



IEEE *The Open Channel*

Newsletter for the Hampton Roads Section of the IEEE
The Institute of Electrical and Electronics Engineers, Inc.

http://www.ewh.ieee.org/r3/hampton_roads/

Volume 1 – No. 4

April 2004

"Carbon Nanotube: Synthesis and Applications"

Speaker: Dr. Sacharia Albin

Professor & Graduate Program Director

Electrical and Computer Engineering,

Kaufman Hall 231

Frank Batten College of Engineering and Technology

Date/Time: Thursday, April 15, 2004 at 6:30 PM

Location: Kaufman Hall 103, Old Dominion University **757.683.3000**

5115 Hampton Boulevard., Norfolk, VA 23529

Cost: Members and guests \$20; Students \$10

Among the many allotropic forms of carbon, carbon nanotube has received considerable attention world wide due to its unique properties and prospects for exciting applications. The presentation will discuss the results on synthesis and electrical applications that are currently underway in the Nanotechnology Lab at ODU.

Biographical sketch: Dr. Sacharia Albin [salbin@odu.edu] received BS and MS degree from the University of Kerala in 1969 and 1971, respectively, and Ph.D. from the University of Poona, India, in 1976. He has worked as a design engineer in microelectronics at Hindustan Aeronautics, India. He was a Post-Doctoral Research Fellow at the University of Liverpool, England. He has conducted research in Si and GaAs electronic devices and semiconductor lasers while working at research laboratories of GEC and ITT, and published articles in this field. His research interests include materials and processes for VLSI devices, nanotechnology, and photonics. Dr. Albin joined Old Dominion University as an Associate Professor of Electrical and Computer Engineering in the Fall of 1986. He was appointed to full professor in 1996. Dr. Albin is currently the Graduate Program Director of the ECE department.

Directions to Old Dominion University: Please see page 4

Reservations: Please forward RSVP to Dr. Robert Dawes [757-621-6284 or dawes@ieee.org] early with your meal choice or if you have questions about the meeting..

Checks: Checks should be made out to IEEE and brought to the meeting.

Future Meetings

May 15 Social Meeting – Spirit of Norfolk

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All materials for THE OPEN CHANNEL are due by the 25th day of the month preceding the issue month. Address all correspondence to:

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From the Editor

In a show-of-force (somewhat) the three of EXCOM board (Tim Gavin, William Clayton and myself) showed up in Greensboro, NC for the SouthEastCon 2004. We were there to for the primary purpose of attending the Region 3 EXCOM, we also spent time learning what we could do to better serve our members. I believe we did accomplish that and more.

In his first year as Region 3 Director, William Harrison (w.harrison@ieee.org) delivered what amounted to the 'State of the Region' address. In his address he stated that the Region 3 is recognized by its peers, in the US and abroad, for innovative projects and programs. Other regions, especially widely dispersed regions such as Region 8, Region 9 and Region 10 are extremely interested in the way Region 3 conducts business via electronic meeting technologies.

One of Mr. Harrison's goals is to identify a Women In Engineering representative at the Region 3 level. He is looking for volunteers or nominations? If you are interested in the Region 3 position, please contact Mr. Harrison.

Enough of the Region 3 news, on to the SouthEastCon's main attraction: the Student Competitions. From the region 38 of 44 eligible schools participated in five events. The hosts of the Student Conference were: North Carolina A & T, University of North Carolina - Greensboro, and Guilford Technical Community College.

