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IEEE Dallas Section: Direction

September 2008
Volume 52, Number 1

From the Chair

By Robert Shapiro

Dear Colleagues,

Hopefully everyone had a wonderful summer.

Well, now it is time to get back to IEEE business in Dallas.

Sections' Congress is next week in Quebec City, Quebec, and we are sending 3 delegates. There is also a Region 5 ExCom meeting and a GOLD summit. I will report on the outcome in the October newsletter.

Please plan on attending the local chapter meetings this fall including the joint Consultant Network/Section meetings each month on the second Monday evenings at the Holiday Inn Select in Richardson.

We are planning another Senior Member upgrade event, Officer training summit, and a 2009 budget planning meeting soon. More details in October.

Have a great day, week, and month.

Sincerely,

**Sincerely,
Bob Shapiro
IEEE Dallas Section
2008 General Chair**



Joint meeting between IEEE Dallas Section and IEEE Consultants network

Topic: The Sci-Tech Discovery Center: Building the Next Generation of Scientists, Mathematicians and Engineers

Date: Monday, September 8, 2008

Time: Social/Networking/Dinner 6:15 pm, Program 6:45 pm.

Location: Holiday Inn Select, 1655 North Central Expressway, Richardson, TX (south of Campbell Road, west side of Central)

Speaker: Carole Greisdorf, President, Sci-Tech Discovery Center Board

Cover: \$5 for IEEE Members with reservation on IEEE website, \$15 for non-IEEE Members/Guests. IEEE members who RSVP may bring a guest at no additional charge.



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Dallas Section

Chapter Meetings/Events

Consultants Network (CN)

Topic: The Sci-Tech Discovery Center: Building the Next Generation of Scientists, Mathematicians and Engineers

Date: Monday, September 8, 2008

Time: Social/Networking/Dinner 6:15 pm, Program 6:45 pm.

Location: Holiday Inn Select, 1655 North Central Expressway, Richardson, TX
(south of Campbell Road, west side of Central)

Speaker: Carole Greisdorf, President, Sci-Tech Discovery Center Board

Cover: \$5 for IEEE Members with reservation on IEEE website , \$15 for non-IEEE Members/Guests (includes light supper buffet) IEEE members who RSVP may bring a guest at no additional charge.

Abstract: Carole will share the vision of establishing an interactive, hands-on Discovery Center for children and families in the Collin County area. The goal is to stimulate interest in these subjects so that our young people will pursue careers in these fields.

Speaker's Biography: Carole Greisdorf serves as president of the board of the Sci-Tech Discovery Center. In her professional capacity, she is the director of alumnae relations for the Foundation for Women's Resources, the parent organization of Leadership Texas and Power Pipeline.

A proud graduate of the University of Florida, Carole previously enjoyed her career as special assistant to the superintendent of schools for communications and community relations in the Plano Independent School District. She served in a similar position in the Volusia County Schools, in Florida.

Carole has been very active in the community, having served on the boards of the Plano Rotary, Practical Parent Education and the Children's Advocacy Center. She also served on the board of the Children's Advocacy Centers of Texas.

Consumer Electronics Society (CES)

Topic: The Past, Present, and Potential Future of Integrated Circuits

Date: Tuesday, September 9th, 2008

Time: Lunch/Chapter business: 11:30 AM - 11:45 P.M.
Program: 11:45 - 12:45 P.M.

Location: Holiday Inn Select, Richardson
1655 N. Central Expressway (US 75)
(Southbound frontage road, south of Campbell)
Richardson, TX 75080

Speaker: Dr. ROBERT R. DOERING, Senior Fellow, Texas Instruments Inc

Door Prizes:

