

## TABLE OF CONTENTS

|                                   |    |
|-----------------------------------|----|
| President's Message .....         | 1  |
| Upcoming Technical Meetings ..... | 3  |
| Society News .....                | 7  |
| Regional and Chapter News .....   | 28 |
| EDS Meetings Calendar .....       | 34 |

## PRESIDENT'S MESSAGE



### EDS President Visits Rochester Institute of Technology

Dr. Renuka Jindal, President of the IEEE Electron Devices Society, visited Rochester Institute of Technology's (RIT) College of Engineering in Rochester, New York, December 16–17, 2010. The primary purpose of his visit was to establish a student EDS chapter at RIT. Dr. Jindal spent a great deal of time with the faculty and staff discussing research, outreach efforts, and the potential for collaboration with EDS. Of particular interest

(continued on page 36)

## 2011 IEEE PHOTOVOLTAIC SPECIALIST CONFERENCE (PVSC)



On behalf of the Organizing, Cherry and International Committees, it is my great pleasure to invite you to join the 37th IEEE Photovoltaic Specialist Conference (PVSC), June 19–24, 2011, at the Washington State Convention Center in Seattle, Washington. This PVSC will be particularly special, as we will be celebrating the 50th anniversary of the first PVSC, way back in 1961. Our goal is to continue as the premier technical conference covering all aspects of PV technology, from fundamental physics and basic material science to installed system performance. We will also continue our Industrial Exhibition that brings together PV Specialists with the industry developing the tools of research, development and manufacturing. I invite you to come and be part of THE photovoltaic conference event of the year!



### Highlights include:

**Strong Technical Program:** Building off the record number of technical presentations at the 35th PVSC, we will continue with our ten (10) technical areas, including the recently added Organic Photovoltaics and Advances in Characterization of Photovoltaics areas.

(continued on page 6)

### YOUR COMMENTS SOLICITED

Your comments are most welcome. Please write directly to the Editor-in-Chief of the Newsletter at [ninoslav.stojadinovic@elfak.ni.ac.rs](mailto:ninoslav.stojadinovic@elfak.ni.ac.rs)

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### EDS AdCom Elected Members-at-Large

Elected for a three-year term (maximum two terms) with 'full' voting privileges

| 2011          | TERM | 2012         | TERM | 2013               | TERM |
|---------------|------|--------------|------|--------------------|------|
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| P.K.L. Yu     | (1)  |              |      |                    |      |

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## CONTRIBUTIONS WELCOME

Readers are encouraged to submit news items concerning the Society and its members. Please send your ideas/articles directly to either the Editor-in-Chief or appropriate Editor. The e-mail addresses of these individuals are listed on this page. Whenever possible, e-mail is the preferred form of submission.

### NEWSLETTER DEADLINES

| ISSUE   | DUE DATE    |
|---------|-------------|
| January | October 1st |
| April   | January 1st |
| July    | April 1st   |
| October | July 1st    |

The EDS Newsletter archive can be found on the Society web site at <https://www.ieee.org/portal/pages/society/eds/pubs/newsletters/newsletter.html>. The archive contains issues from July 1994 to the present.

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# UPCOMING TECHNICAL MEETINGS

## 2011 IEEE INTERNATIONAL SOI CONFERENCE (SOI)

The premier conference dedicated to current trends in Semiconductor-On-Insulator technology will be held October 4–6, 2011, at the Tempe Mission Palms Hotel and Conference Center, Tempe, Arizona (south of the Grand Canyon and Sedona). The conference will be preceded by a one-day tutorial Short Course on Monday, October 3rd, and will also feature a half-day educational class focusing on the fundamentals of SOI technology.

The conference was established with the support of the IEEE Electron Devices Society to provide a forum for open discussion in all areas of semiconductor-on-insulator technologies and their applications. Ever increasing demand and advances in this technology make it essential to meet to discuss new gains and accomplishments, as well as to consider the new developments introduced in original papers presented at the conference.

The conference will have two days of oral sessions, a poster session and a late news session. Two Best Paper Awards will be presented; one for the best oral presentation and one for the best student paper presented at the conference.

Participants are free on Wednesday afternoon to enjoy and explore the great outdoors of the American southwest, get a little work done, or just plain relax. Alternatively, participants may choose additional education with the optional, intermediate-level class intended for individuals from a variety of fields including circuit design, material scientists/engineering, process technology, modeling, and device design. This will be the fourth SOI fundamentals class offered by the conference and



*Tempe Mission Palms Hotel and Conference Center, Tempe, Arizona*

is meant to increase participant's understanding fully, depleted device SPICE modeling (FinFET and FD-SOI). An evening discussion panel where attendees are encouraged to share their opinions and expertise will round off Wednesday evening.

The 2011 SOI Conference seeks previously unpublished papers on a wide range of SOI technology including:

- SOI DEVICE PHYSICS AND MODELING
- SUBSTRATE ENGINEERING (III-V advanced substrates, hybrid Si and III-V integration, GaN on Si)
- NEW DEVICE/PHYSICS USING ADVANCED SUBSTRATES (III-V CMOS, Hybrid Si-III-V, and GaN)
- MANUFACTURABILITY AND PROCESS INTEGRATION OF SOI DEVICES
- LOW-POWER SOI TECHNOLOGY and CIRCUIT DESIGN INFRASTRUCTURE
- SOI CIRCUIT APPLICATIONS (High Performance MPU, SRAM, ASIC, High-Voltage, RF, Analog, Mixed Mode, etc.)
- SOI DOUBLE & MULTIPLE GATE/VERTICAL CHANNEL STRUCTURES;
- OTHER NOVEL SOI STRUCTURES, CIRCUITS, AND APPLICATIONS (Display, Microactuators, Novel Memories, Optics and etc).
- SOI RELIABILITY ISSUES (Hot-Carriers Effects, Radiations)

Effects, High Temperature Effects, and etc.)

