



IEEE

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MARCH 2005

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## Chapter Meetings and Events

*SCV CAS - 3/3* **Circuits and Processing Techniques for Enhancing Sigma-Delta Performance** - achieving the best trade-off between power consumption, oversampling, and performance ... [\[more\]](#)

*SIP - 3/4* **Is there life on Mars?** - The story behind the landings and findings of the Mars Exploration Rovers Spirit and Opportunity ... [\[more\]](#)

*SCV-ED - 3/8* **Gate Tunneling in MOS Devices - Modeling and Simulation, Device Characterization and Circuit Effects** - state-of-the-art in carrier tunneling studies in deep submicron MOSFETs with ultrathin gate dielectrics ... [\[more\]](#)

*SCV-Comm - 3/9* **Wireless Facts and Fiction** - sorting out WiFi, WiMax, Mesh Networks, Smart Antennas, UWB, CDMA ... [\[more\]](#)

*SCV-MTT - 3/10* **Millimeter Wave Technology and Applications** - generating, measuring, calibrating and verifying vector and scalar signals at millimeter wave frequencies ... [\[more\]](#)

*SF-GOLD - 3/10* **Graduates Of the Last Decade (GOLD): Social and Networking** - help for new engineers bridging the transition from student into career professional ... [\[more\]](#)

*SCV-PACE - 3/10* **IEEE Job Site Forum: How to Better Serve Members & Employers** - an in-depth analysis of how the IEEE jobs site is being managed ... [\[more\]](#)

*SCV-CPMT - 3/16* **New, Ultrahigh Thermal Conductivity Materials** - improved thermal performance and reliability, simplified thermal design, elimination of fans and heat pipes, weight savings ... [\[more\]](#)

*SF-PES - 3/16* **Transbay HVDC Cable Technology** - proposed high-voltage direct-current submarine cable for transmission capacity (400 MW) between the Pittsburg and Potrero switchyards ... [\[more\]](#)

*SCV-EMB - 3/16* **Gastric Electrical Stimulation** - the history of gastric electrical stimulation is discussed, focusing on recent progress in the treatment of obesity ... [\[more\]](#)

*SCV-SSC - 3/17* **The Road to 60 GHz Wireless CMOS** - a 60 GHz multi-antenna phased array for low cost robust high data rate system in a compact package ... [\[more\]](#)

*SCV-CE - 3/22* **Panel Discussion: Video on Demand (VOD)** - home networking and service provider solutions for choice and flexibility in Internet based VOD ... [\[more\]](#)

*SCV-CNSV - 3/22* **Role of Computer Tomography in Molecular Imaging** - this technique will become the future of medical imaging, especially in gene therapy ... [\[more\]](#)

*SCV-Rel - 3/23* **How Cosmic Rays Cause Computer Downtime** - more users and designers most now contend with soft error possibilities in their designs ... [\[more\]](#)

Continued →

*SCV-Ed - 3/23* **Shaping the Future of Engineering Education in Silicon Valley** - current challenges and possibilities for shaping the future of engineering education in the Valley ... [\[more\]](#)

*SCV-EMB - 4/20* **Tactile Pressure Imaging: A New Tool For In Vivo Physiological Assessment for Gastroenterology** - portable advanced pressure imaging system with high fidelity pressure maps of the gastrointestinal tract ... [\[more\]](#)

## Upcoming Conferences in the Bay Area

March 6-10: **Embedded Systems Conference**  
Moscone Convention Center, San Francisco [\[more\]](#)

March 9-11: **Int'l Symposium on Systems and Human Science - Safety, Security, Reliability**  
Milbrae (Westin at SF Airport) [\[more\]](#)

March 21-23: **Symp on Quality Electronic Design**  
Double Tree Hotel, San Jose [\[more\]](#)

April 12-14: **IEEE Wescon**, Santa Clara Conv'n Ctr  
Exhibits, seminars, tutorials [\[more\]](#)

## Upcoming Courses:

March 8: **Communication & Conflict Mgmt using Myers-Briggs (MBTI)**  
March 15: **Writing Effective E-mail Messages**  
March 24: **Getting Things Done Across Organizational Borders** [\[more\]](#)

April 12: **Motor Control ... Robot Manipulators ... Control System Design: A Review** [\[more\]](#)

April 13: **Designs for the High-Speed, Broadband Information Age** [\[more\]](#)

April 13: **Packaging and Manufacturing of RFID Technology** [\[more\]](#)

April 12-13: **Electromagnetic Compatibility Tutorials (four)** [\[more\]](#)

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**MARKETPLACE** – Services [page 3](#)

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**Conference Calendar** [page 26](#)

# IEEE GRID

**Your Networking Partner®**

March 2005 • Volume 52 • Number 3

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IEEE **GRID** is the monthly newsmagazine of the San Francisco Bay Area Council of the Institute of Electrical and Electronics Engineers, Inc. As a medium for both news and opinion, the editorial objectives of IEEE **GRID** are to inform readers in a timely and objective manner of newsworthy IEEE activities taking place in and around the Bay Area; to publish the official calendar of events; to report on IEEE activities of a national and international scope; and to serve as a forum for comment on areas of concern to the engineering community by publishing contributed articles, invited editorials and letters to the editor.

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## *From the editor . . .*

There's a great opportunity in our Council this spring for learning, updating skills, and meeting with suppliers and customers – Wescon is at the Santa Clara Convention Center in April!

Some of you remember when Wescon was at the Cow Palace in Brisbane; more recently it has been at Moscone Center in San Francisco (not easy for many working engineers to get to). But in Santa Clara, there is plenty of free parking, and it's easily accessible by car from any of the local freeways: 880, 101, and 237.

In this **GRID** (pages 7 thru 11) you'll find a profile of some of the events that'll happen from April 12-14, and you should try to attend at least one day of them. Most of the sessions, talks, and panels are free, and your Wescon pass will get you into the exhibits as well. There are also a series of tutorials, seminars, and workshops, organized by local Chapters or by Region 6 (and all at modest Member rates).

As the March **GRID** went to press, I only had access to some of the information – but what I saw was impressive. You'll be able to update skills, learn about new tools, network with key professionals, and do some career and skills planning while you're at Wescon. To see what else is developing at Wescon, visit the website: **[www.wescon.com](http://www.wescon.com)**.

We'll have an update in the April **GRID**, but you'll want to reserve your seat in one or more of the events before that issue "hits the streets" at the end of March. And I'll plan to see you on the floor at Wescon!

This issue contains a listing of all of the Chapter officers in the Council, along with Section officers. Please save and print this handy guide – you'll be able to get in touch with any Chapter chair, program committee, and other volunteers. Consider volunteering to give one of the Chapters a hand this year – setting up an evening talk, helping to sign up new members, perhaps being a speaker yourself.

*Paul Wesling* [editor@e-grid.net](mailto:editor@e-grid.net)

**NOTE:** This PDF version of the IEEE **GRID** – the **GRID.pdf** – is a monthly publication and is issued a few days before the first of the month. It is not updated after that. Please refer to the Online edition and Interactive Calendar for the latest information: **[www.e-GRID.net](http://www.e-GRID.net)**

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## IEEE Professional Skills Courses

### **new! Communication and Conflict Management using Myers-Briggs (MBTI)**

Date/Time: Tuesday, March 8, 8:30AM-4:30PM  
Instructor: Linda Price  
Location: Carl Zeiss Meditec, Dublin

The Myers-Briggs Type Inventory (MBTI) is the most widely used instrument in the world for gaining a deeper understanding of self, others and interpersonal relationships. It provides insights on the four basic "people patterns" that hold the key to leadership styles, effective communication, conflict, team building and productivity.

**Key Topics:** Discover your Myers-Briggs Type – Understand four basic "people patterns" and how they think and act – Discover your preferred communication and conflict style – Build trust and rapport through communication – Practice how to communicate and influence each type – Learn how to use questions that gain quality information – Separate facts from emotions – Speak with clarity and commitment

**Improve your skills – register for one of these classes. Bring a team!**

### **new! Writing Effective E-mail Messages**

Date/Time: Tuesday, March 15, 8:30AM-4:30PM  
Instructor: Kathleen Mohn  
Location: Synopsis, Sunnyvale

A step-by-step process for designing and writing clear business emails. The training involves writing, revising, and editing exercises; critiquing documents; games; and lecture. You will walk away with confidence in writing and editing skills and a consciousness about international writing.

### **Getting Things Done Across Organizational Borders**

Date/Time: Thursday, March 24, 8:30AM-4:30PM  
Instructor: Kathleen Mohn  
Location: Synopsis, Sunnyvale

This seminar introduces you to innovative practices for dealing with people who do not report to you -- but whose assistance and support are critical.

For complete information and registration form, see our Chapter website, right-hand column:

[www.cpmt.org/scv/](http://www.cpmt.org/scv/)

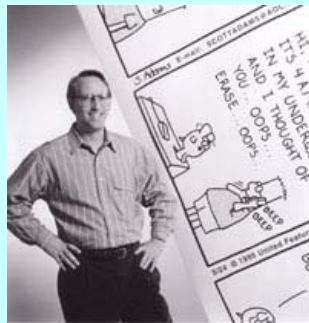
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The Embedded Systems Conference offers an exciting line-up of special events. All of our special events are free to registered attendees and range from keynote addresses to networking opportunities and receptions, to panel discussions all designed to enrich your event experience.

