

September 2004

See us on the WEB at: [www.ewh.ieee.org/r2/susquehanna](http://www.ewh.ieee.org/r2/susquehanna)**September 2004 Section Meeting****New Discoveries by Recent Missions to Mars**

**Date:** Tuesday, September 14, 2004  
**Time:** "Wunderbot II" Presentation 6.00 PM  
Dinner 6.30 PM  
Presentation 7:30 PM  
**Dinner:** Susquehanna Room in Myer Hall  
Elizabethtown College  
Elizabethtown, PA  
**Dinner Cost:** \$10  
**Location:** Same as dinner location  
**Contact:** (by email if possible)  
Dr. Troy McBride  
717-361-3755  
E-mail: [mcbridet@etown.edu](mailto:mcbridet@etown.edu)

**RSVP to Dr. Troy McBride, [mcbridet@etown.edu](mailto:mcbridet@etown.edu), by 9/09/04 so we can get the catering count right for our hosts.**

Note: To handle the flow, please arrive as early as 5:45 PM; no later than 6:00 PM. Menu: Caesar Salad, Pan Roasted Breast of Chicken with Apples, Fresh Sage and Brandy Demi-Glace, Roasted Red Potatoes, Fresh Asparagus, Cheesecake with Fresh Strawberries, Rolls/Butter, Coffee/decaf/tea/ water, (Vegetarian plate is possible if requested ahead of time.)

**September's Program**

Join the IEEE Susquehanna Section's blockbuster September 14th meeting as we welcome back Dr. John Wood from NASA for a talk entitled, "New Discoveries by Recent Missions to Mars" (abstract on page 2). This month's meeting will be held at Elizabethtown College (location/directions on page 2). As a special pre-dinner feature, the Robotics and Machine Intelligence Club of Elizabethtown College will show their autonomous robot, "Wunderbot II". The Club consists of 20 computer engineering and computer science students at the College. This past June, they entered their robot in Annual Intelligent Ground Vehicle Competition in Michigan.

**May Section Meeting**

On May 11th, members were treated to a tour of Electron Energy Corporation in Landisville, lead by Dr. JinFang Liu, their Director of Technology, and Payal Vora, a Process Engineer. As a vertically integrated US supplier, Electron Energy Corporation develops, produces and markets samarium cobalt (SmCo) and neodymium iron boron (NdFeB) sintered and bonded permanent magnets and magnet assemblies. They have been dedicated to improving rare earth

permanent magnet performance to meet the most technically demanding applications in aerospace, military, medical, electronics, instrumentation and motion control markets since 1970. The late Marlin Walmer, a pioneer in samarium cobalt magnet technology, founded EEC. With a long history of providing innovative solutions for a variety of customer requirements, their technical expertise, and their ability to precisely control material compositions allow them to partner with their customers as a virtual "in-house" source of magnet technology.

EEC accomplishments include technology leadership in early commercial production of Samarium Cobalt 1:5 magnets. They later commercialized SmCo 2:17, followed by a new series of SmCo 2:17 magnets, patented in 2002, which can operate at temperatures up to 550 degrees C. 250 degrees C above any other SmCo magnet available in the world. EEC is one of the only two American-owned producers of rare earth magnets. EEC's 40,000 square foot fabrication facility, custom-built in 1985 near Lancaster, PA, is the production site where their talented staff continually exceeds customer expectations for Boeing, Teledyne, L-3 Communications, Northrop Grumman and others on demanding applications for the F-18, F-16, Patriot, and Navy nuclear programs.



IEEE members saw how EEC's customers benefit from extensive knowledge of magnet materials and processes and sophisticated in-house magnet design capabilities with high performance 2D and 3D electromagnetic design software. Their objective is to help customers identify and solve their application challenges by developing and optimizing systems using EEC custom-made magnets. They also offer fast prototyping, design optimization, magnet testing and selection recommendations, manufacturability assessment, pre-production trials, and production of magnets and magnet assemblies. Thank you to EEC for an excellent background presentation and tour.