Web Page Design

- 1st Florida Atlantic University
- 2nd Florida International University
- 3rd Southern Polytechnical University

Software Design:

- 1st University of Central Florida
- 2nd North Carolina A & T
- 3rd Mississippi State University

T-Shirt Design

- 1st Southern Polytechnical University
- 2nd University of Florida
- 3rd Old Dominion University

Student Paper

- 1st Christian Brothers University
- 2nd University of Central Florida
- 3rd Old Dominion University

Hardware Design:

- 1st Tennessee Tech
- 2nd University of North Florida
- 3rd University of Tennessee - Knoxville

Like many section and region leaders, I have many hats. In addition to being the newsletter editor, I am also the section membership development chair. Membership in IEEE and Hampton Roads has been dropping. There are many reasons. Among the reasons is a member having to drop their membership because they can no longer afford to pay the full annual fee. Members are carried in the arrears for up to three years before they are fully removed from section rolls. It has been observed that a member that does not renew their membership in the first year usually never returns. Members that find themselves in an out-of-job state can arrange to temporarily pay half the regular membership fee. Contact IEEE or me for more information.

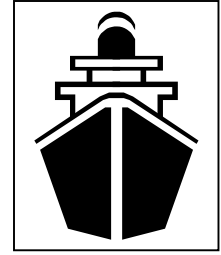
William LaBelle

Spirit of Norfolk – Robert Dawes

The month of May is when the Hampton Roads section traditionally holds its annual Family Fun Meeting. There's no technical stuff here, just an opportunity for our family members to get to know one another. Last year we met at the Williamsburg Winery where we had a great time touring the cellars and tasting the wine.

This year, on Saturday, May 15, we've scheduled a harbor cruise aboard The Spirit of Norfolk. This will be a lunchtime cruise and it features lunch, music, dancing, a narrated tour of the Navy yards and sightseeing for two hours. All this, and you pay only \$20 per person. There is also a pay-as-you-go bar. We board at 11:00 AM for departure at 11:30 and return at 1:30. The Spirit sails from her berth at Waterside, and there is convenient parking in the city parking garage adjacent to the Waterside Marriott Hotel.

We have projected a demand for about 30 seats, but we need your RSVP by April 15 in order to finalize our group reservation. Please RSVP to me, your section Vice Chair, at dawes@ieee.org and tell me how many will be in your party. (Singles are welcome too, by the way.) I look forward to meeting you and your family.



Nominations for the Virginia Engineering Awards Committee Crozet and Pletta Awards are due by 15 April.

The Crozet Award recognizes a Virginia state or local government engineer who has exhibited outstanding leadership in technical and non-technical fields as well as public service in the Commonwealth. The award honors Colonel Claudius Crozet who was Principal Engineer of Virginia from 1823 to 1842.

WHO IS ELIGIBLE

- Any engineer licensed in Virginia who, on the date of his or her nomination, is an employee of the Commonwealth or one of its political subdivisions (cities, counties, towns, authorities) is eligible.
- The nominee need not be a Virginia resident and may be in a technical or managerial position.
- Employees of educational institutions are not eligible for the Award.

The Pletta Award recognizes a Virginia engineering educator who has exhibited outstanding teaching and public service in the Commonwealth. The award honors Professor Dan H. Pletta, P.E., who taught Engineering Mechanics at Virginia Polytechnic Institute and State University from 1932 through 1972, and continues to be nationally recognized as an authority on engineering ethics and professionalism.

WHO IS ELIGIBLE

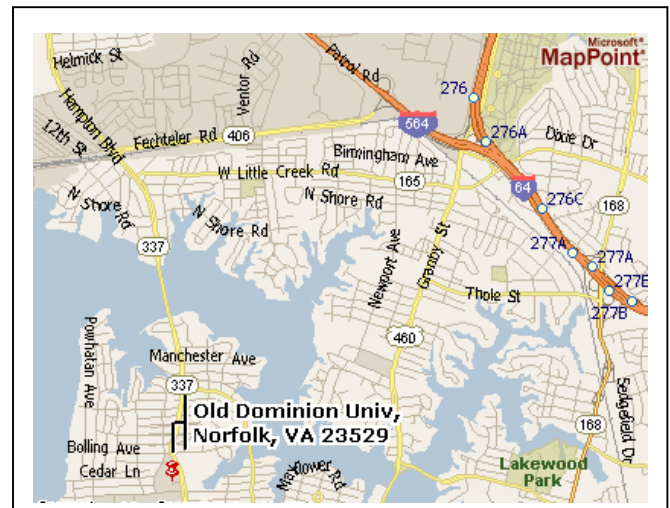
- Any engineering educator in Virginia who, on the date of his or her nomination, is employed by an institution of higher education in Virginia that has one or more programs accredited by ABET-EAC.
- The nominee need not be a Virginia resident and may be in a teaching or administrative position.