**Keynote Address:**  
**Cartoonist Scott Adams:**  
 From Cubicles to Comics  
 Tues March 8, noon - 1:00 PM



**Design Seminar Keynote:**  
**Software Defined Radio —**  
**Business, Market, and Social**  
**Ramifications**  
 Stephen M. Blust and Mark Cummings, SDR Forum  
 Wed March 9, 2-3 PM

**Panel Discussions**  
**The Future of Processors for Signal Processing Applications**  
 Monday, March 7; 6–7 PM

**After the Storm: How the Industry has Changed Forever**  
 Wednesday, March 9; 1 – 2 PM

**Engineering Humanity: Managing the Chaos**  
 Thursday, March 10; 10:00am - 11:00am

**Plus Other Panel Discussions:**  
 • Moving Beyond 3G: Where Do We Go From Here?  
 • The Transformation of the TV  
 • Silicon Support at Layer 7: XML, SOAP, and Vertical Protocols  
 • The Future of Wireless Networking

**Visit the Exhibits** (free admission)

The Embedded Systems exhibits floor features leading companies showcasing cutting-edge hardware, software, tools, and the full spectrum of system components! You will learn relevant new skills, meet and talk with vendors, network with peers, and develop new strategic partnerships – all under one roof, at one time, with both daytime and evening hours:

Tues 1-8pm – Wed 10am-7pm – Thurs 9am-2pm

Visit [www.esconline.com/sf/exhibits](http://www.esconline.com/sf/exhibits) 

**Technical Program**

**Sunday full-day tutorials**

- User Interface Design • Migrating from a Legacy RTOS to Embedded Linux • Scaling System Design • Embedded Linux Jumpstart • Embedded C Programming • Introduction to Real-Time Operating Systems • Real-Time UML

**Monday full-day tutorials**

- Real-Time Kernels • System Architecting and Tradeoffs • Managing Embedded Projects • Real-Time Design Guidelines and Rules of Thumb • Embedded GNU Jumpstart • Crafting Embedded Systems in C++ • Architectural Design of Device Drivers • TCP/IP Networking

\$645 for one full day; \$995 for BOTH days

**Plus 132 three-hour and 90-minute Technical Classes** on Tuesday through Friday– see the Advance Program for listing/descriptions and times for each topic.

**Register now to ensure your participation!**

[www.esconline.com/sf/program](http://www.esconline.com/sf/program)

**Seven full- or multi-day DESIGN SEMINARS:**

- **Analog and Power** (Monday – 2 tracks)
- **DSP Performance** (Monday – 2 tracks)
- **Easy Paths to Silicon** (Mon & Tues, 2 tracks)
- **Consumer Systems** (Tues & Wed, 2 tracks)
- **3G Cellular Systems** (Tues & Wed, 2 tracks)
- **Wireless Networking** (Wed & Thurs, 2 tracks)
- **Network Systems** (Wed & Thurs, 2 tracks)

... and the new

**Microprocessor Summit** (Monday) – new-product introductions in AM; three tracks on shipping products in PM

**Flexible Registration Packages**

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**On-line Registration closes on Wednesday March 2!**

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# QUALITY ELECTRONIC DESIGN

March 21-23, 2005

DoubleTree Hotel, San Jose



[www.isqed.org](http://www.isqed.org)

ISQED is the leading international conference dealing with design for manufacturability and quality issues front-to-back. The conference spans three days, Monday through Wednesday, in three parallel tracks, hosting nearly 100 technical presentations, six keynote speakers, two panel discussions, workshops/tutorials and other informal meetings. ISQED proceedings are published by IEEE Computer Society and hosted in the digital library. Proceedings CD ROMs are published by ACM.

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## CONFERENCE HIGHLIGHTS



IEEE



### TUTORIALS/WORKSHOPS

ISQED 2005 offers a single full-day tutorial track focusing on a range of critical issues in circuit design and packaging at sub-90nm CMOS. We are pleased to have five noted experts in their respective fields (Design methodologies for implementing Robust Circuits with desired Power Performance Characteristics, Managing Leakage Power, Circuit Design in the Presence of Uncertainty, and Modeling and Design of Chip-Package Interface) to present the latest research in these compelling areas as follows:

#### Design of sub-90nm Circuits and Design Methodologies

**Ruchir Puri**, IBM TJ Watson Research Center, NY  
**Sachin Sapatnaker**, Electrical & Computer Engineering, University of Minnesota  
**Tanay Karnik**, Intel Circuit Research Labs, Hillsboro, OR  
**Rajiv Joshi**, IBM TJ Watson Research Center, NY

#### Modeling and Design of Chip-Package Interface

**Luca Daniel**, Massachusetts Institute of Technology, Cambridge, MA  
**Byron Krauter**, IBM Microelectronics, Austin, TX  
**Lei He**, UCLA EE Dept, Los Angeles, CA

### PLENARY SESSIONS

Two plenary sessions will be held on Tuesday and Wednesday mornings. Six industry & academia leaders will discuss the issues surrounding manufacturability and electronic design from various points of view.

Plenary keynote speakers are:

**John Kibarian**, President & CEO, PDF Solutions  
**Ashok K. Sinha**, Sr. VP & GM, Applied Materials  
**Joe Sawicki**, Vice President & General Manager, Mentor Graphics  
**Aki Fujimura**, Chief Technology Officer, Cadence Design Systems  
**Kurt A. Wolf**, Director, Library Management Division, TSMC  
**Bernard Candaele**, Department Head, SoC, IC & EDA, Thales, Paris

### PANEL DISCUSSIONS

ISQED is pleased to offer two high-power evening panel discussion sessions, where many leading experts, address the important issue of quality design. These panels would focus on the following topics:

#### 1. IP Creation and Use

*What roadblocks are ahead or it is just a clear and bumpy road?*

#### 2. Nanoelectronics: Evolution or Revolution?

### LUNCHEON SPEECH

**IP Quality: A Design, not a Verification Problem**

**Michael Keating**, Synopsys

### TECHNICAL SESSIONS

ISQED Technical sessions start on Tuesday March 23 and continue until the afternoon of Wednesday March 24. Besides the above plenary sessions, panel discussions, and workshops, the program consists of seventeen technical sessions, featuring up to 80 papers on various challenging topics related to design for manufacturability and quality. A list of topics includes:

- Tools, Flows & IP Blocks: Interoperability and Implications (EDA)
- Design for Manufacturability & Quality (DFMQ)
- Design Verification and Design for Testability (DVFT)
- Package-IC Design Interactions and Co-Design (PDI)
- Robust Device, Interconnect, and Circuits (RDIC)
- Physical Design, Methodologies and Tools (PDM)
- Effects of Technology on IC Design, Performance, Reliability, Yield (TRD)
- System Level Design, Methodologies and Tools (SDM)

Please refer to the ISQED web site at [www.isqed.org](http://www.isqed.org) for information regarding the tutorials, conference, and hotel registration. Direct all conference inquiries to [isqed@isqed.org](mailto:isqed@isqed.org). Early registration is recommended to take advantage of the discounted registration fee.

**See the full Advance Program  
and Tutorial Descriptions  
(21 pages, 225kB PDF):**

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**Visit the ISQED website for  
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Wescon brings engineers and scientists together in an environment that advances their education and careers by opening doors to a wealth of intellectual property, a wide range of technology tools and components, and access to immediate solutions for commercial applications.

**Keynote:**

**Is the Wireless Industry Disconnected?**

Martin Cooper,  
 Array Communications



**Special Sessions (free):**

**Spintronics: A New Spin on Electronics**

Kevin Roche, Staff Engineer/Scientist, IBM Almaden

**Advances in Wireless Communications**

Dr. Arthur W. Astrin, Senior VP, STEP Communications



**Mark your  
 Calendar  
 now!**



**Wescon – owned by engineers and run  
 by engineers to benefit engineers.**

**Test & Measurement Track**

**Free Tutorials and Panels:**

**Advances in Signal Integrity Testing**

Rick Nelson, Editor in Chief,  
 Test & Measurement World



**Testing and Troubleshooting Serial Data Signals and Getting More Out of Your Digital Oscilloscope**

Dr. Michael Lauterbach,  
 LeCroy Corporation



**Productivity Features in Mid-range, Windows Oscilloscopes**

**Bill Leineweber, Tektronix**  
**Debugging Elusive Digital System Problems Using Sophisticated Logic Analyzer Triggering and Faster Ways to Characterize Transients RF Signals**

David Hayworth, Tektronix

**Test Data Management System Optimizes Product Development Process**

Don Holley, VI Technology

**High Speed Probing and Signal Fidelity**

Roland Crop, Tektronix

**Design & Analysis Track**

To deal with increasing chip- and system-level complexity, designers depend on a variety of design and analysis tools to successfully develop their products from conception through the manufacturing supply chain.