- MATERIAL SCIENCE / MODIFICATION, SOI CHARACTERIZATION, MANUFACTURE
- SOI SENSORS, MEMs, and RFIDs TECHNOLOGY and APPLICATIONS
- 3D INTEGRATION (Imagers, power devices, wafer-to-wafer + die to wafer and die to die 3D integration)

Abstracts for the 2011 SOI Conference should be submitted no later than May 16, 2011, to the conference manager, via e-mail ONLY to [papers@soiconference.org](mailto:papers@soiconference.org) in PDF format.

Late news papers with exceptional merit will be considered for the

Late News session if submitted on or before August 29, 2011.

Once again, the popular One-Day Tutorial Short Course will be offered preceding the conference. The course is intended to educate attendees in detail about current trends and issues in the SOI industry. The 2011 tutorial Short Course is entitled "SOI technologies for 15 nm SOC" and will provide a comprehensive look at the essential aspects of technology, design, design tools and applications of SOI at 15 nm node. Experts from all these areas will give a detailed tutorial on a wide range of topics such as technology characteristics, advanced circuit design techniques and tools needed for full SoC implementations. The short course

will provide invaluable insight into all aspects of the growing list of current applications and also give a forward looking vision of how FDSOI will change the future of the semiconductor market.

For registration forms and additional information, please go to the conference web site [www.soiconference.org](http://www.soiconference.org), or contact the 2011 IEEE International SOI Conference by e-mail: [manager@soiconference.org](mailto:manager@soiconference.org), or phone: (818) 795-3768 between the hours of 8:30 am and 4:30 pm Pacific Time.

*Wade Xiong*  
2011 SOI General Chair  
SEMATECH Inc.  
Austin, TX, USA

## 2011 IEEE SEMICONDUCTOR CONFERENCE (CAS)

The 34th edition of the 2011 International Semiconductor Conference (CAS 2011), sponsored by the IEEE Electron Devices Society, will be held in Romania, at the Hotel Sinaia, in the Sinaia mountain resort, October 17–19, 2011.

The aim of the conference is to provide an international forum of debate on selected topics of scientific research, recent technological development and future trends in the field of micro-nano-biotechnologies, being also an occasion for refreshing a broad perspective of the participants through invited papers and tutorials. The Conference is underlying the development in micro and nanotechnologies and it is still maintaining the "traditional" connection with semiconductor electronics. More information can be found at [www.imt.ro](http://www.imt.ro).

The CAS conference was originally created in 1978. Until 1996, it was organized as the *Annual Semiconductor Conference* (in Romanian – *Conferinta Anuala de Semiconductoare* – CAS). Starting in 1991, CAS was opened to the international

scientific community and changed its name accordingly to the *International Semiconductor Conference*, still maintaining the same acronym (CAS). In 1995, the conference became an IEEE event, being sponsored by the IEEE Electron Devices Society. Since 1997, the organizer of CAS has been the National Institute for Research and Development in Microtechnologies (IMT-Bucharest).

The organizer, IMT-Bucharest, coordinated by the Romanian Ministry of Education, Research, Youth and Sports, is the main actor in microtechnologies in Romania. The mission of IMT consists of research and development in micro-nano-bio-technologies, technology transfer, education and training, dissemination. The institute is a pole of multidisciplinary research, integrating research, education and technology transfer, and emerging as a regional center. Since 2003, IMT has been involved in approximately 31 European projects (FP6, FP7 and related). Now IMT houses a *European Centre of Excellence* financed by the EC (2008–2011) the first one after Romania became an EU member.

The topics to be covered by the technical program include:

- Nanoscience and nanoengineering
- Micro and nanostructures for biomedical and environmental applications
- Advanced materials for micro and nano scale
- Micro and nanotechnologies for microsensors, transducers, interfaces and microsystems
- Microwave and millimeter wave devices, circuits and microsystems
- Microoptics and microphotonics
- Micromachined devices and circuits for microwave and millimeter wave applications
- RF integrated circuits
- Simulation and fabrication of microstructures and microsystems
- Semiconductor device physics and technology
- Design and technology of micro-electronic components

CAS 2011 will begin with a half-day plenary session, followed by two and a half days of parallel technical sessions. Based on the past decade, the technical program is expected to consist of



about 100 contributed papers by authors from more than 18 countries and will be structured into oral and poster sessions. Furthermore, ten invited speakers will be present during the entire three days of the conference.

The agenda also includes a Student Papers Session, allowing students presenting their work to get immediate feedback from experts in the field. A Best Student Paper Award is given every year by the IEEE ED Romania Chapter.

CAS 2011 will provide an environment that encourages discussions and interactions between researchers from institutes, academia and companies worldwide. Conference participants have numerous opportunities for social gatherings; organized coffee breaks, the conference lunches and gala dinner are opportunities to meet and exchange ideas with colleagues.

The conference will be held in the mountain resort Sinaia, Romania, during the fall season, at the hotel having the same name, Sinaia. The "Henri Coanda" Otopeni International Airport is 115 Km from Sinaia and the organizers are providing car transportation to



*Bucegi Mountains view from Sinaia in late autumn*

all participants arriving by plane at Otopeni.

Sinaia is situated at 800 meters altitude, just near the Bucegi Mountains chain, on the Prahova River Valley. The mountains highest altitude is 2,500 meters. Sinaia was developed around the Sinaia Monastery built at the end of the 17th century and its name comes from the Mount Sinai. The small town of Sinaia, with its famous Peles Castle, formerly the Summer Royal Residence, is the favorite place outside Bucharest for international conferences and high-level meetings. The rocky landscape of the Prahova Valley is a paradise for mountain climbers. You may reach the height of 2,000 or 2,200 meters by cable or car and enjoy a walk without any special equipment.

The papers, original and previously unpublished, submitted online ([www.imt.ro/cas/](http://www.imt.ro/cas/)) will be reviewed by the Technical Program Committee. The invited and accepted papers are published in CAS 2011 Proceedings (an IEEE publication), which will be delivered to the participants at the beginning of the conference.

Deadline for submission: **June 1, 2011**  
Notification of acceptance: **July 15, 2011**

For call for papers, paper submission, advance program, registration and further information regarding CAS 2011, please visit the conference website, <http://www.imt.ro/cas/>. For additional information contact us at [cas@imt.ro](mailto:cas@imt.ro).

