



**IEEE NEWS FOR APRIL 2010 (and Late March)**

**Jacob Z. Schanker, P.E., Newsletter Chair**  
Rochester IEEE home page at: <http://rochester.r1.ieee.org>

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**Rochester Section Meeting - Tuesday, April 6, 2010**

The next Rochester Section business meeting is on Tuesday, April 6, 2010 at Noon, at the Shanghai Restaurant, 2920 West Henrietta Road, just south of the intersection with Brighton-Henrietta Town Line Road.

Any IEEE member is welcome to attend and to participate, or just to observe. Lunch is only \$3 for IEEE members. No reservation or RSVP is needed, just show up.

**2010 Rochester Section Joint Chapters Meeting Wed., March 31**

The Rochester Section of the IEEE will be hosting a joint meeting for all IEEE society chapters on March 31, 2010. The meeting is open to the general public as well as IEEE members. The meeting will feature several technical presentations from different technical society chapters. Don't miss this great opportunity to meet and network with people from all engineering disciplines and to learn more about the activities of the different IEEE society chapters in the Rochester area.

The meeting will be held at the RIT Inn & Conference Center located at 5257 W. Henrietta Road, Henrietta, NY. The technical sessions are free to attend. Reservations are required to attend the dinner and feature presentation (\$20 for IEEE members, \$25 for non-members, and \$10 for IEEE student members).

Further details are found in the full-page announcement in this issue, as well as in the individual society chapter announcements here. More current details can be found at: <http://rochester.r1.ieee.org/jc10/program> and on-line registration may be found at: <http://rochester.r1.ieee.org/jc10/>.

## **IEEE Electromagnetic Compatibility (EMC) and Product Safety Engineer (PSE) Joint Chapters**

**Title:** Best PWBA Design Practices for Achieving Optimal EMC, Signal Integrity, and Power Integrity

**Speaker:** James Herrmann is a Principal Engineer and Managing Partner at AppliedLogix, LLC.

**Date:** Wednesday, March 31, 2010,

**Location:** At the Joint Chapters Meeting (see announcement) RIT Inn and Conference Center

**Abstract:** Digital electronics based product development has never been more exciting or more challenging. As semiconductor manufacturers press forward and fulfill Moore's Law, product development teams are integrating increasingly complex, high clock rate silicon devices into all manner of consumer, commercial, and industrial products. While such processing power provides the design team with unprecedented capabilities, it also creates significant design implementation challenges. Higher clock rate devices infer higher internal transient current demands. Correspondingly, fast edge rate external logic signaling places more energy in higher harmonics beyond the fundamental frequency. Without proper design consideration, these attributes of high speed devices will most often result in a failed product development as characterized by excessive EMI and / or unreliable operation. This presentation will highlight proven design tools and techniques, applied throughout the PWBA design and layout phase, to effectively manage these challenges. Actual PWBA design examples will be included to reinforce and illuminate best design practices as well as common mistakes. The discussion will also highlight and demonstrate the strengths of modern circuit (e.g., Spice) and EM (e.g., Hyperlynx) simulation tools.

**Biography:** Mr. Jim Herrmann is a Principal Engineer and Managing Partner at AppliedLogix, LLC. He has 20+ years of industry experience designing and commercializing embedded electronics subsystems. He has developed, and continues to refine, a rigorous yet lean PWBA design methodology. This quantitative board design methodology has consistently delivered first-pass success as characterized by reliable operation and robust EMC characteristics. Product applications have ranged across a broad spectrum, from very high-performance pulsed-radar signal processing to battery-operated wireless devices.

Mr. Herrmann began his engineering career at Eastman Kodak, where he worked for 14 years as a design engineer and team leader. He then moved on to Xerox, where he was a hardware design manager within their wide-format printer division. Mr. Herrmann was a co-founder and VP of Engineering at a prominent local high-tech startup (InSciTek / Allworx), acquired by Paetec in 2007. During his 8-year tenure there, Mr. Herrmann led the consulting engineering group and provided digital system design engineering expertise to numerous OEM customers.

Mr. Herrmann received his BSEE degree from the State University of New York at Buffalo (1981), and his MSEE degree from the University of Rochester (1991).

On May 11, the group will again meet to hear the IEEE EMC Society Distinguished Lecturer Mark Steffka.