**Free Tutorials and Panels:**

**Innovative Approaches to Tackling the Challenges of D2M**

Steve Schulz, President and CEO, Si2

Morning session topics: – DFM: The Physics – Yield: The Basics – Lithography Challenge – Design Optimization Yield – Test to Yield Prediction – Design for Yield: Mixed Signal Analog – Library Challenge

**Meeting the Challenges of Complex Systems Design**

Henry Potts, Vice President and GM, Mentor Graphics

**Advanced Interconnect**

David Wiens, Mentor Graphics

*Also:*

**Cost Trade-offs and Design Techniques for Embedded Passives and HDI Technologies**

**Integrated Systems Design -- Trends, Challenges and Solutions**

**Register for free pass and events today:**

**[www.wescon.com](http://www.wescon.com)**

Continued, next page →

SCV Microwave Theory & Techniques Chapter

## Designs for the High-Speed, Broadband Information Age



- Wednesday, April 13, 2005
- Seminar: 8:30 AM – Noon
- Registration/Breakfast: 8 AM – 8:30 AM
- Santa Clara Convention Center
- In conjunction with IEEE WESCON'05
- Includes free admission to WESCON exhibits

More information on [Page 10](#)

SCV Control Systems Chapter



**Three Seminars**  
(choose one, or all three)

### General Concepts of Motor Control

8:30 AM – 11:00 AM

### Understanding Robot Manipulators

11:30 AM – 2:00 PM (includes lunch)

### Control System Design: A Review

2:30 PM – 5 PM

- Wednesday, April 13, 2005
- Santa Clara Convention Center
- In conjunction with IEEE WESCON'05

More information at

[www.ewh.ieee.org/r6/scv/css/](http://www.ewh.ieee.org/r6/scv/css/)

SCV Components, Packaging & Mfg Technology Chapter

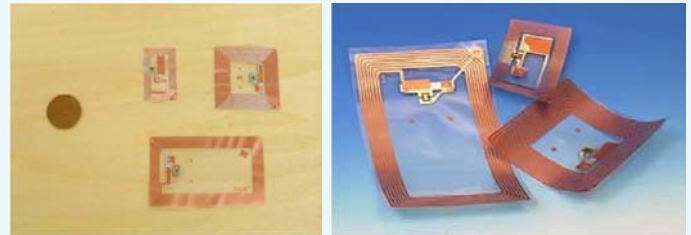
## Packaging and Manufacturing of RFID Technology

- Wednesday, April 13, 2005
- Seminar: 1:00 – 5:30 PM
- Registration: begins at Noon
- Santa Clara Convention Center
- In conjunction with IEEE WESCON'05
- Includes free admission to WESCON exhibits
- Plenty of free parking

With the advent of RFID chips in the commercial sphere, many companies and individuals are taking an interest in this emerging market. Major retail outlets as well as government uses of the devices are spurring a great deal of speculation about the future of the technology and creating demands for lower cost. Because of the small size and extreme cost constraints, packaging and test of these unique devices presents a challenge in terms of handling, yield and cost. This seminar will bring together leading experts in the field to discuss manufacturing, infrastructure, packaging and cost reduction efforts in the industry as well as an overview of RF packaging at Freescale Semiconductor.

The topics include:

- RFID technology and deployment
- Packaging technology and standards
- Frequency ranges and antenna packaging
- Manufacturing and cost considerations
- Training opportunities and sources of more information



### PROGRAM

- Introduction and Overview – Seminar Chairman
- Al Scott - Besser Associates "Overview of RFID Technology and Deployment"
- Raj Bridgelall - Alien Technology – "Packaging Technology for UHF RFID Tags"
- Jim Eagleson - Savi Technology – "International RFID Frequencies and Package Outline Standards"
- Rod Petrianos - Escort Memory Systems – "Packaging for RFID Antennas, Controllers, and Network Interface Modules"
- Norm Owens - Freescale Semiconductor – "RF/Microwave Packaging Technology at Freescale Semiconductor"

### REGISTER TODAY!

The seminar is filling up fast, so register early to ensure a seat for this interesting technical program.

REGISTRATION	By April 1	After April 1
IEEE MEMBER	\$75.00	\$95.00
NON-MEMBER	\$110.00	\$125.00
STUDENT (fulltime)	\$30.00	\$35.00
UNEMPLOYED*	\$30.00	\$35.00

\*With proof of unemployment

Register through PayPal or get registration form:

[www.cpmt.org/scv/courses/rfid.html](http://www.cpmt.org/scv/courses/rfid.html)



## Explore Wescon at

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SCV Electromagnetic Compatibility Chapter

### Four Half-Day Tutorials (choose one, or all four)

Fundamentals of Electromagnetic Compatibility

April 12 – 8:00am – noon

Fundamental Concepts of Signal Integrity & EMC Related to Printed Circuit Boards

April 12 – 1:00pm – 5:00pm

Testing for EMC Compliance – Approaches and Techniques

April 13 – 8:00am – noon

Fundamentals of Grounding and Shielding for System Level Noise Reduction

April 13 – 1:00pm-5:00pm

**Instructor: Mark Montrose**

Montrose Compliance Services, Inc.

### Other Tutorials:

Key Issues of EMI/EMC

April 14 – 9:00am – Noon

High-Frequency Digital Design and PCB Layout

April 14 – 1:00pm – 4:00pm

Get full information and register at

[www.wescon.com](http://www.wescon.com)

### Exhibits

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- Prototype Production
- Power Components
- Active, Passive & Electro-mechanical Components
- Interconnects



### Industry Leaders

Respected leadership from across industry sectors join together to determine IEEE Wescon's content and direction. The Advisory Committee for this spring's event includes:

**Dr. Meyya Meyyappan**, Director, Center for Nanotechnology, NASA Ames Research Center

**Larry Tracewell**, President and CEO, Tracewell Systems

**Dr. Jack Pearson**, Former Vice President and General Manager, Air Combat and Strike Systems, Raytheon

**Masami Yamamoto**, Co-founder and Chairman, Beganto, Inc.

**Mark Strauch**, Deputy Program Director, Engineering, Lawrence Livermore National Laboratory

**Dr. Anthony F. Laviano**, Council on Nanotechnology, National Academy of Science

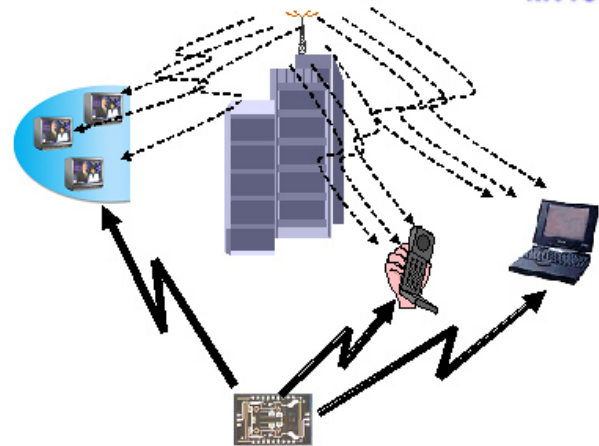
**Bernie Siegal**, IEEE Fellow & Director, Thermal Engineering Associates, Inc.



# Designs for the High-Speed, Broadband Information Age



- Wednesday, April 13, 2005
- Seminar: 8:30 AM – Noon
- Registration/Breakfast: 8 AM – 8:30 AM
- Santa Clara Convention Center
- In conjunction with IEEE WESCON'05
- Includes free admission to WESCON exhibits
- Plenty of free parking



As the need for higher data rates and faster user interfaces increases, demands are placed on both the technology used to transmit and receive this information and on its designs. Previously, the realm of high speed, high frequency, high bandwidth circuits was relegated to III-IV materials like GaAs or InP. Recently, advances in materials like Si and SiGe have forced designers to look at these technologies to keep the cost low and to be competitive. Additionally, innovations like those in newer materials like GaN have been sought to provide advantages for these types of circuits.

Therefore, the ability to understand how the requirement for higher speed and faster data rates drives microwave circuit designs and the ability to design circuits in these various technology choices is an important part of the contemporary engineer's job as well as his/her value to an organization. The main challenges for today's microwave circuit designer are to understand which technology to use for a given application and know the tradeoffs and limits when designing in these technologies.

This seminar will explore the advances that have been made in these various material technologies and their affect on IC designs. Speakers will cover:

- The applications and requirements for higher speed and faster data rates
- The advantages and disadvantages of these technologies for handling higher speed/data rate applications
- How the need for faster and increased quantity of information affects circuit designs
- Current examples of designs and the tradeoffs addressed

To register, send your contact information and the fee to: Benson Chan (MTT Treasurer)  
M/A-Com - 5300 Hellyer Ave  
San Jose, CA 95138  
Phone# 408-624-3359

## PROGRAM

### 100GHz CMOS Circuits and the High Speed Broadband Information Age

Dr. Luiz Franca-Neto, Technical Leader and Manager, Broadband Wireless Division (BWD) Intel Communications Group (ICG), Intel Corporation

### SiGe and RFCMOS Technology for the High Speed Information Age

Dr. Xiaojuen (Ben) Yuan, Ph.D, IEEE Senior Member, Vice Chair, SSC/AP/MTT IEEE San Diego Chapter, IBM West Coast Foundry Applications

### InP HBT Design for 100 to 200GHz IC's

Dr. Zachary Griffiths, Post Doc Researcher, UC Santa Barbara

### SiC and GaN Based Transistor and Circuit Advances

Mr Simon Wood Principal RF Design Engineer, Cree Microwave

## REGISTER TODAY!

Space is limited, so please mail in your registration by April 6. Registration fee includes breakfast and the course CD (proceedings).