*Dan Dascalu*  
2011 CAS General Chairman  
IMT-Bucharest  
Bucharest, Romania

## 2011 IEEE BIPOLAR/BICMOS TECHNOLOGY AND CIRCUITS MEETING (BCTM)

The 2011 IEEE BCTM will be held October 9–11, 2011, at the Georgia Tech Global Learning Center (GLC) in Atlanta, Georgia, USA.

The BCTM is the world's premier forum for technical communication focused on the needs and interests of the Bipolar and BiCMOS community. If you are interested in leading edge Bipolar/BiCMOS devices and technology, circuits, and application related to telecommunication systems and wireless systems, as well as networking with experts in these areas, BCTM is a conference you should definitely add to your calendar!



*Georgia Tech Global Learning Center*

GLC is conveniently located nearby to a variety of entertainment and the action of downtown Atlanta. As the capital city of Georgia, Atlanta is

easily accessible through the famous Hartsfield-Jackson Atlanta International Airport. Atlanta is considered to be a top business city with the 4th largest concentration of Fortune 500 companies. The Coca-Cola Company is headquartered in Atlanta, and is one of the many great historical attractions that Atlanta provides.

BCTM offers a one day short course where you can learn directly about the latest developments in the area of SiGe BiCMOS technology and circuit design, modeling and test for over 100 GHz applications from leading experts. Whether or not you



*Skyline of Atlanta at night*

currently work in one of these areas or just want to expand your knowledge of them, this short course is an excellent opportunity.

The conference starts with a keynote address by SiGe HBT pioneer Dr. David Hareme, IEEE Fellow and IBM Fellow. As a world renowned expert in SiGe bipolar and long time contributor and supporter of BCTM, Dr. Hareme covers the history and future directions in

SiGe BiCMOS technology and its applications.

As part of our emerging technologies session, invited authorities in silicon photonics, GaN-on-Si, and microfluidics for medical applications will provide their insight to these exciting new areas. Finally, our topical areas will be feature industry leaders presenting invited talks on "Bipolar Devices on SiC," "Towards THz SiGe HBT," "Virtual Technology

for QuBIC," and "RF Power Management and Control."

This year is the 25th anniversary of the BCTM conference. Special celebrations and a gala banquet dinner are planned to round out the conference. See you in Atlanta!

*Alvin Joseph  
2011 BCTM General Chair  
IBM Microelectronics  
Essex Junction, VT, USA*

## 2011 IEEE PHOTOVOLTAIC SPECIALIST CONFERENCE (PVSC)

*(continued from page 1)*

**Full Day of Tutorials:** We will have ten (10) tutorials scheduled, consisting of half-day lectures taught by experts in the field. The topics will range from the basic physics of solar cell operation to details about the latest trends in the industry that will be valuable to newcomers to PV as well as seasoned veterans.

**Industrial Exhibition:** Within the fantastic Washington State Convention Center, our exhibit space will be designed to bring together the commercial sector and the Photovoltaic Technologist. Our focus will be on R&D as well as tools for commercialization.

**Student Participation:** Our technical community is only as vibrant as our student body, so we have created incentives to encourage students to attend and to be active participants in the conference, including

reduced registration and tutorial fees, special hotel rates, and best student presentation awards in each technical area.

**Hotel Accommodations:** The Sheraton Seattle will serve as our primary conference hotel, with the Red Lion as our high value option. Both are right across the street from the Convention Center and are in the heart of great tourist, dining and shopping opportunities. In addition, staying at either conference hotel automatically enters you in a drawing for a **FREE SEVEN (7) DAY ALASKAN CRUISE FORTWO!**

**Social Program:** Continuing our theme of enhancing our PV Specialists community, our goal is to create relationships on a social as well as professional level amongst our attendees, families, and com-

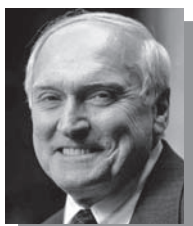
panions. From the Cherry Award Reception to the Conference Banquet to the daily sightseeing tours, the social program is going to be truly memorable. Plan to arrive early and stay late!

We urge you to register for the meeting, as well as to make your hotel reservation, well ahead of the deadline. The increased interest PV is likely to lead to greatly increased attendance and the hotel will maintain our group rate and room block for a limited time. Please join us in Seattle and help to celebrate the 50<sup>th</sup> anniversary of the oldest and best PV technical conference.

*David M. Wilt  
2011 PVSC General Chair  
US Air Force Research Laboratory  
Kirtland AFB, NM, USA*

# SOCIETY NEWS

## DECEMBER 2010 AdCom MEETING SUMMARY SAN FRANCISCO, 5 DECEMBER 2010



James L. Merz  
EDS Secretary

### President's Report

The meeting was called to order by the President of the Electron Devices Society, Renuka Jindal, with hearty words of welcome to this beautiful city. After encouraging all members of the AdCom to be active in the work of the Society, he described a number of initiatives put in place during 2010 to enhance the visibility and effectiveness of the EDS. These include two new journals, the IEEE *Journal of Photovoltaics*, whose first issue is expected in July of 2011 (more about this new journal follows below), and *Electron Devices Express* (EDX). The new EDS website has just been launched due to the hard work of Paul Yu and the EDS staff. The new EDS Photovoltaics video is streaming online at the EDS website, and will be available soon on IEEE.tv and he pointed out that EDS is on Wikipedia. A **MOTION** was offered which passed unanimously to donate \$1000 to Wikipedia as a gesture of hosting EDS information on this site. Despite our generosity, however, this secretary does not think that we will make it on Wikileaks, since no professional diplomats or federal officers were involved!

### Steve Parke presented the Treasurer's Report

For 2009, the budget ended up being \$390K more than initially estimated. The final operational surplus for 2009 was \$151K, and with interest income included, the full surplus for 2009 was roughly \$1,500K. For 2010 the revenue and expenses are down;

the overall forecast is negative at this time (-\$41K). On the other hand, 2011 revenue and expenses look more like 2009 with a slight positive operating margin. Publications provided healthy reserves in 2010 (almost to where we were in 2006) with a better than expected net income. The outlook is conservative for 2011, however, this is likely the result of the austere estimates required by IEEE.