Abstract: This year is the 50th anniversary of Jack Kilby's 1958 invention of the integrated circuit (IC), for which he won the 2000 Nobel Prize in Physics. Since that invention in a laboratory at Texas Instruments, IC components have been continuously miniaturized, which has resulted in exponential improvement trends in their performance, energy efficiency, and cost per function. These improvements have created a semiconductor industry that has grown to over \$250B in annual sales. The process of reducing integrated-circuit component size and associated parameters in a coordinated fashion is traditionally called "feature-size

scaling." Kilby's original circuit had active (transistor) and passive (resistor, capacitor) components with dimensions of a few millimeters. Today, the minimum feature sizes on integrated circuits are less than 30 nanometers for patterned line widths and down to about one nanometer for film thicknesses. Thus, we have achieved about five orders of magnitude in linear-dimension scaling over the past fifty years, which has resulted in about ten orders of magnitude increase in the density of IC components, a representation of "Moore's Law." As IC features are approaching atomic dimensions, increasing emphasis is now being given to the parallel effort of further diversifying the types of components in integrated circuits. This is called "functional scaling" or "More than Moore." Of course, the enablers for both types of scaling have been developed at many laboratories around the world. The consensus of industry experts is that continuing R&D breakthroughs should allow the traditional feature scaling trend of CMOS technology to continue for approximately another decade, beyond which a radically new information processing paradigm would be needed. Research toward this goal is now underway in universities under the guidance and support of a new industry-government partnership in the U.S.

Speaker's Biography: Dr. Doering is a Senior Fellow and Research Strategy Manager at Texas Instruments. He is also a member of TI's Technical Advisory Board. His previous positions at TI include: Manager of Future-Factory Strategy, Director of Scaled-Technology Integration, and Director of the Microelectronics Manufacturing Science and Technology (MMST) Program. The MMST Program was a 5-year R&D effort, funded by DARPA, the U.S. Air Force, and Texas Instruments, which developed a wide range of new technologies for advanced semiconductor manufacturing. The major highlight of the program was the demonstration, in 1993, of sub-3-day cycle time for manufacturing 350-nm CMOS integrated circuits. This was principally enabled by the development of 100% single-wafer processing.

He received a B.S. degree in physics from the Massachusetts Institute of Technology in 1968 and a Ph.D. in physics from Michigan State University in 1974. He joined TI in 1980, after several years on the faculty of the Physics Department at the University of Virginia. His physics research was on nuclear reactions and was highlighted by the discovery of the Giant Spin-Isospin Resonance in heavy nuclei in 1973 and by pioneering experiments in medium-energy heavy-ion reactions in the late 70's. His early work at Texas Instruments was on SRAM, DRAM, and NMOS/CMOS device physics and process-flow design. Management responsibilities during his first 10 years at TI included advanced lithography and plasma etch as well as CMOS and DRAM technology development.

Dr. Doering is an IEEE Fellow and Chair of the Semiconductor Manufacturing Technical Committee of the IEEE Electron Devices Society. In addition, he represents Texas Instruments on the Corporate Associates Advisory Committee of the American Institute of Physics. Dr. Doering is also a cofounder of the International Technology Roadmap for Semiconductors and one of the two U.S. representatives to the International Roadmap Committee, which governs the ITRS. He has authored/presented over 150 publications and invited papers/talks and has 20 U.S. patents.

For additional information, please contact Sue Hui at (214)567-5017, shui@ti.com or visit our website: <http://www.dallasces.org/>

Circuits and Systems (CAS)

Topic: Convergence of IC Technology and Healthcare

Date: Thursday, September 11, 2008

Time: 6:30pm: Pizza & Drinks; 7:00pm: Presentation

Location: Dallas Texins Activities Center, Conf Room 1
(North end of Texas Instruments expressway site,
13900 N Central Expwy.; site entrance on north-bound access road, between Midpark Rd. & Spring Valley Rd.)

Dallas Section

Chapter Meetings/Events

Speaker: Karthik Vasanth, Texas Instruments, Dallas, TX.

Abstract: The healthcare industry spend has seen a steady rise over the last 30 years. With aging populations and developing countries this trend is expected to accelerate even more in the coming years. Semiconductor content penetration in the healthcare industry is also rising be it in implantable devices or advanced imaging techniques. This talk will cover the overall market trend and pay close attention to the semiconductor device opportunity in various medical market segments. Details on the types of devices required in the future will also be discussed in general. A detailed discussion around medical imaging will be presented. We will cover Ultrasound and CT applications in particular with analog signal chain requirements and possible semiconductor architectures needed in these imaging modalities.