Registration Fee:	Pre-Reg'n by Apr 6	After Apr 6
IEEE Members	\$50	\$65
Nonmembers	\$75	\$90
Students	\$30	\$30
Unemployed *	\$30	\$30

\* Bring or send a photocopy of unemployment check receipt dated within 2 weeks of registration to qualify

For Workshop registration information, please visit the MTT Chapter website:

[www.mtt-scv.org](http://www.mtt-scv.org)

## IEEE Region 6 Tutorials at Wescon

Enhance your education with a broad spectrum of practical skills that can immediately pay off with this low cost set of up-to-date tutorial sessions – only \$22.50 per 105-minute Tutorial session.

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Getting Started with Windows Development in .Net – Introduction to Visual Basic.net – Introduction to C Sharp.net

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### Professional Activities & Career Tutorials:

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To help keep costs low, discounts are provided for IEEE members and for those who register early (by March 11). To help us in session planning, please register early to guarantee a seat.

### Hardware Design Tutorials:

Zigbee: Wireless control that simply works – System C – HDL – DSP for FPGAs

### Open Source Design Tutorials:

The Emerging Economic Paradigm of Open Source – How Open Source is Transforming the Business of Technology – Open Source Hardware Design – Open Source EDA Tools – RFID Workshop

For full information on the times and contents of these tutorials, please download the PDF (80 kB)

[www.e-grid.net/docs/wesconr6.pdf](http://www.e-grid.net/docs/wesconr6.pdf)

Further information: Contact **Gina Earnest**, IEEE Los Angeles Council, at **310-524-4134**

## Santa Clara Valley K-12 Program

Want more information? Can you help?

Contact: **David Fong**, [daffy@ieee.org](mailto:daffy@ieee.org), (510) 687-4507

Come to our **K-12 Committee Meetings** – held once a month on Tuesdays during lunch at Silicon Valley Technical Institute. Come join us! We'd love your assistance on some of our projects this year:

### Gift of Reading Volunteer Event

During the week of December 4-10, 2004, six IEEE volunteers (Charlie Neuhauser, Chris Silbert, Issac Leung, David Fong, Sherry Woo, and Kara Poon) sorted thousands of books and packaged them into various boxes for distribution. This year was Charlie's first year. He had some good ideas to improve the productivity: use a bar code system to easily identify the grade and age range for each book. We had fun with the other volunteers from different non-profit organizations.

Books were distributed by Daisy Cheng and David Fong to schools between December 11 and January 4.

Thanks to Kids in Common and the San Jose Mercury, we were able to sort books and distribute books to over 3650 children in the Santa Clara Valley Area – two thousand more books than last year. Most are for low-income immigrants and migrant families. About 100 books were in Spanish.

## Personal Library for Sale

Electronics and Communications Engineering Works

After 45 years as an independent consultant, I am now preparing for retirement. I invite you to consider acquiring my extensive collection.

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- Bell System Technical Journal
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## THURSDAY MARCH 3

### Circuits and Processing Techniques for Enhancing Sigma-Delta Performance

Speaker: Dr. Franco Maloberti, Electrical Engineering Dept, the Univ of Texas at Dallas  
Time: 6:30 PM - refreshments; 7:00 PM for presentation  
Place: Cadence Design Systems, Building 5, 2655 Seely Avenue, San Jose  
Cost: Donation for refreshments  
RSVP: 408 894-2646 (leave a message) or by email to [ssc\\_scv\\_rsvp@yahoo.com](mailto:ssc_scv_rsvp@yahoo.com)  
Web & Map: [www.ewh.ieee.org/r6/scv/ssc/](http://www.ewh.ieee.org/r6/scv/ssc/)

**Franco Maloberti** received the Laurea Degree in Physics (Summa cum Laude) from the University of Parma, Parma Italy, in 1968 and the Dr. Honoris Causa degree in electronics from the INAOE in 1996. In 1993 he was a Visiting Professor at ETH-PEL, Zurich and in 2004 Visiting Professor at EPFL, Lausanne. He was the TI/J.Kilby Analog Engineering Chair Professor at the Texas A&M University and the Distinguished Microelectronic Chair Professor at University of Texas at Dallas and part-time Professor at the University of Pavia, Italy. Currently he is Professor and Head of the Micro Integrated Systems Group, University of Pavia, Italy. His professional expertise is in the design, analysis and characterization of integrated circuits and analog-digital applications, mainly in the areas of switched capacitor circuits, data converters, interfaces for telecommunication and sensor systems, and CAD for analog and mixed A-D design. He has written more than 300 published papers, three books and holds 18 patents (17 USA, 1 Europe).

Dr. Maloberti was Vice-President, Region 8, of the IEEE Circuit and Systems Society from 1995 to 1997 and an Associate Editor of *IEEE-Transactions on Circuit and System-II*. He received the 1999 IEEE CAS Society Meritorious Service Award, the 2000 CAS Society Golden Jubilee Medal, and the IEEE Millenium Medal. He was the 2002-2003 President of the IEEE Sensor Council. He is member of the BoG of the IEEE-CAS Society. He is a member of the Italian Electrothechnical and Electronic Society (AEI), the Editorial Board of *Analog Integrated Circuits and Signal Processing*, Associate Editor of *IEEE-TCAS II*, and a Fellow of the IEEE.

Sigma-delta modulators are now used for an increasing number of applications. For portable communications it is required to achieve the best trade-off between power consumption, oversampling, and performances. Some techniques that address the above points are discussed. The first is about the synthesis of noise transfer functions. The method enables special features like band-pass via N-path architectures with an effective resolution and minimum power consumption. A second technique considers multi-bit architectures. They are good for enhancing resolution. However, the required linearity on the DAC imposes the use of averaging techniques (DEM) that transform distortion into noise. DEM works well for DACs with not more than 3 bits. This presentation shows how a digital processing method alleviates the needs of using DEM. Another problem addressed here concerns the swing reduction of op-amps used in modulators. The described methods allow us to relax the op-amp specs with benefits on power consumption and system linearity.

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### Gate Tunneling in MOS Devices - Modeling and Simulation, Device Characterization and Circuit Effects

Speaker: Dr. Hisham Massoud - Duke University,  
Durham, NC  
Time: Pizza social at 6:00pm;  
Presentation at 6:15pm  
Place: National Semiconductor Corp. Building 31  
Large Auditorium, 955 Kifer Road,  
Sunnyvale  
Cost: free  
RSVP: not required  
Web: [www.ewh.ieee.org/r6/scv/eds/  
announcements/ieee-scv-eds-  
20050301.html](http://www.ewh.ieee.org/r6/scv/eds/announcements/ieee-scv-eds-20050301.html)

**HISHAM Z. MASSOUD** received the Ph.D. degree in Electrical Engineering from Stanford University, Stanford, CA, in 1983. In 1983, he joined the Department of Electrical and Computer Engineering at Duke University, Durham, NC, where he is currently Professor and Director of the Semiconductor Research Laboratory. He has been a research scientist at the IBM Thomas J. Watson Research Center, Yorktown Heights, NY, in 1977 and 1980/81, the Microelectronics Center of North Carolina in 1987, the Hewlett-Packard Integrated Circuits Business Division in 1992, and the Max-Planck Institute for Microstructure Physics in 1997 and 1998. His research interests are in the areas of the thermal and rapid-thermal oxidation of silicon in the ultrathin-film regime, Si-SiO<sub>2</sub> interface studies, point-defect and diffusion phenomena, carrier tunneling studies in MOS devices and their effects on device physics, characterization, and simulation, and the effects of gate tunneling on MOS circuit performance. Dr. Massoud is a Fellow of IEEE, and a member of APS, AVS, ECS, MRS, AAAS, Eta Kappa Nu, Tau Beta Pi, and Sigma Xi.

In this talk, the state-of-the-art in carrier tunneling studies in deep submicron MOSFETs with ultrathin gate dielectrics will be presented. Special emphasis will be placed on topics in modeling and simulation, device characterization, and the effects of gate tunneling on the performance of static and dynamic MOS integrated circuits. A review of gate tunneling modeling and simulation in MOS devices will be followed by a discussion of gate tunneling distributions along the channels of MOSFETs used in device characterization. These simulations indicate that current reports of gate tunneling current densities must be revisited to include these channel-position-dependent gate tunneling distributions. The second part of the talk will focus on the effects of gate tunneling on the static and dynamic performance of future generations of MOS integrated circuits. Simulations results were obtained for ICs in the 90, 75, 65, 53, 45, 40, and 35nm technology generations. The effects of gate tunneling on power dissipation, noise immunity, and the dynamic characteristics and performance will be presented. A conclusion will be made on the role of gate tunneling in determining the ultimate CMOS technology node.