There follows a number of Vice-Presidential reports.

### The Vice President of Membership, Albert Wang, gave his report

EDS experienced its first membership increase in several years, a whopping +0.2%. Though slight, any increase is very good news! North America comprises 51% of all membership, but Regions 8 and 10 continue to increase membership. To increase membership across the board, Albert described several approaches: have on-site promotions at conferences (one year free membership), the TIP (Technical Interest Profile) campaign, the Membership Fee Subsidy Program, distribution of EDS membership materials at EDS supported conferences and at Distinguished Lecturer talks, and promotions to attract affiliate members. A 2011 initiative is to develop overlap between EDS and the American Ceramic Society; Albert suggested that we might be able to form a joint chapter with ACS or have affiliate membership. The ACS charges \$120 for membership and has 1000 members. He also suggested using "Element K" to host online learning products like the Computer Society does. Finally, he suggested increasing 2012

membership rates from \$12 to \$15 since the estimate from IEEE is that it costs \$15 per year to serve members. A **MOTION** to that effect passed unanimously; this will be done automatically when EDS members renew their IEEE membership. Note that a number of additional suggestions for increasing EDS membership were made by Meyya Meyyappan in his Education Activities report, below.

### Juin Liou gave his Vice President of Regions/Chapters' Report

He discussed the new chapters formed in 2010 (6 new EDS chapters) as well as potential chapters that are currently in the formation process, and those that will soon be dissolved due to inactivity. EDS chapter numbers have been growing in Regions 9 & 10 (Latin America, Asia, and the Pacific), whereas there has been little chapter growth in the US – efforts are being taken to revitalize chapters in the US. Region 8 (Europe, Middle East, and Africa) still has the largest number of EDS chapters. Juin described several initiatives designed to enhance the growth of new chapters: A "new chapter initiative" was started in Region 6 (Western USA), where letters are sent to people in the areas where a chapter opportunity was identified based on EDS membership counts. Outreach to IEEE student branches for EDS student chapter formation has been implemented, and efforts have been made to revitalize inactive chapters. It was suggested that a map could be created to determine where there is a need for chapters. Juin concluded on a positive note pointing out

that EDS has the largest number of chapters of all of the IEEE societies.

### **The Vice President of Educational Activities' Report was given by Meyya Meyyappan**

This year there was an increase of Mini Colloquia (MQ) to a total of 25, and a decrease in Distinguished Lectures (DL) to a total of 150 for 2010. Meyya stressed that he felt the DL/MQ program could and should be used to grow membership, and he outlined a number of key initiatives to do this. (1) Create a new online registration tool for DL and MQ to better monitor attendance and gather feedback, (2) Live streaming webinars of DLs and MQs should be made available to EDS members. These webinars would increase membership benefits, (3) EDS membership materials should be made available on-site at all DL talks and MQs to promote membership development, and (4) To determine appropriate topics for DL/MQ programs, dialogues need to take place with the chapters holding them, between local EDS members and people in the industry.

### **Samar Saha presented his report as Vice President of Publications**

Samar discussed the activities, circulation numbers, impact factors, acceptance rates and financial results for the major publications of the EDS. Here are some highlights. The acceptance rates and author feedback ratings for *Transactions on Electronic Devices* (TED) were 40% and 4.3 out of a possible 5, respectively, and for *Electron Device Letters* (EDL) these numbers were 28% and 4.3. Samar felt that these are very encouraging statistics. *JMEMS* has traditionally done well, but the 2011 budget predicts a significant loss for this important journal. To address this, and to help readership of *JMEMS*, the publication's scope was changed, the steering committee was more active, and term limits were installed for the Editor In Chief. There have also been scope

changes for *TMS*, and an increase in the number of Region 10 editors (currently at 3). The time frame for the publication of *Electron Devices Express* (EDX) is 4–6 weeks from submission to online posting. This will be achieved by carrying out manuscript reviews in 48 hours, and assigning dedicated editors to manage the rapid review process. There will initially be 12 editors of EDX, currently being recruited. There followed a discussion of the pros and cons of reviving the *Circuits and Devices* magazine, and it was announced that the Wiley-IEEE book program would be reestablished by the EDS community, with details to be worked out soon. Finally, options regarding an electronic delivery of a "Table of Contents" were discussed.

### **The Vice President of Technical Activities' Report was given by Joachim Burghartz**

Achim reminded us that there are 14 different Technical Activities Committees (TAC), with a total of 167 TAC members, which is about 1.5% of EDS membership. He discussed the continuous optimization of the TAC roster, and that there are some TACs that need to be more active. It was suggested that EDS extend the TAC meetings matrix, and have more special issues in EDS publications. He also noted that there is a new system to request EDS meeting sponsorship, adding that it is not clear at what level we should form a link between the technical committees and conferences. Finally, Achim told us that there are two anniversaries coming up in 2012: the 60th anniversary of EDS as a committee in IRE, and the 35th anniversary of the establishment of the current IEEE Electron Devices Society. Consequently, he proposed an EDS anniversary book that would be comprehensive, illustrating the interrelationship of EDS's technical committees and trends. Wiley-IEEE would publish this book with a 70% discount on \$70 books. He moved

that EDS contribute a lump-sum of \$10K for the creation of an EDS Technical Activities Anniversary book to be published in June 2012, and the **MOTION** passed unanimously.