Microwave Theory and Techniques (MTT)

Topic: Status and Future Trends for Si and Compound MMICs in Millimeter-Wave Regime and Related Issues for System on Chip (SoC) and/or System in Package (SiP)

Date: Friday, September 12, 2008

Time: Lunch 11:30 AM / Program 12:00 noon

Location: Holiday Inn Select
1655 N Central Expy
Richardson, TX 75080
(972) 644-7728

Speaker: Huei Wang, National Taiwan University

Cover: Mandatory \$5 (\$10 for non-IEEE members) includes admission and buffet. No charge for Student and Life Members

RSVP: Please RSVP to csanabria@tqs.com by noon, September 10th, for restaurant headcount

Abstract: The anticipated presentation will cover the current status and future trends of millimeter-wave MMICs, including those using III-V compound (GaAs, InP, GaN, etc.) and Si-based (CMOS, SiGe HBT and BiCMOS) MMIC technologies. Millimeter-wave MMICs used to be applied to military and astronomy systems for long time and started to be utilized for civil applications in the decade, such as communications and automotive radars. The evolution of IC technologies has enabled the performance of Si-based MMICs over 100 GHz, even in standard bulk CMOS processes. This is believed to have a major impact in the future development of millimeter-wave systems. Since low-cost mass-production potential pushes forward the technology, a very high integration of circuit functions on a chip, such as RF, base-band circuitry, automatic-control for a steady operation, and maybe even the antenna, etc. should be included, and thus the system on chip (SOC) issues should be addressed, especially in the MMW regime. Moreover, millimeter-wave packaging cost always dominated in the module development. In order to simplify the assembly and reduced cost, the concept of system in package (SiP) has been proposed. This presentation will also survey the current technologies for SOC and SiP and discuss related issues and challenges.

Speaker's Biography: Huei Wang was born in Tainan, Taiwan, Republic of China on March 9, 1958. He received the B. S. degree in electrical engineering from National Taiwan University, Taipei, Taiwan, Republic of China in 1980, and the M. S. and Ph. D. degrees in electrical engineering from Michigan State University, East Lansing, Michigan in 1984 and 1987, respectively.

During his graduate study, he was engaged in the research on theoretical and numerical analysis of electromagnetic radiation and scattering problems. He was also involved in the development of microwave remote detecting/sensing systems. Dr. Wang joined Electronic Systems and Technology Division of TRW Inc. in 1987. He was an MTS and Staff Engineer responsible for MMIC modeling of CAD tools, MMIC testing evaluation and design and became Senior Section Manager of MMW Sensor Product Section in the RF Product Center. He visited the Institute of Electronics, National Chiao-Tung University, Hsin-Chu,

Taiwan, in 1993 to teach MMIC related topics and returned to TRW in 1994. He joined the faculty of the Department of Electrical Engineering of National Taiwan University, Taipei, Taiwan, Republic of China, as a Professor in February 1998. He is currently Director of the Graduate Institute of Communication Engineering of National Taiwan University.

Dr. Wang is a member of the honor society Phi Kappa Phi and Tau Beta Pi. He received the Distinguished Research Award of the National Science Council, ROC (2003-2006). He was also elected the Richard M. Hong Endowed Chair Professor of National Taiwan University from 2005 to 2007, and elected as a Fellow of the IEEE in 2006. He has been appointed an IEEE Distinguished Microwave Lecturer for the 2007-2009 term. Prof. Wang received the Academic Achievement Award from the Ministry of Education, ROC, in 2007.

Sponsorship: This announcement is brought to you by **Groover & Associates** patent attorneys. "Respect for Technology. Respect for Technologists" <http://technopatents.com>
Phone 1-972-980-5838

More information at the MTT website:
<http://ewh.ieee.org/r5/dallas/mtt/>

Communications & Technology (CVT)

Topic: Next Generation Broadband Networks

Date: September 16th, 2008

Time: Program starts at 11:30a with lunch being served followed by the technical presentation from 12noon - 1pm

Location: Holiday Inn Select (south of Campbell / west side of I-75)

Speaker: Benny Bing **Cover:** For IEEE members \$5.00 / for non IEEE members \$10.00 / students free

RSVP: N/A

Abstract: Broadband wireless access is viewed by many telephone and cable operators as a "disruptive" technology and rightly so. The broadcast nature of wireless transmission offers ubiquity and immediate access for both fixed and mobile users, clearly a vital element of quadruple play services involving voice, video, data, and mobility. Unlike wired access (copper, coax, fiber), a large portion of the deployment costs is incurred only when a subscriber signs up for service. The first part of the talk will provide a comparative assessment of the standards and technologies underpinning emerging broadband wireless access solutions.