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### Wireless Facts and Fiction

Speaker: Benjamin Friedlander, Professor,  
Department of Electrical Engineering,  
University of California, Santa Cruz  
Time: 6:00 PM (pizza & soda),  
6:30 PM presentation  
Place: National Semiconductor Credit Union,  
Bldg. 31, 955 Kifer Rd., Sunnyvale  
Cost: \$1 donation to partially cover food cost  
RSVP: please reply to [rsvp@comsocscv.org](mailto:rsvp@comsocscv.org)  
Web & Map: [www.comsocscv.org](http://www.comsocscv.org)

**Professor B. Friedlander** is from the Department of Electrical Engineering, University of California at Santa Cruz, where he is the director of the Wireless Communications and Signal Processing Lab. He has over 35 years of experience in wireless communications and is an internationally known expert on performance analysis of communication systems. He has consulted extensively in the industry and has been involved in several Silicon Valley wireless startups.

He is currently working on: interference mitigation techniques for reliable operation in the license exempt spectrum using WiFi, WiMax and other wireless systems; using multiple antennas for diversity and spatial multiplexing (MIMO, smart antennas); advanced techniques for fixed-point and mobile broadband; evaluating the performance of wireless systems; 2G, 3G, 4G and beyond; wireless location estimation; and sensor networks (radar, sonar, and imaging systems).

He received the B.Sc. and the M.Sc. degrees in Electrical Engineering from the Technion in Israel, and the Ph.D. degree in Electrical Engineering and M.Sc. degree in Statistics from Stanford University. He is a Fellow of the IEEE, recipient of the IEEE Third Millennium Medal, the Technical Achievement Award of the IEEE Signal Processing Society, and various awards for papers published in the professional literature.

WiFi, WiMax, Mesh Networks, Smart Antennas, OFDM, UWB, CDMA: The proliferation of wireless systems and technologies continues to generate tremendous amounts of excitement and a commensurate amount of confusion and uncertainty. Claims of performance breakthroughs and improvements abound, making it difficult to sort out fact from fiction.

This talk focuses on the performance of the physical layer of wireless communication systems, the tradeoffs and limits of throughput/capacity and range/coverage of broadband wireless access systems will be discussed. We take some of the common performance claims made in the industry regarding 802.11, 802.16 in its various flavors, and other broadband access technologies, and analyze them to address questions such as: What do these claims really mean? How credible are they? How can we make useful comparisons between different systems? We identify some of the questions you should always ask when someone is trying to sell you on a new and improved wireless technology.

The talk will cover some of the basic physical laws governing all wireless systems, how they shape wireless broadband access deployments, and what they tell us about which wireless technologies are more likely than others to be successful in the long run.

#### Patent Agent

Jay Chesavage, PE  
MSEE Stanford  
3833 Middlefield Road, Palo Alto 94303  
[patents\(at\)chesavage\(dot\)com](mailto:patents(at)chesavage(dot)com)  
TEL: 650-494-9162 FAX: 650-494-3835

## THURSDAY MARCH 10

### IEEE Job Site Forum: How to Better Serve Members & Employers

Speaker: Alex Witkowski

Time: 6:00 PM for social and food;  
6:30 PM for presentation

Place: Cadence, Building 5, 2655 Seely Ave,  
San Jose

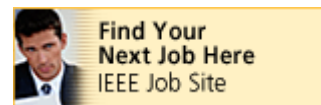
Cost: no charge for the pizza and drinks

RSVP: not required

Web: [www.ewh.ieee.org/r6/scv/scv\\_pace.html](http://www.ewh.ieee.org/r6/scv/scv_pace.html)

Alex offers an in-depth analysis of how the IEEE job site is being managed. He will discuss findings he submitted to the IEEE-USA Board and welcomes your feedback during the interactive discussion. The meeting will be held from 6PM to 8PM on Thursday, March 10. We will have Pizza and soft drinks. Presentation will begin at 6:30PM.

Check out the site itself (click):



## SCV Microwave Theory & Techniques

### THURSDAY MARCH 10

#### Millimeter Wave Technology and Applications

Speaker: Dr. Mohamed Sayed, Consultant,  
Microwave and Millimeter Wave Solutions

Time: 6:00pm - Refreshments and Social Hour;  
7pm - Technical Presentation

Place: Agilent Technologies, Santa Cruz  
conference room, Bldg 50, 5301 Stevens  
Creek Blvd, Santa Clara

Cost: none

RSVP: not required

Web & Map: [www.mtt-scv.org/](http://www.mtt-scv.org/)

Mohamed was born in Cairo, Egypt where he obtained his BS and MS degrees in electrical engineering from Cairo University. He obtained his Ph.D. degree from Johns Hopkins University.

Mohamed worked at H-P for 27 years, and three years for Agilent Technologies. He developed and launched state-of-the-art microwave and millimeter wave systems and products through initiating and creating cutting-edge technologies for vector network analyzers, sources, spectrum analyzers, and counters. He has been principal consultant for Microwave and Millimeter Wave Solutions since April 2003.

The millimeter wave region ranges from 30 to 300 GHz (wavelengths range from 10 to 1 millimeters). Components, devices, circuits and connections are different across this 270 GHz range. Some of the uses are in satellites, communications, scientific and military applications. Generating, measuring, calibrating and verifying vector and scalar signals at millimeter wave frequencies will be presented. Typical applications with typical measurement systems will be discussed. General trade-offs between accuracy, traceability, measurement speed, cost and development time will be outlined.

Mohamed taught graduate and undergraduate courses at Cairo University, Johns Hopkins University, Howard University, and San Jose State University. In addition, he has been a technical advisor for Masters, Doctoral and Post Doctoral candidates.

Mohamed is author and co-author of over 40 publications in the field of device characterization, microwave and millimeter wave measurement systems and high power amplifier design. He is a member of IEEE and was technical program chairman of the 46th ARFTG held in San Francisco, June 1996, and session chairman at the 2000 European Microwave Conference held in Paris, France. In 2004 Mohamed was elected to be on the Executive Committee of ARFTG and the secretary of the MTT Santa Clara Valley Chapter.

## THURSDAY MARCH 10

### Dinner and Networking

Event: Dinner and networking courtesy of IEEE GOLD, and locally brewed beer  
Time: 6:30 PM  
Place: Moylans Brewery and Restaurant, 15 Rowland Way, Novato  
Cost: no charge for dinner  
RSVP: not required  
Web: [www.ewh.ieee.org/r6/san\\_francisco/gold/](http://www.ewh.ieee.org/r6/san_francisco/gold/)

For the many of you that attended the IEEE Gold events in 2004, we would like to say **Welcome Back!** The Chapter hit a temporary slowdown last year – however, we are excited to get things going again.

IEEE **Graduates Of the Last Decade (GOLD)** is an affinity group sponsored by the San Francisco IEEE Section covering the city and North Bay region. The group is chartered to help new engineers bridge the transition from student into career professional and to develop strong networking ties within the area's engineering community to foster personal and professional growth.


IEEE GOLD will be hosting its 2005 kickoff meeting on Thursday, March 10th at Moylans Brewery and Restaurant in Novato. (<http://www.moylans.com>). Please join us for dinner and drinks (dinner will be courtesy of IEEE GOLD). Current and Prospective GOLD members are invited. This will be the first of many GOLD events, and we hope to see you all then!

If you have any questions, please call Curt Irwin (510-846-3705) or Tim McCarthy-Smith (707-799-1730).

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## WEDNESDAY March 16

### Gastric Electrical Stimulation

Speaker: Mir A. Imran, In-Cube, Inc.  
Time: Dinner with the speaker in the Stanford Hospital cafeteria at 6:15 PM (No reservation needed); Presentation at 7:30 PM  
Place: Clark Center Auditorium (see website for map)  
RSVP: not required  
Web: [www.ieee.org/scv/embs/pages/upcoming.html](http://www.ieee.org/scv/embs/pages/upcoming.html)

**Mir Imran** is recognized for his history as a scientist, inventor, entrepreneur and investor of medical technology companies. He is the founder and Chairman of InCube Laboratories, Inc, business incubator for medical and technology companies. Through InCube, and prior to its establishment, he founded numerous medical and high technology companies. He was a pioneer in the development of the automatic implantable defibrillator, a device that has saved hundreds of thousands of lives, and has become a standard of care in cardiology. One of his high profile medical inventions is his EEG monitoring sensor array that John Glenn was featured as wearing in the Time Magazine story of his latest space mission. This became the core product for Physiometrix and has become a standard diagnostic tool used in neurophysiology. In the medical field Mr. Imran's interest is to develop medical devices that blur the distinction between organic and synthetic and advance patient treatment options.

Mr. Imran's current research interests include tissue engineering, gastroenterology, nephrology, neurology, orthopedics, congestive heart failure and artificial organs. He is an active angel investor and a limited partner in several venture funds. In addition, he serves as an Advisor to and Alley Ventures and is a Venture Partner and an Advisor of DFJ ePlanet Ventures, a \$650 million global venture capital fund, based in Silicon Valley.

Mr. Imran's formal education consists of a B.S. in electrical engineering and M.S. in Bioengineering from Rutgers University. After three years at the Rutgers Medical School, which included research in bioengineering, he pursued his subsequent interests in industry, which include the establishment of close to 200 patents in his name, and numerous scientific publications.