### **Bin Zhao, Vice President of Meetings and Conferences, gave his Report**

Bin began by reminding us that EDS supports 106 conferences, twelve of which are either fully financed by EDS or co-sponsored. There is a \$500 charge to technically co-sponsored conferences that do not publish with IEEE, and currently there are about 10–12 conferences that fall into this category. Bin then talked about the "Exceptions List." Conferences are placed on the exceptions list if they are not compliant with IEEE policies and procedures, have had financial loss in the last three years, and/or are delinquent in closing. In December 2009 there were 6 conferences on the exceptions list, and since then two of them, ASMC & BCTM, have been removed. Bin then reviewed several conferences' financial figures for 2010; the number of conferences losing money has been reduced, with only 2 conferences projecting losses for 2010, while there were 6 with losses in 2009. Discussion then focused on the International Interconnect Technology Conference (IITC), which is delinquent in closing, has had declining attendance over the years, and has over \$100K of cumulative loss since 2007 (post conference forecast for 2010 is \$909 surplus). Approval of this conference is contingent upon approval of their budget. Bin then moved to approve the "EDS Repeat Conferences for 2012," a list that had been sent to AdCom members in November; the exceptions were included in the general meeting handouts. The **MOTION** was approved unanimously. Finally, a discussion ensued on how to reward or punish conferences whose performance were at opposite ends of the spectrum, and Bin proposed an Action Item, to make sure that a



procedure be implemented to ensure that papers from EDS conferences are stored in the appropriate paper citation database.

### Yuan Taur presented a Report on *Electron Device Letters*

The key figures for the year 2010 are as follows: the number of manuscripts received for 2010 was up 41% over last year; of these, 57 papers were published in 2010, which is an increase of 10% from 2009. The EDL acceptance rate is approximately 29%, and for emerging areas of interest, the acceptance rate is highest in the U.S. and Europe. Currently, the topics of most EDL papers are in the silicon area. Publication rates have remained steady since last year. In 2009 a new policy was set in place regarding terms for editors – a nine year maximum term was instituted; since then, 2 editors have retired and have been replaced.

### Doug Verret presented a Report on *Transactions on Electron Devices*

Doug reported that in April, T-ED switched manuscript processing to ScholarOne, an automated, web-based software system. The transition was smooth, and it has produced a 20% increase in T-ED submissions. Doug described the various pros and cons of this change in processing, and then told us that the average T-ED paper length is between 7 and 8 pages. However, there continues to be a discrepancy between what is budgeted and what is being published. Costs need to be contained. The submission to publication time is calculated by the time until the publication is printed, not when it appears online. The editorial board has increased to thirty people, with 2/3 of these people coming from universities rather than industry. Due to the increased submissions, more editorial board members will need to be added, hopefully from industry so that there will be balance on the editorial board. A member of the audience asked what recognition is available for reviewers,

and an Action Item was proposed, namely that a Golden List of publication reviewers should be published on the website.

### A report was presented on the new *EDS Journal of Photovoltaics*

Tim Anderson from the University of Florida was introduced as the Editor in Chief for the new *Journal of Photovoltaics*, which represents a field which has been the fastest growing industry in the last few years, a rapidly commercializing industry that has spurred large amounts of research. Over the years, the Photovoltaics Specialists Conference (PVSC) has been the premier venue for disseminating information on Photovoltaics, but it has been realized that there should be a separate journal with peer reviewed articles in order to stimulate the best possible work within this exciting field. Because the content of this journal overlaps with other IEEE societies, there are several co-sponsors for this publication. The *Journal of Photovoltaics* site should be open for article submissions next month, with the first issue slated for July.

### A Report on the International Conference on Electron Devices and Solid State Circuits was given by Mansun Chan

This conference was initiated in Hong Kong in 2003, and the principal attendees are from the Asia/Pacific region. Paper submissions have an average acceptance rate of 60%. The total budget for this conference is around \$60K. One important aspect of this conference is that it serves as a vehicle to help less experienced IEEE chapters in the region to organize international events.

### Meikei Leong, Chair of IEDM, presented a report on this year's conference

There were 555 papers submitted for the International Electron Devices Meeting (IEDM) this year, which is less than previous years. Submission rates were 357 from universities, 153 from industry, and 45 government submissions. The largest number of submissions came from Asia, but the Asian acceptance rate was quite low. Industry submission rates continue to drop in 2010, and steps are being taken to correct this in the future. Growing new areas include design/device interaction, packaging/3D integration, power devices, energy (solar cells) and bio (bio-sensors). The conference attendance has been down for several years, but 2010 showed a comeback. Estimates were at 1450, but projections show about 1500 in total attendance. The estimated surplus for 2010 of \$60,000 was exceeded by the final surplus, which was \$87,000. A total of 69 people attended the 2010 IEDM short course.

### Renuka Jindal reviewed recent AdCom appointments and recognitions

He first reviewed the Vice-President, Committee Chair, and Committee Member appointments for 2011, and moved to approve the proposed list of appointments which had been sent to AdCom members in November.

The **MOTION** was approved unanimously. He then reviewed the EDS recognitions for this year and handed out certificates to the volunteers listed below, and thanked them for their contribution to the service of EDS.

|                          |   |
|--------------------------|---|
| <b>Joachim Burghartz</b> | EDS Elected AdCom Member (2005–2010)          |
| <b>Mansun Chan</b>       | EDS Elected AdCom Member (2005–2010)          |
| <b>Jamal Deen</b>        | EDS Regions 4–6 Newsletter Editor (2005–2010) |
| <b>Shuji Ikeda</b>       | EDS Elected AdCom Member (2005–2010)          |
| <b>Rebecca Nikolic</b>   | EDS Elected AdCom Member (2005–2010)          |
| <b>Samar Saha</b>        | EDS Distinguished Lecturer since 2005         |
| <b>Jeffrey Welser</b>    | EDS Elected AdCom Member (2005–2010)          |