Complete details and award nomination forms are available in the Awards section of our web site, http://ewh.ieee.org/r3/hampton_roads.

Directions to Webb Center, ODU

Directions from the Peninsula:

1. I-64 E until you reach exit 276, VA-406/NAVAL BASE/TERMINAL BLVD. This exit is about nine miles away once you emerge from the Hampton Roads Bridge-Tunnel.
2. Once on the exit ramp, stay right as it splits into a "Y". Once on 564, stay right again, following the first exit for "Terminal Blvd."
3. Continue straight through two traffic lights, and at the third light, turn left onto Hampton Blvd.
4. From here directions change based on the location of the event. Please see below:
7. Follow Hampton Blvd. to 49th Street (approximately 3 miles)
8. Turn right on 49th Street
9. Turn left onto Elkhorn Ave.
10. Parking is in Lot #27 on Elkhorn Ave.



Directions from the South Side:

1. 264 toward Portsmouth/Norfolk.
2. Follow signs to St. Paul's Boulevard.
3. At the third light, make a left onto Brambleton Ave.
4. Follow Brambleton until you see signs for Hampton Blvd./ODU.
5. Bear right onto Hampton Blvd.

6. From here directions change based on the location of the event.
7. Follow Hampton Blvd. to 43rd Street (approximately 3 miles)
8. Turn left on 43rd Street
9. Turn left onto Elkhorn Ave.
10. Parking is in Lot #27 on Elkhorn Ave.

IEEE REGION 3 DANIEL W. JACKSON AWARD

27 March 2004 K. REED THOMPSON

Reed was Region 3 Director from 1982-83. He retired in 1994 after 40 years with General Electric, where he worked after receiving his BEE & MSEE from Georgia Tech.

His citation is ...

"For exemplary and dedicated service to **IEEE** Region 3, the Institute, and the profession following service as Region 3 Director."

Reed has filled numerous Region 3 positions and committees since he ended his term as Director. An important contribution was writing software for the Region 3 Treasurer with an instruction book, programming which was adaptable to all IEEE sections. Three editions were written. In addition to Region 3 service, Reed has filled many slots with the Institute and the Virginia Mountain Section. He has been an active member of various non-IEEE organizations, including NSPE, VSPE, GE Management Assn., and five NEMA standards committees. He's a Registered Professional Engineer. After eight years service in U.S. Army Reserve, he was discharged as 1 st LT.



He has quite a list of publications authored for GE and presented at IEEE conferences. Reed also has a string of awards, including the Region 3 Outstanding Service Award, the IEEE Centennial Award, various GE awards, Tau Beta Pi and Eta Kappa Nu at Georgia Tech, and several Who's Who listings.

Of particular note, Reed holds 7 US patents, 2 French patents, and one each from UK, Sweden, Germany, Italy, & Japan!

Busy in his community, Reed was the first Eagle Scout in Bacon County and has served as a merit badge counselor in several fields. To prove he still had the right stuff, he even took the MENSA exam at age 68 and passed with flying colors!

Of particular note: After being diagnosed with prostate cancer in 1996, Reed became an active spokesman and advocate, alerting all men to get checkups for early diagnosis so as to avoid ending up with the disease too advanced to get a cure -- as he did. Through managing his own disease he has become a great resource for information and comfort for others to draw upon. He is also an information source for doctors, helping them learn about the latest treatments -- and they call on him to counsel some of their patients. His treatments are sometimes a doctor's first use of them -- and the doctors learn on him!