One of the concepts proposed for the treatment of obesity is gastric electrical stimulation, also known as gastric pacing. Gastric pacing was first tried by Bilgutay in 1963. His concept was to take the idea of cardiac pacing and deliver an electrical stimulus to the stomach. The stomach has an intrinsic electrical pacemaker similar to that of the heart. However, the natural electrical rhythm of the stomach is three cycles per minute which is much slower than the heart. The pacemaker region is located in the proximal gastric corpus near the greater curvature. Electrical signals, also called slow waves propagate from the pacemaker region proximally to the pylorus distally. Stomach contractions and subsequent emptying depend on normal gastric electrical slow waves. Examples of gastric electrical abnormalities include: tachygastric, bradygastric, and electrical-mechanical dissociation. Patients that exhibit these abnormal electrical rhythms have delayed gastric emptying, nausea, weight loss, early satiety, and fullness as common signs and symptoms.

Over the last four decades, considerable research with the use of gastric and intestinal pacing has been performed in animals and humans. Specific pacing parameters, consisting of amplitude, pulse type and duration and pacing frequency have been defined to demonstrate that the gastric intrinsic slow wave can be entrained or disrupted. The procedure of pacing the gastrointestinal tract for the treatment of obesity and gastroparesis has proven safe and effective in multiple human trials.

The ability to manipulate the myoelectrical activity of the stomach has become a research focus in the treatment of obesity as a way to create a sense of fullness and satiety by inducing a number of physiological changes including changes in satiation hormones such as ghrelin, delaying gastric emptying, inducing gastric retro-contractions, disrupting the normal slow wave, and changing gastric tone. Gastric electrical stimulation provides an advantage as an obesity treatment because it does not permanently alter the gastric anatomy such as that seen with other more invasive surgical procedures.

Although the concept of gastric electrical stimulation has been used in medicine for over 30 years to treat various motility disorders, it has seen a renewed interest for the treatment of obesity over the last ten years. Gastric electrical stimulation provides an exciting alternative to current invasive surgical procedures for the treatment of obesity and other gastrointestinal motility disorders.

## WEDNESDAY March 16

### New, Ultrahigh-Thermal-Conductivity Materials

Speaker: Dr. Carl Zweben  
Time: Seated dinner at 6:30 (\$25 if reserved before Mar 13; \$30 after & at door; vegetarian available);  
Presentation at 7:30 PM  
Place: Ramada Inn, 1217 Wildwood Ave (Fwy 101 frontage road, between Lawrence Expy and Great America Pkwy), Sunnyvale  
RSVP: Via PayPal on website, or email to Janis Karklins at [karklins@ieee.org](mailto:karklins@ieee.org)  
Web: [www.cpmt.org/scv/](http://www.cpmt.org/scv/)

**Dr. Carl Zweben**, an independent consultant, has directed development and application of advanced packaging materials for over 30 years, and was the first to use Al/SiC. For many years, he was Advanced Technology Manager and Division Fellow at GE Astro Space. Other affiliations have included DuPont, Jet Propulsion Laboratory and the Georgia Institute of Technology NSF Packaging Research Center. Dr. Zweben was the first, and one of only two winners of both the GE One-in-a-Thousand and Engineer-of-the-Year awards. He is a Fellow of ASME, ASM and SAMPE, an Associate Fellow of AIAA, and has been a Distinguished Lecturer for AIAA and ASME. He has published and lectured widely on advanced thermal management and packaging materials.

In the last two years, there have been revolutionary advances in thermal management materials. There are now 16 low-CTE (coefficient of thermal expansion) materials with thermal conductivities between that of copper (400 W/m-K) and 4X copper (1600 W/m-K). Some are low cost. Others have low-cost potential in high-volumes. Most have low densities. They have a wide range of electrical properties that can minimize electromagnetic emissions or provide EMI shielding. Several are now in production applications, including servers, plasma displays, laptops, and printed circuit boards, marking historic packaging milestones. For comparison, traditional low-CTE materials like copper/tungsten have thermal conductivities that are little or no better than that of aluminum (200 W/m-K). Payoffs include: improved thermal performance, reliability, alignment and manufacturing yield; reduced thermal stresses, simplified thermal design; direct solder attach, elimination of liquid cooling, fans and heat pipes; weight savings up to 85%; size reductions up to 65%; and lower cost. This talk discusses the large and increasing number of advanced composite and monolithic materials, including properties, manufacturing processes, development status, applications, and future directions, including nanocomposites.



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**WEDNESDAY March 16**

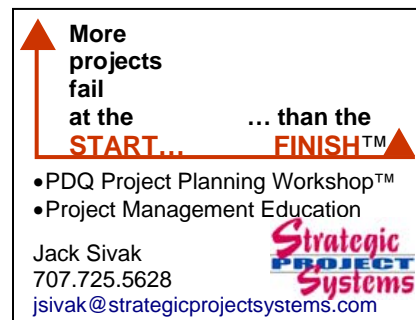
## Transbay HVDC Cable Technology

Speaker: Lindsay Martin, Siemens  
Time: Lunch, 12:00 Noon  
Cost: \$6 (includes lunch)  
Place: PG&E Building, 77 Beale St.  
Conference Rm. 305, SF  
RSVP: In advance, via Bhaskar Ray,  
(415) 973-0582, bxr0@pge.com  
Web: [www.e-grid.net/docs/0503-sf-pes.pdf](http://www.e-grid.net/docs/0503-sf-pes.pdf)

Babcock and Brown (B&B), a San Francisco-based company, in collaboration with the City of Pittsburg, has proposed to install a high-voltage direct-current (HVDC) submarine cable transmission system (Project) in the Pacific Gas and Electric (PG&E) service territory. This Project, known as the Trans Bay Cable Project, is intended to provide controllable transmission capacity (400 MW Monopolar HVDC System) between the Pittsburg 230 kV and Potrero 115 kV switchyards in the Greater Bay Area PG&E system and provide load serving support to the City of San Francisco.

HVDC technology has been installed in a growing list of projects around the world. In significant ways, it is different than AC technology in that it is controllable, mimics generation on the power delivery end, functions independently of problems in the AC grid, has negligible magnetic fields, and can easily and inexpensively be buried underground or underwater. Babcock and Brown has partnered with Siemens as the supplier of the HVDC converter stations and Pirelli as the supplier of the HVDC cable system. The proposed Project is to be based on conventional HVDC technology and the revenue recovery is based on FERC-approved cost-based rates under a PTO tariff with the California ISO (CAISO). B&B will provide necessary financing and City of Pittsburg will own the Project assets. Transmission rights will be turned over to the CAISO under a negotiated Transmission Control Agreement. The proposed commercial operation date is anticipated to be early 2008.

**Lindsay Martin** (Siemens) will discuss proposed HVDC technology and share various aspects of the Transbay Cable Project with all attendees at this presentation.



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## THURSDAY MARCH 17

### The Road to 60 GHz Wireless CMOS

Speaker: Ali M. Niknejad, EECS department,  
UC Berkeley  
Time: Refreshments at 6:30 PM,  
Presentation at 7:00 PM  
Cost: donation to cover food cost  
Place: Cadence Building 5, 2655 Seely Ave,  
San Jose  
RSVP: In advance, call 408 894-2646 (leave a  
message) or by email to  
ssc\_scv\_rsvp@yahoogroups.com  
Web: www.ieee.org/scvssc

**Prof. Ali M. Niknejad** received the B.S.E.E. degree from the University of California, Los Angeles, in 1994, and his Master's and Ph.D. degrees in electrical engineering from the University of California, Berkeley, in 1997 and 2000. After graduation from Berkeley he spent two years in industry designing analog RF integrated circuits and devices for wireless communication applications. Presently he is an assistant professor in the EECS department at UC Berkeley. He is an associate editor for the *Journal of Solid-State Circuits*. Prof. Niknejad is a BWRC faculty member and co-director of the BSIM project. His current research interests lie within the area of circuits for wireless and broadband communications. This includes implementation of integrated communication systems in silicon, device compact modeling, computer-aided design and optimization of such systems, and numerical techniques in electromagnetics particularly as applied to the analysis and modeling of active and passive devices at microwave frequencies.

Commercial CMOS chips routinely operate up to 5 GHz and exciting new opportunities exists in higher frequency bands such as 3-10 GHz, 17 GHz, 24 GHz, and 60 GHz. The Berkeley Wireless Research Center (BWRC) has demonstrated that standard digital 130nm CMOS technology is capable of operation up to 60 GHz, enabling a host of new mm-wave applications such as Gb/s WLAN and compact radar imaging. How did we go from 5 GHz to 60 GHz? This presentation will highlight the design and modeling challenges in moving up to these higher frequencies. A merger of RF and microwave design perspectives will be used to offer insight into the problem. The architecture for a 60 GHz multi-antenna phased array will be discussed, enabling a low cost robust high data rate system to be integrated into a compact package.