| 2011 EDS APPOINTMENTS                  |                     |  |   |                       |
|--|---------------------|--|---|-----------------------|
| VICE-PRESIDENTS                        |                     |  | COMMITTEE MEMBERS   |                       |
| Vice President of Awards               | Marvin White*       |  | Compact Modeling Member                                     | James Chen            |
| Vice President of Publications         | Samar Saha          |  | Compound Semiconductor Devices & Circuits Member            | Supriyo Bandyopadhyay |
| Vice President of Technical Activities | Achim Burghartz     |  | Organic Electronics Member                                  | Arokia Nathan         |
| Vice President of Regions & Chapters   | Juin Liou           |  | Awards Committee Member                                     | Mark Lundstrom        |
| COMMITTEE CHAIRS                       |                     |  | Awards Committee Member                                     | Samar Saha            |
| Compact Modeling Chair                 | Jamal Deen          |  | Educational Activities Member                               | M. Jagadish Kumar     |
| Organic Electronics Chair              | VACANT              |  | Educational Activities Member                               | Jeong-Soo Lee         |
| Distinguished Service Award Chair      | VACANT              |  | Meeting Committee Member                                    | Vinit Todi            |
| Education Award Chair                  | Mark Lundstrom      |  | Compact Modeling Representative – Publications Committee    | Jamal Deen            |
| JJ Ebers Award Chair                   | Jay Baliga          |  | Organic Electronics Representative – Publications Committee | Hagen Klauk           |
| Paul Rappaport Award Chair             | Samar Saha          |  | Publications Committee Member                               | M. Jagadish Kumar     |
| George Smith Award Chair               | Samar Saha          |  | Publications Committee Member                               | Rebecca J. Nikolic    |
| PhD Award Chair                        | Agis Illiadis       |  | Nanotechnology Magazine – Council Representative            | Cary Yang             |
| GOLD Chair                             | Ravi Todi           |  | Trans. On Nanotechnology – Council Representative           | Cary Yang             |
| Region 10 SRC Vice Chair               | M.K. Radhakrishnan* |  | Early Career Award Committee Member                         | Chen Yang             |
| IEEE REPRESENTATIVES                   |                     |  | Distinguished Service Award Committee Member                | Marvin White          |
| IEEE Technology Management Council     | Ravi Todi           |  | Conferences Committee Member                                | Ru Huang*             |
| IEEE Nanotechnology Council            | Cary Yang           |  | <b>*Appointed after December 2010 AdCom</b>                 |                       |
| IEEE Women in Engineering Committee    | Usha Varshney*      |  |   |                       |

### The Chairman of the IEEE Fellows Evaluation Committee, Ilesanmi Adesida, gave his committee's report

Ade started by stressing the importance of the EDS Fellows Committee. In 2010 there were 45 nominees and 26 evaluators. Each nominee had about 15 evaluators

to ensure that every individual was given a comprehensive review. The results were approved at the IEEE Board of Directors meeting on Nov. 22. The list of new fellows included 16 EDS members evaluated by EDS, and 20 evaluated by other societies, making a total of 36 new Fellows.

### Cor Claeys gave the Nominations and Election Chair's Report

Two **MOTIONS** were considered and voted on. The first was a minor change in the number of candidates that must be presented on a slate of candidates for Society Officer and Member-at-Large positions; this

motion passed unanimously. The second was a detailed motion for inclusion into the EDS Bylaws, which described the creation, budget, and staffing of the EDS Executive Office. This motion led to considerable discussion and was finally approved by a vote of 18 to 2. (Yeah, at last, a slight deviation from unanimity!) Details of both motions can be found in the Minutes of the meeting. The IEEE Technical Activities Board must approve these changes before they take effect.

### **Xing Zhou reported on Activities and Statistics in Region 10: Asia and the Pacific**

Xing told us that there are 42 chapters in Region 10, four of which were created in 2010, and there are many more chapters in the process of formation at this time. Region 10 chapters are among the most active in the EDS. There is strong support from local hosts to organize flagship conferences and promote technical activities. Because of the high level of activity in Region 10, there has been a discussion about adding another Vice Chair to help mentor chapters in China and to help with inactive chapters in the region.

### **Zeynep Celik-Butler provided a report on Regions 4–6: Central, Southwestern and Western USA**

A detailed accounting was given of chapters in these regions with the Western Region having the largest number of chapters (15), 5 in the Southwest and 6 in the Central Region. The Chicago chapter has been revitalized and a new chapter formed in Santa Clara Valley. A new chapter at the University of New Mexico is currently in formation. Denver is the only chapter to be dissolved. In 2010 there have been 9 chapter subsidies.

### **The Gold Chair Report was given by Ravi Todi**

The EDS provides Ph.D. and Masters Student Fellowship, and has established an Early Career Award to recognize young professionals. One goal of the GOLD Member Program is to have a GOLD member on each EDS committee. Finally, Ravi described the EDS Student GOLD Ambassador Program, which exists to better serve the needs of student and recent graduate professionals by increasing the number of student branch chapters, and providing effective communication between

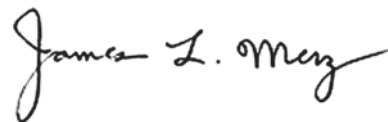
them. The budget for this program is \$20,000/year.

### **The Semiconductor Manufacturing Committee Report was given by Bob Doering**

Bob provided an overview of this committee, pointing out that there have been many Semiconductor Manufacturing committee member changes over the years. A few members have dropped off, and some have not been active from the start. Members participate in many conferences, such as ISSM, ASMC, ITRS and NRI, and Conferences on Frontiers of Characterization and Metrology for Nanoelectronics. New conferences reflect a shift in the location of manufacturing.

### **Renuka Jindal closed the meeting by thanking everyone for their attendance**

A **MOTION** to adjourn was approved unanimously.



*Respectfully submitted,  
Jim Merz,  
EDS Secretary*

## **SECRETARIAL REFLECTIONS**

In my last Newsletter article, on the Stuttgart meeting of May 2010, I proudly showed a photo of myself with my dream car, the Pope Mobile. However, as a consequence of this sin of presumption, I now have to make a confession to all my readers – *I did not even attend this meeting in San Francisco about which I have just written in detail.* How did I accomplish this sleight of hand? Have I mastered bi-location, or experienced a transcendental experience? No much simpler than that – EDS has a great staff. In fact, you might say this article was really



*Jean Bae, Conference Administrator; Kellie Gilbert, Committees Coordinator; Chris Jannuzzi, Executive Director; and friends of EDS from Stuttgart*

written by Kellie Gilbert; I merely transformed her detailed, accurate, and professional meeting minutes into a narrative account of the highlights. Thanks, Kellie.

Let me take this opportunity, then, to remind you that EDS has an outstanding staff of full-time, dedicated professionals who provide insight into the Society's needs and keep the trains running on time. We are indeed fortunate to have them, and they don't receive the recognition they deserve. They are indispens-



*Laura Riello, Senior Administrator, Kellie Gilbert, Committees Coordinator and Jean Bae, Conference Administrator, enjoying the ride on a San Francisco Cable Car*

able because the rest of us are simply volunteers and volunteers can prove to be unreliable. (I am at least speaking for myself.)