Dan Jackson once described Reed Thompson as his IEEE mentor. Certainly, it's appropriate that Reed now be awarded the prestigious Daniel W. Jackson Award!

IEEE Events and Announcements

SIEDS 2004

The 2004 IEEE Systems and Information Engineering Design Symposium will be held on Friday, April 16th, 2004 in downtown Charlottesville at The Omni Hotel.

Professor K. Preston White (SIEDS '04 Committee Chair) has mentioned that there is still a window of opportunity for those interested in presenting papers to submit one. The SIEDS 04 Conference is currently accepting submission of one-page abstracts for expanded presentation in a 30-minute format at the Symposium.

Those requesting further information on the 2004 IEEE Systems and Information Engineering Design Symposium are encouraged to visit our website at:

<http://www.sys.virginia.edu/sieds04>

Consider this a unique opportunity. Please don't hesitate to contact us should you have questions or concerns about your paper abstract and participation in the Symposium.

Local Engineering Announcements

SoutEastCon 2007: The VA Council has delivered a letter of intent to host SoutheastCON 2007 in the Richmond/Williamsburg area to Region 3. In order to start our proposal effort, we will be holding a Southeastcon 2007 Kick-Off Meeting on Saturday, April 24th at Dominion's Innsbrook Facility starting 10:00 AM. Working Lunch will be provided.

Please RSVP to a.hamzey@ieee.org and s.a.haynes@ieee.org if you are able to attend.

Agenda will be available online @ the Virginia Council Website (<http://www.ieee.org/vc>)

Anyone that is interested is welcome to attend.

Local Engineering Events inputs

Are you organizing or sponsoring a local event of interest to the engineering community? Do you know of one? Let us know! Send your event announcement to me, William LaBelle (w.labelle@ieee.org), for publishing in the next edition(s) of *The Open Channel*. Additionally, your event can be announced, or a link established, on the section web site. The section newsletter reaches about 1000 local IEEE members each month. It is a free resource that you can't ignore.

Brain Teaser Challenge Solution by Butch Shadwel

March 2004

At the time I am writing this, I haven't received any answers to the last BTC. As you recall, I was reminiscing about some robotics work I did in England years ago, which brought me to this problem; "Henry ... pneumatically actuated ... joints were operated by air pistons. The elbow used a 1" cylinder to move his forelimb out and in again. This cylinder had a 1/4" piston rod. Henry's arm extended just fine but would hesitate while retracting. The arm retraction was powered by the cylinder's retraction motion, as opposed to the extension motion. With a 90 pound air supply, how much force was the cylinder applying to the retraction function?"

A lot of folks don't know that all piston actuators do not supply the same force in both directions, even with the same fluid supply pressure. First the force generated for extending the piston comes from the entire piston surface, in this case 0.785 sq. in. This results in an extension force of 70.7 lbs. When the fluid is forced into the retraction side of the cylinder, the piston area is reduced by the cross sectional area of the piston shaft. The piston size is effectively reduced by this amount at the point of attachment. So the effective piston size in this direction is 0.735 sq. in., resulting in only 66.2 lbs. of force in this direction, a 6.4% reduction. But I bet you already knew that.

April 2004

Have you ever wondered about the true origin of mermaids? I know what you're thinking, mermaids – right, another one of Butch's ridiculous premises for a technical problem. As it turns out, mermaids are real. I'm talking about beings that are female human at the top end and fishy below the waste. A few years back I used to navigate on ocean racing yachts. On one practice cruise I kind of messed up, and we got lost. Fortunately, after we had been out of drinking water for a whole day, we came upon a small atoll somewhere in the Bermuda polygon.

It was a godsend. There was fresh water there and a few fruit bearing trees. We were saved...or were we? A number of the crew had been trying in vain to catch some fish. The fruit was nice but we needed more protein. On the third night, we were startled by some splashing at the waters edge. When we arrived to see what was responsible, we found three red fish lying neatly in a row on the beach.