### IEEE Professional Skills Courses

*Engineering Management & Components, Packaging and Manufacturing Technology Societies, SCV Chapters*

#### Writing Effective E-mail Messages

Date/Time: Thursday, March 15, 8:30AM-4:30PM

Instructor: Kathleen Mohn

Location: Synopsis, Sunnyvale

A step-by-step process for designing and writing clear business emails. The training involves writing, revising, and editing exercises; critiquing documents; games; and lecture. You will walk away with confidence in writing and editing skills and a consciousness about international writing.

#### Getting Things Done Across Organizational Borders

Date/Time: Wednesday March 24, 8:30AM-4:30PM

Instructor: Dr. Andrew Oravets

Location: Synopsis, Sunnyvale

This seminar introduces you to innovative practices for dealing with people who do not report to you -- but whose assistance and support are critical.

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## TUESDAY MARCH 22

### Role of Computer Tomography in Molecular Imaging

Speaker: Dr. Ling X. Shao, Philips Medical Systems

Time: Networking at 7:00 PM -  
Presentation at 7:30 PM

Cost: none

Place: Ramada Inn, 1217 Wildwood Ave (Fwy 101 frontage road, between Lawrence Expy and Great America Pkwy), Sunnyvale  
*(new meeting place)*

RSVP: not required, but seating is limited,  
so arrive early

Web: [www.ieee-sv-consult.org/notices.htm](http://www.ieee-sv-consult.org/notices.htm)

Dr. Ling X. Shao is currently the director of advance development for SPECT business unit at Philips Medical Systems. He received his BS degree in instrumentation from Zhejiang University, China in 1982, and his M.S. and Ph.D. in Bioengineering from the University of Michigan in 1985 and 1989, respectively.

From 1990 to 1995, Dr. Shao worked as an assistant professor in the department of Radiology at the University of Pennsylvania, where he received a 5-year NIH young investigation award grant. He conducted his research in the area of quantification techniques for both Position Emission Tomography (PET) and Single Photon Emission Computed Tomography (SPECT) systems, such as scatter correction, attenuation correction, filtering and dynamic physiological modeling. SPECT and PET systems are mainly used for diagnostic imaging in both cardiology and oncology. In 1995, Dr. Shao joined ADAC Laboratories in Milpitas California (which acquired by Philips in 2001) as a staff physicist working on the research and development of SPECT and PET systems and later became a principal physicist. He has been deeply involved and instrumental in various SPECT camera designs for the last ten years. Dr. Shao has authored and co-authored many papers and received many US patents in gamma-ray imaging devices. He has been an IEEE member for over 16 years and served in a few national professional committees, such as NIH study section and IEEE-MIC organization committee.

In medical imaging, there are many types of imaging devices, such as CT (Computer Tomography), MRI (Magnetic Resonance Imaging) and Gamma-Ray imaging (Position and Single Photon). Depending on their detection mechanisms, the applications are different, such as for anatomic, functional and molecular imaging.

As medical imaging technology advances, molecular imaging technique will become the future of medical imaging, especially in gene therapy. Major medical device manufacturers, such as Philips Medical Systems, have become the leaders to provide such devices to help medical communities to facilitate the research and to improve the quality of life.

Molecular imaging can be broadly defined the in vivo characterization and measurement of biological processes in the cellular and molecular level. Comparing to the conventional imaging, it sets forth to probe the molecular abnormalities that are the basis of disease rather than to image the end effects of these molecular alternations. While the underlying biology represents a new arena for many medical professionals, the concomitant efforts such as research and development of novel pharmaceutical agents, signal amplification strategies and imaging technologies, are clearly needed. From imaging technology point of view, a few imaging devices already exist in the market, depending on different mechanisms to image the molecular level although improvements in detectability are required. Recently, new multi-modality imaging devices are been developed for this purpose. Dr. Shao will address the role of engineering in this new endeavor and talk about the opportunities and challenges in this new Molecular-Imaging frontier.



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## TUESDAY MARCH 22

### Panel Discussion: Video on Demand (VOD)

**Speakers:** Patrick Henry, CEO, Entropic Communications; Steve Shannon, Founder, Akimbo  
**Time:** 7:00 PM  
**Cost:** IEEE Members \$5, Others \$10  
**Place:** Hewlett Packard Oak Room (Bldg 48), 19447 Pruneridge Ave (at Wolfe), Cupertino  
**RSVP:** In advance by email to [scv.ce@ieee.org](mailto:scv.ce@ieee.org)  
**Web:** [ewh.ieee.org/r6/scv/ce/meetings/050322/2005Mar22.html](http://ewh.ieee.org/r6/scv/ce/meetings/050322/2005Mar22.html)

The panel will explore the road to Internet-based Video on Demand. We will help you sort out the home networking and service provider solutions that should provide consumers unparallel choices and flexibility in their digital entertainment needs.



Patrick Henry



Steve Shannon

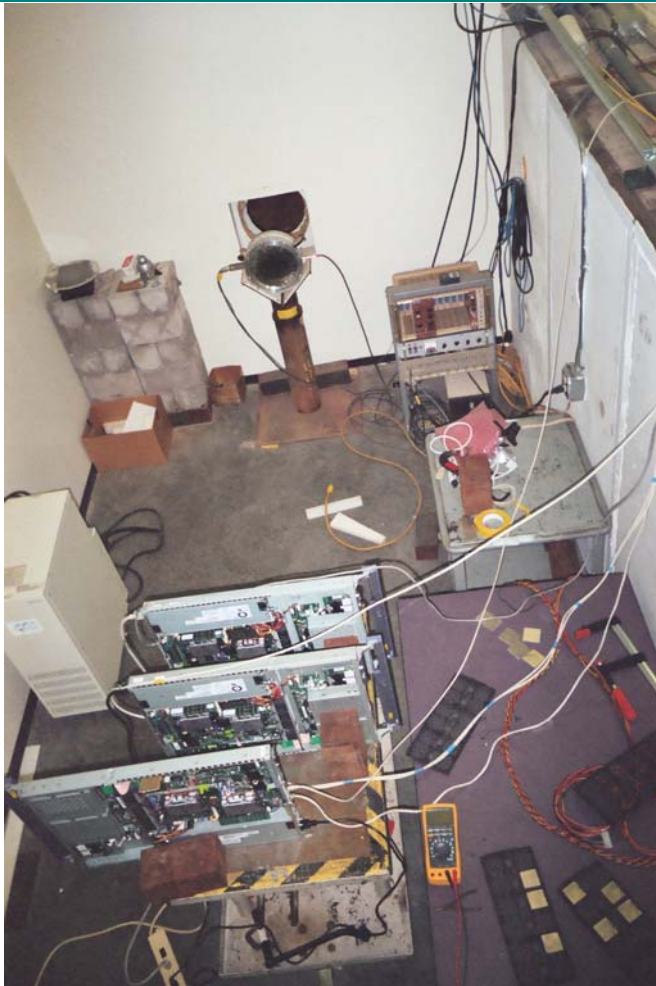
**Patrick Henry**, CEO of Entropic Communications, brings more than 20 years of high technology experience to Entropic. Mr. Henry has served in executive management roles in companies ranging from small, innovative startups to large multinationals. Just prior to Entropic, he served as president and CEO of Pictos Technologies, developers of digital imaging products, and exited after completing a multimillion-dollar sale of the company to ESS Technology. Before that, he was CEO of LinCom Wireless, a chip company focused on 802.11 wireless LAN products. Mr. Henry also served as a vice president and general manager at LSI Logic, and was a senior vice president at C-Cube Microsystems, a pioneer in the development of digital video ICs. Mr. Henry has also held sales and marketing management positions at Hyundai Electronics America (now Hynix) and AMD. He has his MBA from the University of Southern California, and holds a Bachelor in Engineering Science and Mechanics, with high honors, from the Georgia Institute of Technology.

**Steve Shannon**, Founder and Executive Vice President of Sales and Marketing at Akimbo, is a Silicon Valley veteran who in the late 1990s was the creative force behind some of the area's most well known consumer technology brands. His most recent post was vice president of marketing at SONICblue, where he was responsible for marketing Rio MP3 players and ReplayTV product lines. Steve joined SONICblue through the acquisition of ReplayTV. At ReplayTV he helped launch the world's first digital video recorder, driving marketing strategies. Before ReplayTV, Steve was director of Internet authoring at Macromedia, where he launched Dreamweaver; Macromedia's popular Web-authoring tool and still the company's most profitable product line. Steve joined Macromedia when it purchased iband, the company he co-founded and the original developer of Dreamweaver. Prior to iband, Steve worked for Coopers & Lybrand and Paramount Pictures. Steve holds a bachelor's degree from UCLA and an MBA from UC Berkeley.