**Title:** Conducted Emissions, Power Supplies, and LISNs

**Speaker:** Mark Steffka, EMC Technical Specialist, GM Powertrain, Milford, Michigan

**Date:** Tuesday, May 11, 2010

**Location:** RIT, One Lomb Memorial Drive, Rochester, NY 14623

**Abstract:** With the proliferation of digital methods from data communication to machine and equipment control, as well as the increasing use of switched mode power supplies (SMPS), conducted emissions are becoming more of a concern. This topic discusses the physics involved in conducted emissions, how to measure those emissions, the trade-offs in power supply issues versus EMC, and effective filtering methods. Diagnostic methods to identify the nature and source of conducted emissions are presented as well as corrective actions to solve those problems are identified.

**Biography:** Mark Steffka, B.S.E., M.S., is with the Electromagnetic Compatibility (EMC) Engineering Group of General Motors (GM) Powertrain and is a faculty member of two universities. He is an adjunct lecturer at the University of Michigan-Dearborn, in the Electrical and Computer Engineering (ECE) department for the undergraduate and graduate classes on EMC. He is an adjunct professor at the University of Detroit – Mercy and teaches undergraduate and graduate engineering courses on EMC. He is a member of Institute of Electrical and Electronics Engineers (IEEE), has served as an invited session chair for the IEEE EMC Symposium. His publications have covered topics on EMC and RFI. He is a co-author of the book “Automotive Electromagnetic Compatibility”.

## **Engineering in Medicine & Biology Society Chapter News**

**Date:** March 31, 2010

**Event:** Rochester IEEE Joint Chapter Meeting at the RIT Inn and Conference Center. The keynote speaker will be Kevin J. Parker from the University of Rochester. He is the founding chair of the Rochester EMB Society and a 2009 finalist for the Rochester Engineer of the Year award. His presentation will be: Imaging the hidden elastic properties of tissues: The process of development from the lab to the clinic.

The Rochester EMB Society will also host two technical presentations.

Thomas Gaborski, President of Simpor Inc. Commercializing nanotechnology to improve biomedical research and development.

Michael Connolly, President & CEO, Integrated Nano-Technologies, Nanotechnology and its utility as a biodetection platform.

**Date:** April 16, 2010

**Event:** UNYBECC 2010: Showcasing the future of biomedical engineering

**Location:** University of Rochester Medical Center

The Upstate New York Biomedical Engineering Career Conference (UNYBECC) 2010 is designed to bring together students & practitioners of Biomedical Engineering and the Life Sciences for panel discussions, technical sessions, and informal extended exchange of ideas important to the future of Biomedical Engineering in the Northeast. Some conference highlights include:

- Assisting participants in planning their academic and industrial careers
- Introducing companies to the wealth of intellectual prowess rooted in Upstate New York
- Exposing participants to innovative research in biomedical engineering and allied areas
- Promoting potential employees through a Career Networking Session

The event is open to the public. Please see web site below for registration information.

<http://www.unybecconference.org/>

UNYBECC 2010 is hosted by the Biomedical Engineering Department at the University of Rochester and is sponsored the by the Rochester EMB Society.

## **IEEE Microwave Theory & Techniques Chapter Meeting**

**Date:** March 31, 2010 at the Joint Chapters Meeting

**Topic:** Microwave over Fiber: Applications and Performance

**Speaker:** John MacDonald, Vice President and General Manager, Linear Photonics, LLC, Director, Advanced Product Development at Linearizer Technology, Inc., Princeton, NJ.

**Abstract:** The field of microwave photonics has experienced continued growth over the past several decades, due to the commercialization and availability of high power, low noise semiconductor lasers and photoreceivers, as well as a variety of commercial passive optical components that allow for the rapid development of system-level solutions for applications including antenna remoting, signal and sensor distribution, delay lines, weight reduction, and EMI immunity. This talk will highlight the primary aspects of a microwave photonic link including modulation and detection schemes, impedance matching, linear and nonlinear fiber effects, and performance factors such as gain, noise and linearity.

**Biography:** John MacDonald is Vice President and General Manager of Linear Photonics, LLC and Director of Advanced Product Development at Linearizer Technology, Inc., located in Princeton, NJ. Mr. MacDonald has more than 20 years experience in RF and microwave engineering and business development including fiber optic components and systems, solid state and traveling wave tube power amplifiers, satellite communications and antenna design. Prior to joining LPL/LTI, Mr. MacDonald served as Product Line Manager for Specialty Products at JDS Uniphase in Horsham,

PA. Prior to that, he was Engineering Manager for Power Amplifier Products in the Space Systems Group at Lockheed Martin, Newtown, PA. Mr. MacDonald received a B.S.E.E from the Rochester Institute of Technology in 1989, and an M.S.E.E. from Syracuse University in 1993. He holds three patents and is the author of numerous publications.