We assume these were left by a mermaid. Whether we were right or not didn't matter, believing in her gave us the will to live. We also had the will to listen to the radio. After a storm we found a transistor radio kit washed up on shore. The schematic was there but we couldn't recall the IF amplifier frequency for an AM band super heterodyne receiver. What the beat frequency that is amplified in the most common form of kind of this radio receiver?

Reply to Butch Shadwell at b.shadwell@ieee.org (email), 904-223-4510 (fax), 904-223-4465 (v), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. (<http://www.shadtechserv.com>) The names of correct respondents may be mentioned in the solution column.

IEEE-USA Today's Engineer (March 2004)

Contract Engineering: A Viable Career Alternative

While many engineers still seek permanent, full-time employment, others are turning to contract engineering as an alternative. What is contract engineering; what are the benefits; and what are the challenges?

<http://www.todaysengineer.org/mar04/contract.asp>

Getting to Know Your Customers

If you are just beginning your engineering career, you might be wise to concentrate on getting to know your customers—really know them. You'll realize your long-term development goals sooner and gain experience, as you earn your customers' confidence and respect.

<http://www.todaysengineer.org/mar04/customers.asp>

IEEE-USA Pulse: Engineering Equality as Important as Job Availability

While much talk surrounds the question of whether or not an engineering shortage actually exists, many believe an issue just as worthy of debate and action is engineering equality. What is IEEE-USA doing to encourage young women, minorities, people with disabilities and the disadvantaged to consider engineering a viable career choice?

<http://www.todaysengineer.org/mar04/equality.asp>

Reader Poll: The Virtual Workforce: A Concept Unfulfilled?

Some years ago, industry leaders predicted that computers would help create a paperless office environment. Others forecast that most workers would work in virtual offices as members of virtual teams. The reality has been quite different.

<http://www.todaysengineer.org/mar04/poll.asp>

Immigrant Worker Debate Remains a Hot Topic

The refueled debate over immigration has some thinking that corporations may press Congress for another H-1B increase. With the H-1B visa limit now set at 65,000, concern is growing about companies that seek talent from other countries misusing the L-1 visa program to make up for the smaller H-1B pool. Professional organizations and interest groups are divided on the visa caps issue.

<http://www.todaysengineer.org/mar04/debate.asp>

Blackout 101 Forum Educates Hill Staff

The 2003 "Northeast Blackout" left more than 50 million people in the dark last August. What happened? The IEEE Power Engineering Society and IEEE-USA sponsored a "Blackout 101" forum for members of Congress and their staffs, to educate them on how North America's electric power system works; what can go wrong; and how we can prevent future large-scale power blackouts.

<http://www.todaysengineer.org/mar04/blackout101.asp>

Also in this issue:

Engineering Hall of Fame: Frederick Terman and the 100th Birthday of Eta Kappa Nu

Capitol Shavings: Senate Approves Pension Legislation, Urges House to Act Quickly

World Bytes: Surviving Without a Salary

IEEE-USA President's Column: Offshoring Challenges Reader Feedback

To read TE, go to: <http://www.todaysengineer.org>

April 2004 Calendar of Events

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---------------------|--------|---------|-----------|--|-------------------------|----------|
| | | | | 1 | 2 | 3 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 <i>Easter</i> | 12 | 13 | 14 | 15 <i>IEEE Section Meeting – ODU; Tax Day</i> | 16 <i>SEIDS 2004</i> | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | |

May 2004 Calendar of Events

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---------------------------|--------|---------|-----------|----------|--------|---|
| | | | | | | 1 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 9 <i>Mothers Day</i> | 10 | 11 | 12 | 13 | 14 | 15 <i>IEEE Meeting – Spirit of Norfolk</i> |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 30 |
| 31 <i>Memorial Day</i> | | | | | | |