Wireless LAN applications have blossomed tremendously over the last few years. What started out as cable replacement for static desktops in indoor networks has been extended to fully mobile broadband applications involving moving vehicles, high-speed trains, and even airplanes. Wi-Fi data rates have also continued to increase from 2 to 54 Mbit/s with the current 802.11n draft topping 600 Mbit/s. This development may eventually render wired Ethernet redundant in the enterprise network. An increasing number of municipal governments around the world and virtually every major city in the U.S. are financing the deployment of Wi-Fi mesh networks with the overall aim of providing ubiquitous Internet access and enhanced public services. In addition, cheap phone calls using Wi-Fi voice over IP may become one of the biggest benefits of a citywide municipal network. This has led some technologists to predict that eventually we are more likely to see meshed Wi-Fi cells that are linked together into one network rather than the widespread use of high-powered WAN handsets cramming many bits into expensive and narrow slices of radio spectrum. The second part of the talk focuses on emerging Wi-Fi technologies.

Speaker's Biography: Dr. Benny Bing is a research faculty member with the School of ECE at the Georgia Institute of Technology. He has published over 60 technical papers and 10 books. In early 2000, his book on wireless LANs was adopted by Cisco Systems to launch Cisco's first wireless product, the Aironet Wi-Fi product. He was subsequently invited by Qualcomm and the Office of Information Technol-

Dallas Section Chapter Meetings/Events

ogy to conduct customized Wi-Fi courses. He is an editor for the IEEE Wireless Communications Magazine. He has guest edited for the IEEE Communications Magazine (2 issues) and the IEEE Journal on Selected Areas on Communications. In October 2003, he was invited by the National Science Foundation to participate in a workshop on Residential Broadband. He is a Senior Member of IEEE and an IEEE Communications Society Distinguished Lecturer.

Electromagnetic Compatibility (EMC)

Topic: EMI Suppression with Ferrite Components

Date: Tuesday, Sept 16, 2008

Time: Refreshments 6:00 PM, Program 7:00 PM

Location: Intertek; 420 N. Dorthy Drive; Richardson, TX 75081

Speaker: Jeff Bruce, Technical Director, SIP Products Laird Technologies

RSVP: to Joe Stanfield, joe.stanfield@ieee.org

Abstract: This presentation will start with a brief look at common EMI sources and the various means of EMI energy propagation. A review of the magnetic properties of ferrite materials will lead to a discussion of what distinguishes an inductor core from an EMI filter or choke core. Design and application considerations such as applied voltage, circuit current, signal & noise frequencies, and temperature range will lead to an understanding of how to select the right ferrite component as a reliable EMI solution. Accurate representation of chip bead performance in Spice models will also be discussed.

Speaker's Biography: Jeff Bruce is now the Technical Director of SIP (Signal Integrity Products) for Laird Technologies. Previously, over a 25 year period, he served as Process Engineering Manager, Director of Engineering, and Technical Director for Steward Inc. In December of 2006, Steward was acquired by Laird Technologies and became the SIP business unit. Jeff is a 1982 graduate of Clemson University with a BS degree in Ceramic Engineering.

For additional program information, refer to the Dallas EMC Chapter Website, <http://www.DallasEMC.org>

BEST Robotics Coaches and Volunteers Needed

The 2008 BEST (Boosting Engineering, Science, and Technology) Robotics Competition, "Just Plane Crazy!", is now organizing high school teams and is looking for volunteers both to mentor and coach student teams and to help set-up and run the competition events. Some of the ways you can get involved include: team coaching, competition set-up and clean-up, judging, and refereeing. We need volunteers on the following dates:

Dallas BEST (Dallas County, <http://www.dallas-best.org>)

Kickoff:	Sept 13	(Raytheon North Building)
Mall Day:	Oct 11	(location TBD)
Competition Setup:	Oct 24	(UT-Dallas)
Competition:	Oct 25	(UT-Dallas)

CoCo BEST (Collin County, <http://www.cocobest.org>)

