



Recent Advances in Photonic Devices for RF/Wireless Communication Applications

Date/Time: Tuesday, October 12, 1999 6:00 PM

Location: Raytheon Systems Company St. Petersburg

Reservations : Leave name & country of citizenship with Greg Bonaguide at (727) 302-3367. Join us for dinner after the meeting.

Abstract

This presentation gives an overview of the requirements of the photonic components in their insertion in applications such as CATV, antenna remoting and base station connections in wireless communication systems. While the driving force for their use is bandwidth, the eventual limiting factors would be cost and reliability. The presentation reviews the advances in the state-of-the-art photonics devices such as laser diodes, high power lasers, external modulators, semiconductor amplifiers, erbium doped fiber amplifier, and photodetectors. Comparisons will also be made regarding the direct modulation scheme versus the external modulation scheme.

Biography

Dr. Yu is a professor in the Department of Electrical and Computer Engineering at the University of California at San Diego (UCSD). At UCSD he is teaching courses in fiber-optics and optoelectronics as well as conducting research on semiconductor materials and devices for various photonics and microwave applications. His research interests include: lasers in the near infrared wavelength region for optical communication and optical interconnection; optical/RF scheme for narrow-band, high center frequency microwave transmission; high speed, high power optical detectors and high speed waveguide modulator devices for both digital and analog modulation; high power semiconductor optical switches for microwave generation; and electronic analog-to-digital conversion using high speed optical switches. He is one of the founding members of the IEEE AP/ED/MTT Chapter of San Diego, and is presently a Senior member of IEEE.

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October 1999

Chair's Comment

by Al Rosenheck

What's the image we project to the public as engineers, and why are there not more women in engineering? A recent Harris Poll showed 61% of Americans feel they are not very well informed or not at all about engineering and engineers. When separated by gender, 78% of women feel they are not informed about engineering and engineers.

What does the average American think engineers do? More than half surveyed relate engineering to construction, building, designing, drawing and planning. About 5% still relate engineering to railroad train operators. Only 20 % believe we are inclusive of women and minorities. What is surprising is that only 3% of those polled associate engineers with being creative, inventing, pioneering, or seeking knowledge.

Nationwide, only 8.5% of all engineers are female according to the Women in Engineering Program Advocates Network. The traditional male stronghold, the Society of Automotive Engineers, reports only 5% of its members are female. Though overall the number of women engineers has risen in the last ten years from 120,000 to 228,000, few would rave about the progress of females or minorities in our profession.

Part of the difficulty of attracting women and minorities to the engineering profession is tied to our public image. We need to break down preconceived ideas of engineering and show the profession to be rewarding and exciting. Professionals need to work with young people and educators in schools and universities, support science programs, provide role models and use the press to publicize IEEE activities. Our section supports many of these activities at the local level and while we are making measurable progress much more needs to be done in community relations and outreach activities. If you would like to support such activities, call our PACE Chair, Mark McKeage at (727) 826-4393 and plan to attend our next executive committee meeting.

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All material for THE SUNCOAST SIGNAL is due by the Friday following the 1st Thursday of the month preceding the issue month.

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IEEE Life Members

1999 IEEE EXECUTIVE COMMITTEE

Have a webboard for textbook exchange.

Have an online registration form for the Student branch to make compiling our membership information much more manageable. The recent issue of the Life Members Newsletter told how easy it was for Ted Saad to get a life member chapter started in the Boston area. A key to their success was having members with historically interesting engineering experiences to share.

Have more job related information online. For example, current job postings.

The Florida West Coast Section has an abundance of members who have made significant and interesting contributions in engineering. At the Executive Committee meeting, Bob Ashley, Jules Joslow and Al Rosenheck volunteered to implement them over the semester. We are looking forward to an exciting semester. We invite you to observe our progress at www.csee.usf.edu/ieee-cs/

Life Members, if you are interested send an E-mail, to Bob Ashley g.ashley@ieee.org with your ideas about time of day for meetings, meal or no meal, location of meetings, etc.