## **IEEE Electron Devices Society Chapter Meeting**

**Date:** May 31, 2010 at the Joint Chapters Meeting

**Topic:** From Deep Trenches to Skyscrapers: A walk down Memory Lane

**Speaker:** Subramanian S. Iyer, Distinguished Engineer and Chief Technologist, Semiconductor Research and Development Center, IBM Microelectronics Division, Hopewell Junction, NY

**Abstract:** Memory technology and the memory business has for many years been the engine that powered technological innovations in the semiconductors especially in the area of lithography and innovative micro-structural engineering. While stand alone memory itself has been commoditized, when embedded in high performance logic it provides incredible leverage for high performance processors, network and mobile appliances, and almost every application. In this talk, we will explore the course of memory in systems, especially DRAM, integration of deep trench technology into high performance logic, the value it brings as well as the collateral advantages it has brought about in power management, noise decoupling, autonomic chip repair and its potential evolution into 3-dimensional chip technology.

**Biography:** Subramanian S. Iyer is Distinguished Engineer and Chief Technologist for the Semiconductor Research and Development Center, IBM Systems & Technology Group, and is responsible for technology development strategy, embedded memory and 3 Dimensional Integration. Till recently he was Director of 45nm CMOS Development. He obtained his B.Tech in Electrical Engineering at the Indian Institute of Technology, Bombay, and his M.S. and Ph.D. in Electrical Engineering at the University of California at Los Angeles. He joined the IBM T. J. Watson Research Center in 1981 and was manager of the Exploratory Structures and Devices Group till 1994, when he founded SiBond LLC to develop and manufacture Silicon-on-insulator materials. He has been with the IBM Microelectronics Division since 1997. Dr. Iyer has received two corporate awards and four Outstanding Technical Achievement awards at IBM for the development of the Titanium Salicide process, the fabrication of the first SiGe Heterojunction Bipolar Transistor, the development of embedded DRAM technology and the development of eFUSE technology. His current technical interests and work lie in the area of 3-dimensional integration for memory sub-systems and the semiconductor roadmap at 22nm and beyond. He holds over 40 patents and has received 22 Invention Plateau awards at IBM and is a Master Inventor. He received the Distinguished Alumnus award from the Indian Institute of Technology, Bombay in 2004. Dr. Iyer has authored over 150 articles in technical journals and several book chapters and co-edited a book on bonded SOI. He has served as an Adjunct Professor of Electrical Engineering at

Columbia University, NY. Dr. Iyer is a Fellow of IEEE and a Distinguished Lecturer of the IEEE and Chair of the mid-Hudson chapter of the Electron Devices Society.

## **IEEE Technology Management Council - Top Ten Notes and Key Points from**

Professor Robert Wolcott, Kellogg School of Management, Northwestern University  
Speaking on “Innovation as a Business Design Challenge” at the March 4 IEEE  
Technology Management Council Meeting (held jointly with the PDMA)

1. Talk tagline was Forts, Ships and Radars. Forts imply fortification, being careful and prudent. Most early career professionals in business focus on fortification, avoid making mistakes. Contrast with Ships (imply exploration), learning to search and reach out, exposure to mistakes. A large enterprise needs both, but leans strongly towards fortification mindset.
2. Don't focus so much on reducing or managing the rate of failure, but minimize the cost of failure. In some sense, failing often, but early, is a better strategy than failing late in the process.
3. Though there are 12 points of the compass in the Innovation Radar, improvement programs should at most focus on 5 of them. It's likely a large company with diverse strengths, is already strong in a half dozen areas.
4. Weakness in one or two areas can torpedo success; for example the recent Toyota accelerator recall and fallout.
5. Apple was uniquely positioned to take advantage of Steve Jobs strengths. Now, of course, succession plan is critical. They went thru a decade (Sculley, Spindler, and Amelio) of leaders who tried in vain to replicate Job's success, until he returned for the resurrection of the brand.
6. Focuses on large companies who have unique strengths that small companies can't match but need to make sure they have an Innovation Radar that covers the 360 degree spectrum and focus on the weaknesses they have in developing and executing the new business.
7. Cisco assigns a key executive to be the “sponsor” or “mentor” to specific product teams, in addition to their regular responsibilities. Both the executive and the team benefit from the mutual interests, learning, and joint experiences.
8. What Lou Gerstner did at IBM that helped him achieve iconic status in business leadership. Move into services, focusing in the corporate enterprise information and management needs, all contributory factors
9. Innovation Radar: The Who Where What and How on a 360 degree circle, implying a holistic approach to new business innovation is required to gain success.
10. Wal-Mart (remote location, dominate markets, build scale in operations), Target (cheap chic), Pfizer (for direct to consumer pharmaceutical marketing). Companies that lost their way (EK, Xerox, GM, Pan American Airlines, IBM, Lehmann Brothers, Sears, Hertz, Kmart) all were dominant in their era, each has declined, a few recovered)

## **The Society Previously Known As .....**

Over the past few years, several IEEE technical societies have changed their names. I have a hard time keeping track of the names, and maybe you do too. So, here is a brief rundown on the changes I know about. If I've missed any, please let me know.