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### How Cosmic Rays Cause Computer Downtime

Speaker: Ray Heald, Sun Microsystems  
Time: : 6:30 PM - refreshments;  
7:00 PM - presentation  
Place: HP-Cupertino Oak Room, Bldg 48  
Pruneridge & Wolfe (near Fwy 280 &  
Wolfe Rd Exit) Cupertino. Turn right on  
Pruneridge Ave and left into HP site  
RSVP: not required  
Web: [www.ewh.ieee.org/r6/scv/rs/](http://www.ewh.ieee.org/r6/scv/rs/)

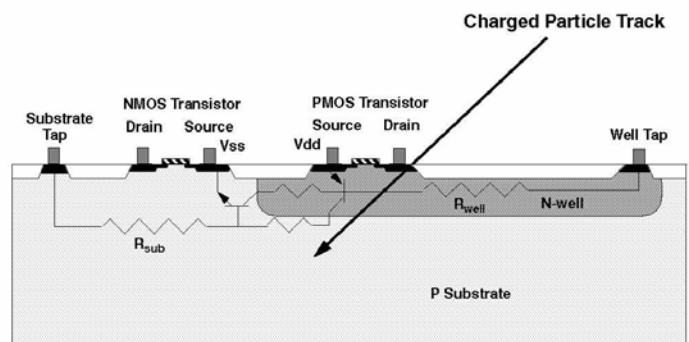


Experimental setup for measuring soft error rates

Radiation-initiated single bit unrepeatable data faults – soft errors – first became important to IC manufacturers and users in the late 1970's. Soft errors in DRAM chips were traced to alpha particles emitted by the radioactive impurities in the packaging material. The result was a major change in packaging materials. Speculation that these faults could be caused by cosmic radiation proved to be premature. It was later verified that cosmic radiation also produced some soft errors. At that time, the rate was low enough that corrective action such as parity and ECC protection was needed only in very large memory arrays and systems which needed very high reliability. As the evolution of the IC business has resulted in an explosion of memory use, many more users and designers most now contend with soft error possibilities in their designs. High reliability systems must now add significantly more error prevention, detection, and correction schemes to prevent radiation-caused errors from causing data errors or system malfunctions. More circuitry is showing radiation sensitivity at each new IC process node. It is expected that significant sections of logic will also need soft error protection soon.

This talk will investigate the mechanism of radiation caused soft errors in integrated circuits, the changing conditions with semiconductor materials and process advances, and the likely changes coming in the next few years.

### Cosmic Latch-up Circuit



**Ray Heald** is a distinguished engineer and technical lead for the global SRAM design group at Sun Microsystems, Sunnyvale, Ca. He has been involved with the UltraSPARC family of processors for over 10 years, defining the circuit design starting points for RAM blocks and advising on other phases

of the physical design. Prior to joining Sun, Ray designed RAM blocks and other circuitry for the Clipper family of microprocessors at Fairchild and Intergraph. Ray received the B.S., M.S., and Ph.D. degrees in electrical engineering from the University of California, Berkeley.

## WEDNESDAY March 23

### Shaping the Future of Engineering Education in Silicon Valley

Speaker: Dr. Belle W. Y. Wei, Dean of the College of Engineering, San Jose State University  
Time: 6:45 - 8:00 PM  
Place: Silicon Valley Technical Institute, 1762 Technology Drive, Suite 227, San Jose  
RSVP: to Charytin charytin@svtii.com, 408-573-0100  
Web: [www.ewh.ieee.org/r6/scv/es/](http://www.ewh.ieee.org/r6/scv/es/)

**Dr. Belle W. Y. Wei** is Dean of the College of Engineering at San Jose State University, the largest provider of engineers to Silicon Valley industry. Previously, she was Chair of the Department of Electrical Engineering. She joined San Jose State as an assistant professor in Electrical Engineering in 1987. She received her bachelor's degree from U.C. Berkeley, master's degree from Harvard University, and Ph.D. in Electrical Engineering from U.C. Berkeley.

There has been a great deal of discussion in the news about other regions challenging Silicon Valley's leadership in high-technology industry. The facts are difficult to ignore: the semiconductor industry is maturing, and the cost of doing business is high in Silicon Valley. In addition, other countries are investing heavily in the infrastructure necessary to become more competitive. What do these technological and economic trends portend for engineering education in our Silicon Valley? In this presentation, Prof. Wei, Dean of Engineering at San Jose State University, gives an overview of current challenges and suggests possibilities for shaping the future of engineering education.

#### IEEE Professional Skills Courses

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*new!* **Communication and Conflict Management using Myers-Briggs (MBTI)**

Date/Time: Tuesday, March 8, 8:30AM-4:30PM

Instructor: Linda Price

Location: Carl Zeiss Meditec, Dublin

The Myers-Briggs Type Inventory (MBTI) is the most widely used instrument in the world for gaining a deeper understanding of self, others and interpersonal relationships. It provides insights on the four basic "people patterns" that hold the key to leadership styles, effective communication, conflict, team building and productivity.

**Key Topics:** Discover your Myers-Briggs Type – Understand four basic "people patterns" and how they think and act – Discover your preferred communication and conflict style – Build trust and rapport through communication – Practice how to communicate and influence each type – Learn how to use questions that gain quality information – Separate facts from emotions – Speak with clarity and commitment

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## WEDNESDAY APRIL 20

### Tactile Pressure Imaging: A New Tool For In Vivo Physiological Assessment for Gastroenterology

**Speaker:** Tom Parks, Ph.D., Sierra Scientific Instruments, Inc.  
**Time:** Dinner with the speaker in the Stanford Hospital cafeteria at 6:15 PM (No reservation needed);  
Presentation at 7:30 PM  
**Place:** Clark Center Auditorium (see website for map)  
**RSVP:** not required  
**Web:** [www.ewh.ieee.org/r6/scv/embs/pages/upcoming.html](http://www.ewh.ieee.org/r6/scv/embs/pages/upcoming.html)

**Tom Parks** led the development of the ManoScan device and has been CEO of Sierra Scientific Instruments since 2003. He has more than 20 years of experience in technology development, corporate management, and entrepreneurial business. Dr. Parks has led teams of scientists and engineers in research and development initiatives involving aerospace sensors, control systems, and medical products. He founded and grew a sustained business producing engineering laboratory workstations. These systems are considered to be the standard in excellence in their field and are in use in over 400 universities world-wide. He has served as Senior Scientist and line manager for a major aerospace firm with oversight of an organization with a \$30M annual budget. Dr. Parks received his Ph.D. from the University of Southern California in mechanical engineering and control systems. He has received numerous academic and technical achievement awards and has 11 patents issued and pending.

Gastroenterological motility disorders are significant both in terms of their impact on public health and on their demand on health care resources. More than 40 million Americans suffer from conditions that include gastroesophageal reflux disease (GERD), achalasia, dysphagia, incontinence, and pelvic floor dysfunctions. SSI has developed advanced pressure imaging systems with proprietary transducers to provide high fidelity pressure maps of the Gastrointestinal (GI) tract. This dramatically improves diagnostic clarity and simplifies clinical procedures when compared to existing technology.

Sierra has completed clinical validation, received FDA 510(k) clearance, and begun commercial production of its first product, the ManoScan™ motility visualization system. This technology was initially developed under NIH funding and is receiving enthusiastic support by experts and clinicians alike. It provides an order of magnitude more pressure transducers (i.e. increased resolution) than current technology to enable novel visualization of gastrointestinal motility physiology (the movement of contents through the GI tract). In this talk operating principles and features of this technology will be discussed; furthermore, developments underway for the next generation device with an additional order of magnitude increase in resolution will be described. A portable version of the device showing real-time pressure data collection and imaging will be demonstrated, and pressure image videos of clinical case studies of normal and pathological conditions will be shown.

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[www.e-grid.net/docs/conf-flyer.pdf](http://www.e-grid.net/docs/conf-flyer.pdf)

## March 6-10: **Embedded Systems Conference in San Francisco at Moscone Center**

The Embedded Systems Conference offers an exciting line-up of special events, 132 technical classes, 16 full day tutorials, 6 Design Seminars and over 350 exhibits. The Microprocessor Summit is a forum for major semiconductor companies to talk about their near-future plans and make new-product announcements. All of the special events are free to registered attendees and range from keynote addresses to networking opportunities and receptions, to panel discussions all designed to enrich your event experience. Discounts for teams registering together; free admission to the Exhibits. For more information:

[www.e-grid.net/conf/embed05.html](http://www.e-grid.net/conf/embed05.html)

## March 9-11: **Int'l Symposium on Systems and Human Science - Safety, Security, Reliability**

SSR-05 has a focus on facilitating the development of new ideas and approaches that support the creation and evaluation of engineered complex systems. Applications include building reliable capabilities for large scale disasters and integrating disciplines to provide solutions for the future. The Advance Program can now be downloaded:

[ssr.llnl.gov](http://ssr.llnl.gov)

## March 21-23: **International Symposium on Quality Electronic Design at DoubleTree in San Jose**

With the theme "Design for Quality in the Era of Uncertainty," ISQED is the pioneer and leading conference dealing with design for manufacturability and quality issues, front to back. It spans three days, Monday through Wednesday, in three parallel tracks, hosting nearly 100 technical presentations, six keynote speakers, two panel discussions, workshops/tutorials and other informal meetings. The Advance Program can now be downloaded:

[www.isqed.org](http://www.isqed.org)

## April 12-14: **IEEE Wescon at the Santa Clara Convention Center**

With the theme "D2M: Design to Manufacture Solutions," Wescon brings together dozens of tutorials and seminars for professional and technical development, alongside exhibits featuring tools and products for the design engineer. A large portion of the program – sessions, keynote talks, panels, pavilions – are without cost. Plan to come and spend the full day. Plenty of free parking. For more information, see

**Pages 7-11 in this GRID**

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