Steven Smith
President - IEEE CS Student Chapter

IEEE Computer Society Student Chapter

by Steven Smith

The student chapter of the IEEE CS at the University of South Florida is off and running for another semester. Myself and the other officers are looking forward to a very active semester for our members. Our first official meeting of the year will be held on Thursday, September 9th. The following officers and their respective positions have been established:

President	Steven Smith (steven.smith@computer.org)
Vice President	James Tucker (tucker@csee.usf.edu)
Secretary	Vikki Sims (sims@babbage.csee.usf.edu)
Treasurer	Jason Martinez (martinezjason@hotmail.com)
SE Coordinator	Workneh Abraham (abraham@suntan.eng.usf.edu)
Webmaster	Steve Csori (csori@eng.usf.edu)

We have discussed a number of plans for this year and we will keep you informed of our progress as we go. Among the most significant is the gradual improvement of our website. Some of the ideas on the agenda are the following:

ASME International and IEEE/PES/IAS Joint Meeting Pinellas County Waste To Energy Plant Visit

(A Rare Insight of the Engineering and Equipment Used to Meet the Current Clean Air Standards)

Date/Time: Wednesday, October 13, 1999 6:15 PM

Location: Pinellas Waste To Energy Plant at 114th Ave., St. Petersburg, FL
(See travel Instr)

Cost: \$5 per person - CATERED Pizza, Salad, Soda, Coffee at Plant Site.

Reservations: Paul Leal - (813)635-1411(paulleal@ieee.org) or
James Reed - (813)654-8331(jamesreed@ieee.org).

Background:

The Pinellas WTE Plant was constructed in 1983 and went on line Sept 1986. It was a very successful mass burning plant with continuous operation since.

The plant has been visited by ASME Fall 1994 and By IEEE Fall 1998. Changes in the nation's clean air rules came with the Clean Air Act of 1990-91, requiring existing and new waste burning plants to meet newer and more stringent air emission standards. Municipally owned, the Pinellas plant has been rebuilt to meet the new standards. This is an active field of engineering, nationwide.

The Pinellas plant has rebuilt two of its three lines (#2 and #3) with new technology. They have had good success in reducing regulated emissions as measured with tests on #3 stack. (Dioxins/ NOx/Carbon/etc.). #2 stack gases will be tested Sept 13. #1 line is in retrofit and modernization. **#3 boiler and its 25 MW turbine and generator will be open for scheduled maintenance during our visit, a rare opportunity.**

A technical presentation on the EPA regulatory changes to air emissions and the resulting retrofit of the plant will be offered by the engineering managers.

Visit schedule:

6:15 PM presentations (½ of group) followed by guided tours in 5 groups to all of the operating and rebuilding lines. ½ of the members will go on tour first followed by presentation. Early start is essential as sunset is around 7:15pm. A brief business meeting will be held by Chairman Bob Andrew, after all tour groups return and presentations complete. Pizza, salad, soft drinks will then be provided by our hosts at the plant. A charge of \$ 5 per person is for partial support of more young engineers and student members to attend the Engineers Week Millennium Banquet in February 2000. Long trousers/slacks and closed toe shoes are required at an industrial plant.

Travel instructions:

From I-275, Roosevelt Blvd exit, proceed West to 28th St and turn left onto 28th. Travel past 118th Ave with plant on the right. Go to second entrance, 110th Ave. and enter gate. Proceed to Administration building and park in available spaces thereby.

HER Engineering, Inc is the Engineer of Record, for Pinellas Solid Waste Facility. Engineering design is by Stone and Webster Implementation is by Wheelabrator Pollution Control.

ISA and IEEE/PES/IAS Joint Meeting

Automated Drive Systems for Mobile Services Tower for Atlas III Vehicle at Cape Canaveral

Date/Time: Monday, October 18, 1999
5:45 to 6:45 PM Social/Restaurant dining available
7:00 to 8:00 PM Program

Location: Sheraton Inn Four Points Hotel Tampa East, 7401 E. Hillsborough Ave., Tampa
(813)626-0999(Off I4 exit at Orient Road)

Speaker: Gene Mills, Systems Engineer,

Hydraulic Supply Company, Tampa, Fla.

Signal Processing and Communications Chapter Meeting Development of the Sea Winds Scatterometer

Date/Time: Tuesday, October 19, 1999 at 6:30 PM

Location: Raytheon Systems Company, St. Petersburg, FL.

Speaker: Richard Crowley, Raytheon Systems Company

Abstract

This presentation will cover the development of the Sea Winds Scatterometer. A Scatterometer is a low Earth orbiting remote sensing Radar used to measure the wind speed and direction over the oceans. The presentation will cover general science requirements and how they are converted to electronic component requirements. An overview of the instrument hardware will be presented with special emphasis on the signal processing design. The signal processing consists of linear FM chirp signal generation, multi-rate filters, digital de-chirp, real time FFT processing, followed by a data compression circuit. This instrument is currently operating on orbit and wind data will be presented.

Biography

Mr. Richard D. Crowley is currently a Manager III at Raytheon Systems Company, C3I, Communications System Division, in St. Petersburg. Mr. Crowley received his MSEE degree from the University of South Florida and a BSEE from Michigan State University. He is responsible for the design of space-based digital signal processing hardware on remote sensing programs. He previously worked at Loral Data Systems and Harris Corp, in the high-speed communications and signal processing hardware design field. Mr. Crowley is also a member of the IEEE.