- The IEEE Power Engineering Society is now the IEEE Power and Energy Society.
- The IEEE Lasers and Electro-Optics Society is now the IEEE Photonics Society.
- The IEEE Oceanic and Tuna Fish Society is now the IEEE Oceanic Engineering Society.
- The IEEE Neural Networks Society is now the IEEE Computational Intelligence Society.
- And most confusing of all, the IEEE Engineering Management Society morphed into the IEEE Technology Management Council, which includes 14 other IEEE societies. Further explanation of this move is way beyond my expertise; limited as it is, to things that make sense.

## **IEEE Table at the RES Gala, April 10, 2010**

The Rochester Section of the IEEE is an affiliate of the Rochester Engineering Society (RES). As many of you will have read in the Rochester Engineer magazine, which is mailed to full members of the section each month, the annual gala of the Rochester Engineering Society is on Saturday, April 10. The event celebrates the achievements of engineers in Rochester and surrounding communities. This year, one of the finalists for the 2009 Engineer of the Year award is an IEEE member, Dr. Kevin J. Parker, Dean Emeritus & Wm. F. May Professor of Engineering, Dept. of Electrical and Computer Engineering, University of Rochester.

The Rochester Section supports this event by hosting one or more tables at the gala. The cost of seats at an IEEE table is reduced by 50% for IEEE members and one guest, to \$40 per attendee. There are only a very limited number of seats available, and will be reserved on a first-come basis. If you are an IEEE member, you may contact Mark Schrader at [mk.schrader@gmail.com](mailto:mk.schrader@gmail.com) to make reservations. Include your full name and member number, your guest (if any) full name, and a dinner selection for each. You will receive a confirmation (if there is still room) and instructions on how to send your check, which is due prior to the event. The IEEE discount is available only for reservations made this way. Reservations made directly with the RES are not eligible for the discount.

## **Back to the Future (from the Feb. 1988 newsletter)**

New Rochester Section Electronic Bulletin Board -- As you read this, the section's new computer bulletin board system should have been installed. The system operates with OPUS software at 300, 1200 and 2400 baud. Accessing it will be quite similar to other bulletin boards. Full details on the system, a user's guide, and the software available for downloading will appear in February's Rochester Engineer. System Operator (SYSOP) Dave Qualich invites you to sign on to the system now, and take a look. This will actually help us in getting out the inevitable bugs. Last minute changes to IEEE Meetings and other announcements of interest to the members will be posted.

The BBS, while meant to meet the needs of Rochester Section IEEE members, is open to access by all interested parties. The telephone number is (716) 288-5230.





# 2010 Rochester Section Joint Chapters Meeting

*March 31, 2010*

***RIT Inn & Conference Center, 5257 W. Henrietta Road***

Registration and refreshment:	5:00 – 5:30 PM
Chapter Technical Presentations:	5:30 – 6:30 PM
Networking (cash bar):	6:30 – 7:00 PM
Dinner & Keynote Presentation:	7:00 – 9.30 PM

### **Keynote Speaker**

2009 Finalist for the Rochester Engineering Society  
Leo H. East Engineer of the Year Award

### **Dr. Kevin J. Parker**

Professor, Electrical and Computer Engineering  
Dean Emeritus, School of Engineering and Applied Sciences  
University of Rochester



### ***Imaging the hidden elastic properties of tissues: The process of development from the lab to the clinic***

Kevin J. Parker earned his graduate degrees from MIT and has served at the University of Rochester as Professor, Department Chair, Director of the Rochester Center for Biomedical Ultrasound, and Dean of the School of Engineering and Applied Sciences. His research is in image processing and medical imaging, and he is a fellow of the IEEE, the AIUM, and the Acoustical Society of America. He is an inventor or a founder of a number of enterprises, including the field of elastography and the International Conference series in that area, the Blue Noise Mask, and VirtualScopics, Inc. Professor Parker has over 150 journal publications and dozens of US and international patents.

### **Parallel Technical Presentations (5:30 – 6:30 PM)\***

***Electron Devices and Circuits and Systems Joint Chapter*** – Dr. Subramanian S. Iyer, Chief Technologist, IBM Microelectronics Division, From Deep Trenches to Skyscrapers: A walk down Memory Lane.