Kickoff:	Sept 6	(Wylie High School)
Mall Day:	Oct 11	(Plano Market Center)
Competition Setup:	Oct 17	(Ereckson Middle School)
Competition:	Oct 18	(Ereckson Middle School)

Cowtown Best (Tarrant County, <http://www.cowtownbest.org>)

Kickoff:	Sept 20	(TCU)
Mall Day:	Oct 25	(Ridgmar Mall)
Competition Setup:	Oct 31	(location TBD)
Competition:	Nov 1	(location TBD)

North Texas Best (Grayson County, <http://www.ntbest.org>)

Kickoff:	Sept 13	(Texas Instruments)
Mall Day:	Oct 18	(Midway Mall)
Competition Setup:	Oct 24	(Gunter High School)
Competition:	Oct 25	(Gunter High School)

Denton County Best

(<http://www.bestinc.org/MVC/Hub/display?hub=7>)

Kickoff:	Sept 13	(UNT)
Mall Day:	Oct 18	(Golden Triangle Mall)
Competition Setup:	Oct 24	(UNT)
Competition:	Oct 25	(UNT)

For more information about the competition, go to any of the above websites or to <http://www.bestinc.org>.

To volunteer with Dallas BEST, contact Jon Spangler at j-spangler@raytheon.com. For CoCo BEST, contact Monica Nunez at m-nunez1@raytheon.com. To get involved with any of the other BEST "hubs", please contact the volunteer coordinator listed on the respective web site.

You'd be surprised at what these young folks can do, but they need your help to succeed. We look forward to hearing from you!

Dallas Section

Chapter Information

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Antennas and Propagation (AP)

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Circuits and Systems (CAS)

Website: <http://ewh.ieee.org/soc/cas/dallas/>

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Publicity Chair/Secretary: Mak Kulkarni

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Meeting chair: Arjun Rajagopal

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Member Chair: Tuna B Tarim

Communications & Technology (CVT)

Website: <http://www.cvt-dallas.org/>

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If you are interested in volunteering/becoming an officer for this society, please contact the past chair, William Riley.

Electromagnetic Compatibility (EMC)

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Microwave Theory and Techniques (MTT)

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Tease Your Brain!!!

There are five weather forecasters getting ready for a weekend forecast. Each forecaster is predicting different weather and is choosing a suit and "tie" (yes, the women, too) of different color combinations. There are 3 men (John, Matt and Tim) and 2 women (Karen and Sarah). Can you determine the color of the suit, the color and pattern of the tie, and the weather prediction for each forecaster?

- The forecaster who wore a black suit did not predict snow or rain.
- Many viewers called in to comment on the whimsically printed tan tie and brown suit combination.
- The five forecasters were: Matt, the woman who predicted high winds, the person in a black suit, the man with a striped tie, and the woman in an olive suit.
- A solid white tie was chosen to represent the snowy forecast that day.
- John's orange tie was hated by his wife.
- Sarah had a teal colored tie which was not floral.
- Tim predicted sun and did not wear brown or black.
- The man who predicted rain did not wear a striped tie.
- The blue suit was worn by a man.

Answer on next page



The Dallas Section of the Institute of Electrical and Electronic Engineers (IEEE) for the benefit of its members publishes *Direction* monthly from September through May. Articles, special announcements and information for publication should be submitted to Dinesh Rajan (rajand@enr.smu.edu) The deadline for submission of materials is no later than the 20th of the month prior to the month of publication.

Advertising: *Direction* is distributed to approximately 7,200 members in the Greater Dallas area.

Invoicing and/or contractual agreements for advertising are administered by Dinesh Rajan, Administrative Chairman and Mark Swenholt, Treasurer, IEEE Dallas Section. All ad insertions must be cleared through the executive board before publication. Advertising rates are as follows:

Per Insertion

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- Low Power Mixed-Signal Hardware
- System Integration & Test
- Embedded Systems
- Program Management



For more information please visit www.ans-medical.com/careers

Mind Tease Solution:

John, black suit, orange floral tie, foggy

Tim, blue suit, striped pink tie, sunny

Sarah, gray suit, dotted teal tie, windy

Matt, brown suit, whimsical tan tie, rainy

Karen, olive suit, solid white tie, snowy