Reservations

Please notify Joe Winner (727) 302-3162 at Raytheon Systems Company at least 48 hours in advance if you are attending. Please leave your name, telephone number, and citizenship.

Directions

From Tampa, take I-275 South to I-275 south across Tampa Bay to EXIT 12 (22nd Ave. N.) From Sarasota, take I-75 North to I-275 north over the Sunshine Skyway Bridge to Exit (22nd Ave. N.). Turn west on 22nd Ave. past Tyrone Mall to 72nd Street N. Turn left at the traffic light to the Engineering Building. Park in the lot farthest south of the complex. GILL ROBB CONFERENCE ROOM, 2ND FLOOR, ENGINEERING BUILDING.

IEEE Industry Applications Society Outstanding Chapter Award

We are pleased to announce that the Florida West Coast Chapter was selected as the IEEE Industry Applications Society's 1999 Outstanding Large Joint Chapter. The award will be presented at the IAS Annual Meetings Awards Luncheon on October 5, 1999 in Phoenix Arizona. Congratulations and keep up the good work.

2000 Engineers Week Banquet

Be sure to sign up for the banquet to be held during Engineer's week. The banquet will be held on February 18th at 6:30PM at the Bellview Biltmore Golf Resort & Spa in Clearwater. This event will be hosted by a local bay area television professional and will feature door prizes, exhibits, a guest speaker, the Engineer of the Year Award as well as the Student of the Year Awards. Special room rates of \$129.00 can be obtained until December 18th by calling the resort at 727-734-6171. The banquet tickets are \$40.00 and include a dinner choice of grilled mahi mahi, chicken wellington, or a veggie plate. Please call Quang Tang at 813-963-0994 or q.tang@ieee.org for tickets.

Attention Members!!!

We are currently trying to create an e-mail data base of local members so that we can inform you of upcoming events and any last minute changes or news that may be of value to you. The submittal will not be used for solicitation purposes or non IEEE business. If you would like to be added to the list please send your e-mail address to: paulleal@ieee.org.

Your Vote Counts!!!

Members of the Florida West Coast Section, along with Sections throughout the Southeast, are all members of IEEE Region 3. The Director of Region 3 represents all Members, Sections, and Chapters on the IEEE Board. This year YOU elect a Director for Region 3 - that individual will serve for two years as Director Elect and then become Region 3 Director in January of 2002 for a 2 year term. Please make sure you take time to complete your ballot and return it by the deadline.

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**FOR REGION DELEGATE - ELECT/DIRECTOR-ELECT, 2000-2001
REGION DELEGATE/DIRECTOR, 2002-2003 - REGION 3 (SOUTHEASTERN USA)**

Charles Hickman
Picture

James Howard
Picture

Charles E. Hickman, P.E.

Charles E. Hickman received BSEE, MSEE and Ph.D. degrees from the University of Tennessee, Knoxville in 1957, 1960 and 1966, respectively. During six years with Auburn University, he taught and conducted research in the Electrical Engineering Department. Charles next joined Southern Company Services to initiate and manage a system-wide noise and vibration control program. During the next 16 years, Hickman's responsibilities expanded to include areas related to advanced power plant research. Since 1988, he has been associated with Tennessee Technological University, first as Director of a research center of excellence in electric power and then as Interim Dean of the College of Engineering. Responsibilities of both positions include providing technical leadership and ensuring professional growth of all staff. The Alabama Section and the Engineering Council of Birmingham honored Hickman as its Engineer of the Year in 1986. He is registered as a Professional Engineer in Tennessee.

James M. Howard

James M. Howard received BSEE degree from the University of South Florida in 1985. He joined Tampa Electric Company as a Cooperative Education Student in 1979 and is currently Supervisor/Senior Engineer in the Energy Delivery System Reliability Department. In this position, he is responsible for monitoring, assessing, reporting, and making recommendations to improve Tampa Electric's transmission, Substation, and Distribution Reliability. He has held positions in Energy Delivery: Distribution Engineering Department, as a staff engineer, and at South Hillsborough Operations Center. As part of his duties in South Hillsborough he was responsible for the protection and coordination of the distribution circuits serving over 32,000 customers, reviewing and approving work orders for system improvements and changes, and general overall responsibility for the reliability of the entire South Hillsborough Service Area. Mr. Howard is a member of the Southeastern Electric Exchange Power Quality & Reliability Committee.