## Our Honorable Speaker

Dr. H. John Wood is an astronomer and serves as an optical engineer for the Optics Branch at NASA's Goddard Space Flight Center. Since June 1990, he has been Optics Lead Engineer on the Hubble Space Telescope (HST) Project. He led the team that successfully determined the optical prescription of HST while on orbit. He then led NASA's effort to develop and test the corrective optics for HST. In addition to his work on Hubble, he currently serves as Science Liaison in the Instrument Synthesis & Analysis Laboratory for new Earth Science and Space Science instrument engineering design at Goddard.

A graduate of Swarthmore College, Dr. Wood earned the M.A. and Ph.D. in Astronomy from Indiana University. He has been at Goddard Space Flight Center for 20 years. In addition to the Hubble Project, he has been Lead Optical Engineer on other Goddard projects: the Mars Observer Laser Altimeter and the Diffuse Infrared Background Experiment aboard the Cosmic Background Explorer (COBE). Earlier he was assistant to the director at Cerro Tololo Interamerican Observatory (Chile) for two years. He held a Fulbright Research Fellowship for two years at the University Observatory in Vienna, Austria. He also served five years as a staff astronomer at the European Southern Observatory in Chile. His career began with six years on the astronomy faculty of the University of Virginia at Charlottesville.

Winner of the 1992 NASA exceptional service medal and the 1994 NASA exceptional achievement medal for his work on COBE and HST, he is the author of 50 research papers in astronomy and space optics. He was invited by the Optical Society of America to edit special editions of Applied Optics and Optics and Photonics News on the HST first servicing mission. He was co-chair of the HST Independent Optical Review Panel that was charged with the determination of the optical parameters for the HST while on orbit.

## Talk Abstract

Dr. Wood began working with Mars images in the early 1960's at Lowell Observatory in Flagstaff Arizona. As a graduate student, he was employed two summers as research assistant to Earl C. Slipher who had spent his professional career photographing Mars and the other brighter planets. Then at NASA Goddard Space Flight Center in the late 1980's, Dr. Wood had the opportunity to participate in building the Mars Observer Laser Altimeter (MOLA), which has produced the most amazing topographical map of Mars. Most recently, Mars Orbiter Camera (MOC) photographs

from orbit show remarkable geographical features showing evidence for past flows of water. They also show dust devil tracks and have caught dust devils in action. Finally, the Mars Exploration Rovers Spirit and Opportunity show close-up evidence of hematite and stratigraphic rocks indicative of flowing water on small scale.

The talk will begin with a short review on the status of the Hubble Space Telescope and the possible robotic servicing mission. Some pictures from the Cassini mission to Saturn will also be shown.

## Directions to Elizabethtown College

**From Harrisburg:** Take Route 283. Follow 283 East to Elizabethtown/Hershey exit and turn right at the end of the ramp onto Route 743 South. Travel south on Route 743 to Elizabethtown. Turn left on Market Street (Route 230). Go past College Avenue and turn left onto Cedar Street. Follow directions from Cedar Street below.

**From Lancaster:** Travel west on Route 283 to the Elizabethtown/Rheems exit. Turn left at end of exit ramp onto Cloverleaf Road and proceed one mile to Route 230. Turn right and travel west to Elizabethtown. You will be on South Market Street. Several blocks past Lemon Street, turn right onto Cedar Street. Follow directions from Cedar Street below.

**From York:** Take Route 30 East. Get off after crossing the river and follow Route 441 north. Turn right on Route 743. You will go through Maytown and enter Elizabethtown. Turn left onto South Market Street. Travel several blocks and turn right onto Cedar street. Follow directions from Cedar Street below.

**From Cedar Street to Myer Hall:** You will see the college on your left. Park in the Elizabethtown Church of the Brethren parking lot at Mount Joy and Cedar Streets. Walk across Cedar Street to Myer Hall. Enter the Susquehanna Room by way of the ramp.

