ralph said, “One such workshop is the Innovation Forum that provides face-to-face training for mid-level managers, current and future leaders from industry academia and government.” According to Wyndrum, top innovation leaders with extensive first-hand experience lead the two-day Innovation Forum consisting of real case studies, group discussions and exercises, breakfast discussion topics, large company vs. small company issues, and other interactive experiences to learn what it takes to lead and be an innovator. The first Innovation Forum held in Washington DC in November of 2007 kicked-off a series of regional forums planned for 2008 and 2009, one of which Wyndrum hopes will take place in Pittsburgh. Watch the Bulletin for the Pittsburgh Section’s response to this challenge.

- ***IEEE Foundation Announces 2008 Application Deadlines***

The IEEE Foundation, Incorporated, the philanthropic arm of the IEEE, is committed to improving the technological literacy of society from childhood through adulthood. One way the IEEE Foundation seeks to achieve this goal is by awarding grants to new and innovative projects. During 2008, unsolicited applications will be accepted in three cycles from IEEE units and other organizations working in areas of relevance and importance to the IEEE and its membership. Projects should achieve one or more of the following objectives:

- Improve primary and secondary science, technology, and math learning
- Encourage pre-university students to consider engineering as a career path
- Increase the public's understanding of the role of engineers and technology in society
- Preserve the history of IEEE associated technologies
- Tap the technological expertise of IEEE members
- Demonstrate ability to be replicated

Application deadlines:

Deadline	IEEE Foundation Meeting Date
4 Jan 2008	Mar 2008
18 Apr 2008	Jun 2008
5 Sep 2008	Nov 2008

Before submitting the online application, please review “How to Apply for a Grant” (<http://www.ieee.org/organizations/foundation/grants.html>). All applications will be considered for funding by both the IEEE Foundation Board of Directors and the IEEE Life Members Committee. Questions should be directed to the IEEE Foundation Administrator at +1 732 981 3435 or [foundation-office@ieee.org](mailto:foundation-office@ieee.org).

• ***EvalWare: Signal Processing for Robotics***

With the capabilities of robots improving dramatically and their cost dwindling, robots hold increasing promise for the successful execution of several challenging tasks. The IEEE Robotics and Automation Technical Committee has a comprehensive database with many links to overviews and tools. The following helps to identify robots and robotics advances by tasks, classes and performance.

TUTORIALS AND OVERVIEWS:

- <http://thth.berkeley.edu/tab-db/>
- <http://www.roboticonline.com/>

The Robotic Online site, sponsored by the Robotic Industries Association (RIA), is a site that addresses topics for practitioners.

COMPUTER VISION FOR ROBOTICS:

- <http://homepages.inf.ed.ac.uk/rbf/CVonline/>
- <http://www.cs.cmu.edu/afs/cs/project/cil/ftp/html/vision.html/>
- <http://www..robot.uji.es/EURON/visualservoing/tutorial/materials>

The computer Vision on line site contains an excellent tutorial for robot and computer vision algorithms, applications and systems and an impressive list of in-depth discussions from segmentation to DSP solutions to real-time applications. It is written and updated by multiple contributors.

## 2008 Calendar – Meetings of IEEE Pittsburgh Section

	Jan	Feb	Mar	Apr	May	June	July	August	Sept	Oct	Nov	Dec
Executive Committee	17 - 7pm Panera Bread Oakland											
Section		16 Engineers Week table										
Communi- cations												
Computer		16 Robot car race										
EMBS												
EMCS												
PES/IAS	16 - AdCom 6:00 PM Panera Bread Penn Center 23 - Why not nuclear	27 Electric Vehicle Land Speed Record										
Magnetics												
Robotics												
Signal Processing												
Social Impl of Technlgy												
Upper Mon	28 Biomolecular Detection Device	4 Radio Astronomy										
Women in Engineering	10 Inaugural Meeting											
Life Member												
GOLD												
PACE												
Student Activities												