Please see election booklet for candidates' IEEE Activities, Statements, and Rebuttals.

by Butch Shadwell

September BTC Solution

I don't know how many of you are regular readers of Popular Fromage, but if you recall the article on cheese dating with light absorption, you will recall that 640nm light appears red to observers. I am guessing that the electromagnetic spectrum must remain something of a mystery for most of my readers, as I received very few correct answers. If your work touches on displays or lighting of any sort, you may want to get one of those spectrum charts that relates wavelength to colors and near IR and UV.

October BTC

Buckling one's belt is one of those tasks that often makes one wax philosophical. As one notes the effort required to bring the ends together, and just how much one must suck in one's gut, and finally whether or not one must change to the next further hole, it usually gives one pause to consider the degree to which adipose tissue is taking over one's body. It may be that only those readers over thirty have experienced this phenomenon, but the odds are that every one of you will at some point. During this contemplative state, as we turn sideways to the mirror, the thoughts that run through our minds range from "I've still got it!" (Of course assuming you ever had "it".); to "It's not that bad yet. Maybe I'll lay off the ice cream a little."; to "I don't look too bad compared to others my age." (You may want to check and make sure the objects of this comparison really are your age.); to "I must be retaining water." (Remarkably, this thought is not gender specific.); to "It's time for emergency action."

Of course there are numerous people and organizations anxious to help with this problem. One of the gadgets being sold is a special scale that also measures the conductivity from one foot to the other with the claim that it can compute your percentage of body fat. I don't know whether these scales work or not but measuring the conductivity of the skin has been done for years as a way to monitor certain physiological conditions. Abbreviated GSR, can any of you tell me the full name of this measurement?

Reply with the IEEE Florida West Coast Section Suncoast Signal reference to Butch Shadwell by the 20th at (904)223-4465 (voice), 904-223-4510 (fax), b.shadwell@ieee.org, 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. (<http://www.ccse.net/~butchs/>). Only the names of correct respondents are mentioned in the solution column on the next Signal.

Florida Counsel and Region 3 Awards

by John Twitchell

The Florida Counsel of IEEE and Region 3 both sponsor awards that give us the opportunity to recognize FWCS members that have contributed to our electro-technology industry and to our professional organization. These awards are for Outstanding Service, Outstanding Engineering Educator, and Outstanding Engineer. All that must be done to get the ball rolling to prepare a nomination is to call any member of the FWCS Executive Committee with a name and we will do the rest to place an

Industrial & Commercial Power Systems Conference (I&CPS)

The FWC PE/IA Chapter will host the 2000 I&CPS Annual Conference, May 7-11, 2000 at the Sheraton Sand Key Resort. The committee is hard at work getting prepared for this conference. We hope to attract over 200 attendees from all over the world and to break all the attendance records we set when we hosted this conference in 1993 here in the FWC. If you are interested in working on the committee, please contact Jim Beall, Chair of the committee at J.Beall@ieee.org, or ph: 727-376-2790.

**Did You Miss IT?
If so, you missed a lot!!!**

The August 23rd meeting of the FWCS PE/IA Chapter on Spaceport was a great success and would have been of interest to all Section members - hope you were there.

As an example - did you ever wonder:

Why Florida does not presently have a Personnel Income Tax - but may in the future?

What the X33 and Venturestar programs are and how they might affect you as a Florida resident?

Employment Opportunities

How the new Linear Aerospike Rocket Engine works - less weight, more power?

Aardvark Automation, Inc., an electrical/electronic equipment sales and service firm is seeking personnel for the following positions.

How to get special official passes to a vehicle launch so you can be near the launch?

Sales Engineer & Service Engineer

28 of our members turned out to hear the answers to these and many other questions. Mr. Richard Ward, from Spaceport, provided a great presentation and overview of what is happening at the Cape and what impacts it will have on all Florida residents and sensors for industrial manufacturing, metals, plastics and water wastewater pumping up control systems. (Part time or full time positions are available) Please send letter of interest and resume to the following web sites:

<http://www.spaceportflrich.com> Richard Beatie, P.E.

<http://www.venturestar.com> Aardvark Automation, Inc.
302 N Willow Ave.

<http://www.x33.com> Tampa, FL 33606

No calls or faxes please. All inquiries held in strictest confidence.

/2000

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October 1999 Calendar of Events

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5 IEEE-FWCS Executive Committee Mtg at TECO Data Ctr 6:00 PM	6	7	8	9
10	11	12 MTT/AP/ED Meeting at Raytheon System 6:00PM Photonic Devices	13 Joint ASME & PES/IAS Mtg at Pinellas Co. Waste to Energy Plant 6:15 PM	14	15	16
17	18 Joint ISA & PES/IAS Mtg at Sheraton Inn Four Point Hotel 5:45 PM	19 SP/COMM Meeting at Raytheon System 6:30 PM	20	21	22	23
24	25	26	27	28	29	30

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