So here's to the staff!

So where was this irresponsible secretary? Home for an important family event, my granddaughter's confirmation, for which I was a sponsor.

*James L. Merz  
EDS Secretary*

*University of Notre Dame  
Notre Dame, IN, USA*

## DECEMBER 2010 REGIONS 4-6 CHAPTERS MEETING



*Juin J. Liou  
EDS Vice President of  
Regions & Chapters*

On Sunday, December 5, 2010, the bi-annual EDS North America West (NAW) Regions 4-6 Chapters Meeting took place in San Francisco, California. Presiding over this meeting were EDS President Renuka Jindal, EDS Vice President of Regions & Chapters Juin Liou and Regions 4-6 SRC Chair Zeynep Celik-Butler. Regions 4-6 SRC Vice Chair, Jason Woo, was also present at this meeting along with several Chapter Chairs including Shyam Surthi, Dina Triyoso and John Wood.

The meeting began with greetings from Juin Liou and an overview of EDS Chapters. Juin discussed the 2010 EDS Chapter figures, which included 12 new chapters, 4 dissolved chapters, and many that are currently in the formation stages. Initiatives discussed included the New Chapter Initiative, outreach to IEEE Student Branches for EDS Student Chapter formation, and revitalization of inactive chapters. The New Chapter Initiative consists of reaching out

to individuals in regions that have a large number of EDS members, but no EDS chapter. Also working toward the goal of more EDS chapters is outreach to universities that have IEEE Student Branches, in hopes that they will create an EDS Student Branch Chapter. In December, Renuka Jindal visited the Rochester Institute of Technology, and as a result, a new Student Branch Chapter is currently in formation. The next scheduled university visit is to Purdue this March.

Renuka followed up on the opening remarks with an open forum discussion regarding membership recruitment, chapter administration, and chapter promotion. The discussion was focused on ways to rejuvenate chapter activities in the United States. The ideal outcome would be to create a better value proposition in terms of the benefits received for the time an individual invests in chapter activities.

Austin Chapter representatives Dina Triyoso and Christian Catalan spoke after Renuka. The Austin Chapter is very active, and has a lineup of active officers. Dina and Christian explained that the activi-

ties they promote satisfy the curiosities and intellectual interests among the chapter's members. Recently the chapter hosted "Road map to Solar Careers," along with various continuing education programs relating to "Engineering Ethics," solar technology workshops, and so on. Their programs have been very successful and offer good examples for other chapters to follow.

The winner of the 2010 Chapter of the Year Award was the ED Boise Chapter from Region 6. The Boise Chapter Chair, Shyam Surthi, provided attendees with chapter updates as well as some of the strategies they used to become such a successful chapter. Each year they ask members for input regarding which symposium topics will fulfill needs within their careers and personal interests. One successful program from 2010 was the WMED, which is a high quality technical program with invited speakers, affordable registration, awards and a high school program. Congratulations to the Boise Chapter for being the 2010 Chapter of the Year!

The final presentation of the meeting came from John Wood,



ED/AP/MTT/UFFC/PHO Phoenix Chapter Chair. Phoenix is another very active and successful chapter. Over the years they have donated about \$50K to Arizona State University scholarships. John reported that in 2010 they held 16 technical seminars,

3 executive committee meetings and 8 Phoenix section meetings. The Phoenix Chapter has about 20 retired engineers that reach out to schools and volunteer their time to give lectures and participate in Chapter activities.

From the presentations at this meeting, it is easy to see that EDS has a number of active chapters that are being led by enthusiastic and committed leaders. Many thanks go out to all who devote their time and energy to EDS Chapter related activities.

## 2010 EDS CHAPTER OF THE YEAR AWARD

The EDS Chapter of the Year Award is presented annually to recognize an EDS Chapter for the quality and quantity of the activities and programs implemented during the prior July–June period.

On December 5, 2010, at the IEEE International Electron Devices Meeting, held in San Francisco, California, the ED Boise Chapter received the EDS Chapter of the Year Award, which included a certificate and a check for \$1,000. The award was received by Shyam Surthi, Chapter Chair.

The IEEE ED Boise Chapter continues to influence its constituency by providing an excellent an-



*Renuka P. Jindal, EDS President (left), presenting the 2010 EDS Chapter of the Year Award to Shyam Surthi, ED Boise Chapter Chair*

nual workshop, various technical events and through its membership drives. In the past year, the mem-

bership at the Chapter has grown by 10%, and the Chapter sponsored and held 2 distinguished lectures, 2 IEEE Expert courses, and the 9th Annual IEEE Workshop on Microelectronics and Electron Devices, as well as several technical meetings. I want to congratulate the Chapter for providing the exemplary contributions and enhanced values to the members of the Electron Devices Society.

*Juin Liou  
EDS Vice-President of Regions/  
Chapters  
University of Central Florida  
Orlando, FL, USA*

## EDS PUBLICATIONS COMMITTEE REPORT



*Samar Saha  
EDS Vice-President of  
Publications*

The IEEE Electron Devices Society (EDS) publications committee consists of 31 members including all EDS journal Editor-In-Chiefs, all technical committee chairs, all representatives to the EDS sponsored and co-sponsored publications, and special assignment members to IEEE Councils. The committee oversees the EDS publication issues.

Since 1954, EDS has been a leading publisher of original research results in the field of electron device engineering. EDS sponsors or co-sponsors over a dozen outstanding industry-leading periodicals and journals. The most notable EDS periodicals include:

- **Electron Device Letters (EDL)**
- **Transactions on Electron Devices (T-ED)**

The year 2010 has been a very exciting year for EDS publications. T-ED moved to ScholarOne for online manuscript processing. EDS submitted proposals have been approved,

resulting in introduction of the following periodicals in 2011:

- **IEEE Journal of Photovoltaics (J-PV):** The scope of J-PV is to publish original research results in the field of Photovoltaics. This is a multi-society publication partnering with six other IEEE societies, with EDS always maintaining the majority ownership of over 51%. In 2011, two issues of J-PV will be published.
- **EDS Express (EDX):** EDX is the proposed new section of EDL. The scope of EDX is rapid publication of breakthrough original

research results (with a strict two-page limit) within about SIX weeks from the submission to online posting. Currently, we are examining how to best implement EDX to meet the scope and goals of the effort.