You can access other directions to Elizabethtown College at [www.etown.edu/web/directions](http://www.etown.edu/web/directions), and find campus maps at <http://www.etown.edu/campustour/campusmap>.

## Upcoming Events

October 12<sup>th</sup>: Dr. Chris McLean speaking on wireless sensor technology  
November 9<sup>th</sup>  
December 14<sup>th</sup>

## Planning to Take the April 2005 Engineering Exam?

Penn State Harrisburg is offering the Fundamentals of Engineering and the Civil/Sanitary/Structural, Environmental and Electrical Professional Engineering Review courses starting in the fall 2004. Taught by engineering faculty as well as professional engineers working in the field and prepare you to take the exam by practicing problem solutions, minimizing test anxiety and establishing built-in study time.

Visit the website:

<http://www.hbg.psu.edu/ce/noncredit/profengrev.shtml>

or contact Brenda L. Firestone, M.Ed, [blf3@psu.edu](mailto:blf3@psu.edu), Penn State Capital College, 116 EAB, 777 W. Harrisburg Pike, Middletown, PA 17057, (717) 948-6538.

## Call for Section Nominations

Nominations are sought for Susquehanna Section Officer Positions for 2005. Nominations should be sent by no later than October 15, 2004 to Ed Simoncek at [simoncek@iee.org](mailto:simoncek@iee.org) or Stan Telson [st@qspp.com](mailto:st@qspp.com). Candidates should be Member grade or above in good standing with the IEEE. You may also discuss these positions with Larry Brown or Omid Ansary, who form the nominating committee. In the event of multiple candidates for any office, there will then be a ballot process in November. Nominations are sought for:

- Section Chair
- Section Vice Chair (Program Chair)
- Treasurer
- Secretary

## 2005 Engineers Week Award

Nominations are now being accepted for the 2005 National Engineers Week Awards to be presented by the Central Pennsylvania Engineers Week Council. The Engineers Week Council anticipates honoring three individuals who have made outstanding contributions to the engineering field with the following awards: Engineer of the Year, Young Engineer of the Year, Technical Achievement Award.

The awards will be presented at the National Engineers Week Banquet to be held on Thursday, February 24, 2005.

Nomination applications, including complete eligibility requirements for each of the awards, are attached. In addition, the applications are available to download from the Central

Pennsylvania Engineers Week Council website ([www.cpewc.org](http://www.cpewc.org)). All applications must be received by November 24, 2004. If you have any questions, feel free to contact Keith Markel, P.E., Chari - Awards Committee at 717-763-7212 ext 2765, or [kmarkel@gfnet.com](mailto:kmarkel@gfnet.com).

### Useful Information Column

#### Susquehanna Section Chair

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#### Q/A-C Column

Do you have any questions or comments? Call, email or FAX it to our Chair at the above address.

#### Newsletter Mailing or WEB Page Notification

If you do not receive your Newsletter, please notify AB Shafaye [mes121@psu.edu](mailto:mes121@psu.edu) or Vittal Balasubramanian [b.vittal@iee.org](mailto:b.vittal@iee.org). If you would like to convert from paper copy mailing of the Newsletter to WEB page delivery, please notify AB Shafaye, who serves as our Publisher.

#### Address Changes and Updates

There are several ways to correct member information with IEEE. They update their directory from the information you provide, and pass the changes to us monthly. Keeping your address information up to date will ensure accurate mailings.

- There is a WEB based interactive "change of address" form at: <http://services1.ieee.org/membersvc/coa/intro.htm>
- You can send an email to: [address-changes@iee.org](mailto:address-changes@iee.org)
- Call IEEE Member Services at 1-800-678-IEEE
- Mail changes to  
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 445 Hoes Lane  
 P.O. Box 1331  
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- FAX changes to 1-732-981-9667

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