***Computer Society*** -- Dr. Sudeep Sarkar, University of South Florida, Perceptual Organization: The search for structure and organization in images.

***Signal Processing Society*** – Dr. Sheila Hemami, Cornell University, Task-Based Imaging – Image usefulness and its relationship to image quality.

***EMC/PSE*** -- James Herrmann, Principal Engineer at Applied Logix, LLC. Best PWBA Design Practices for Achieving Optimal EMC, Signal Integrity, and Power Integrity.

***Microwave Theory & Techniques*** -- John MacDonald, Vice President at Linear Photonics. Microwave over Fiber: Applications and Performance..

***Engineering in Medicine & Biology Society*** – Dr. Thomas Gaborski, President, Simpire Inc., Commercializing Nanotechnology to Improve Biomedical Research and Development; Dr. Michael Connolly, President & CEO, Integrated Nano-Technologies, Nanotechnology and its utility as a biodetection platform.

***Technology Management Council*** -- James S. Senall, President, High Tech Rochester, Issues related to Technology Infusion in Upstate New York.

\*No charge for attending technical presentations. Reservation / registration not required.

### **Dinner Selections**

#### **New York Strip Steak**

Peppercorn Rubbed with Roasted Sliced Portabella Mushrooms

#### **Or Chicken Roulade**

Filled with Serrano Ham & Gruyere Cheese, Smoked Tomato Nage

#### **Or Vegan Grilled Vegetable Napoleon**

Layers of Peppers, Eggplant and Portabella Mushrooms on Steamed Rice, Chimichurri Drizzle

*All dinners include salad, dinner roll basket, coffee, tea, and dessert*

**Reservations (required for dinner):** Contact the reservation clerk at RES, 585-254-2350 (or [res@frontiernet.net](mailto:res@frontiernet.net)) by March 24<sup>th</sup> to guarantee your dinner choice. Please also indicate which technical presentation you will be attending.

**Dinner:** \$20.00 (IEEE members), \$25.00 (Non-members), and \$10 for Student members.

**Further details and on-line registration at:** <http://www.r1.ieee.org/~roch/>

**2010 Rochester Section Joint Chapters Meeting***March 31, 2010***RIT Inn & Conference Center, 5257 W. Henrietta Road**

Chapter Technical Presentations: 5:30-6:30 PM

*(no registration required)*<http://www.r1.ieee.org/~roch/jc10/>***Electron Devices and Circuits & Systems Joint Chapter Proudly Presents*****From Deep Trenches to Skyscrapers:  
A walk down Memory Lane**

Subramanian S. Iyer

Distinguished Engineer and Chief Technologist  
Semiconductor Research and Development Center  
IBM Microelectronics Division, 2070 Route 52  
Hopewell Junction, NY 12533  
[ssiyer@us.ibm.com](mailto:ssiyer@us.ibm.com), Tell: 845 894 1439

**Abstract:**

Memory technology and the memory business has for many years been the engine that powered technological innovations in the semiconductors especially in the area of lithography and innovative micro-structural engineering. While stand alone memory itself has been commoditized, when embedded in high performance logic it provides incredible leverage for high performance processors, network and mobile appliances, and almost every application. In this talk, we will explore the course of memory in systems, especially DRAM, integration of deep trench technology into high performance logic, the value it brings as well as the collateral advantages it has brought about in power management, noise decoupling, autonomic chip repair and its potential evolution into 3-dimensional chip technology.

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*2010 IEEE JCM, Rochester Section*  
**Microwave Theory and Techniques,**

**March 31, 2010, 5.30pm – 6.30pm,**  
**RIT Inn & Conference Center, 5257 W. Henrietta Rd. Rochester, NY 14623**

*"Microwave over Fiber:  
Applications and Performance"*

By

**John MacDonald**

**Vice President and General Manager, Linear Photonics, LLC**  
**Director, Advanced Product Development at Linearizer Technology, Inc.,**  
**Princeton, NJ.**

**Abstract:**

The field of microwave photonics has experienced continued growth over the past several decades, due to the commercialization and availability of high power, low noise semiconductor lasers and photoreceivers, as well as a variety of commercial passive optical components that allow for the rapid development of system-level solutions for applications including antenna remoting, signal and sensor distribution, delay lines, weight reduction, and EMI immunity. This talk will highlight the primary aspects of a microwave photonic link including modulation and detection schemes, impedance matching, linear and nonlinear fiber effects, and performance factors such as gain, noise and linearity.

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