All EDS members have free online access to the following publications via IEEE Xplore or directly from the EDS homepage:

- EDL – all issues from 1980 through current
- T-ED – all issues from 1954 through current
- International Electron Devices Meeting (IEDM) – all issues from 1955 through current
- J-PV (as become available)
- Journal of Lightwave Technology (JLT)

- EDS Newsletter
- QuestEDS – an on-line publication that includes questions asked by EDS members and the corresponding answers by experts in the field. Please visit: <http://eds.ieee.org/questeds.html>.

In addition, the access to members-only content includes the EDS archival collection DVD update package. This DVD includes all issues of T-ED (2004–2009), EDL (2004–2009) and IEDM (2004–2009).

Also, EDS publications provide copy editing service to authors of accepted manuscripts. This is a member benefit service to authors all of whom are EDS members at the time of submission of their manuscript to T-ED or EDL.

The 2011 plans of EDS publications include:

- IEDM short course digitization onto DVD for EDS members
- EDS Magazine: We are conducting a feasibility study of publishing an EDS- only magazine for the member benefit package
- Implement system to provide Table of Contents (TOC) to EDS members
- Implement readers' interactivity to all EDS journal articles
- Improve ScholarOne manuscript central.

*Samar Saha  
EDS Vice-President of Publications  
SuVolta, Inc.  
Los Gatos, CA, USA*

## 2010 EDS DISTINGUISHED SERVICE AWARD



*Marvin H. White*

The IEEE Electron Devices Society is extremely proud of the services that it provides to its members. Its members generate the premier new developments in the field

of electron devices and share these results with their peers and the world at large by publishing their papers in EDS journals and presenting results in its meetings. This is a global activity that is effective because of the efforts of numerous volunteers. Many of these volunteers labor in relative obscurity, with their only reward being the satisfaction that they receive in being an important part of a successful organization, namely of the IEEE Electron Devices Society. One means of thanking these volunteers is to recognize their contributions through the EDS Distinguished Service Award. This award for 2010 was presented to Marvin H. White at the IEEE Inter-

national Electron Devices Meeting in San Francisco, California, on December 5, 2010.

Marvin H. White was born in the Bronx, New York. He obtained a BSE degree in Physics and Mathematics from the University of Michigan in 1960 and an MS degree in Physics from the same school in 1961. In 1961, he joined the Westinghouse Solid State Laboratory in Baltimore, Maryland, where he worked on advanced military and space imaging systems. He and his colleagues developed integrated CMOS technology for low power memories and self-scanned photodiode imaging arrays. In 1966, he took a leave of absence and continued his studies as an instructor at Ohio State University. In 1969, he received his Ph.D. in Electrical Engineering from Ohio State University (advisor: Prof. Marlin O. Thurston) with a dissertation on microwave, s-parameter, bipolar transistor modeling.

After returning to Westinghouse, Dr. White and his colleagues devel-

oped the concept of correlated double sampling (CDS) to remove the reset noise and filter 1/f noise in CCD and photodiode imaging arrays and analog signal processing circuits. CDS solved a critical problem in the application of low light level to imaging in fields, such as astronomy, medicine (endoscopy), satellites, and consumer electronics – i.e. digital cameras, camcorders, facsimile and video conferencing. The removal of reset noise and suppression of 1/f noise enabled the detection of extremely low light levels (photon counting). In the 1970's, he made contributions to low power CMOS and MNOS memory devices, microwave bipolar transistors and CCDs for imaging and signal processing. In this decade, he was a visiting Senior Fulbright researcher at Catholique Universite' de Louvain in Belgium, a lecturer at the Westinghouse School of Applied Science and Engineering and Adjunct Professor at the University of Maryland.

In 1981, he joined Lehigh University in Bethlehem, Pennsylvania,

as the Sherman Fairchild Professor of Solid-State Studies in Electrical Engineering and became Director of the Sherman Fairchild Center for Solid-State Studies from 1998-2010. In 2010, he became Professor Emeritus at Lehigh and is presently a Professor in Electrical and Computer Engineering at Ohio State University in Columbus, Ohio. He and his students have contributed to the understanding of defects in solid-state devices, charge transport and storage in charge-trap SONOS nonvolatile memories, the Si/SiO<sub>2</sub> interface, IS-FETs/MEMS, synchronous oscillators, CMOS transistor modeling, SiC power devices, and Biochips for medical research. He has taken sabbaticals as a research scientist at

NRL and at NSF as Program Director in Solid State & Microstructures. At Lehigh he has graduated 34 Ph.D. and 62 M.S. students. His teaching areas concern the analysis and design of semiconductor devices for integrated circuits and systems applications. He received Lehigh's Eleanor and Joseph F. Libsch Research Award in 1997.

He has been active in the IEEE, particularly the EDS, since the early 1970's when he was an EDS Newsletter Editor. He has authored or co-authored nearly 300 technical papers with students and colleagues, contributed chapters to four books and has 27 U.S. patents. He is an IEEE Life Fellow and a member of the U.S. National Academy of Engineering.

He has received several awards, including the 1997 IEEE EDS J.J. Ebers Award, the 2000 IEEE Masaru Ibuka Consumer Electronics Award, and the IEEE 2001 Aldert van der Ziel Award.

Marv resides with his wife, Sophia, in Powell, Ohio. Their son David and wife, Becky, live in nearby Dublin, Ohio. David works for Sterling – IBM. Becky is a certified financial planner. Marv is an avid runner, fly fisherman, amateur magician and enjoys playing jazz piano.

*Steven J. Hillenius  
2010 EDS Distinguished Service  
Award Chair  
Semiconductor Research Corporation  
Durham, NC, USA*

## 2010 EDS J.J. EBERS AWARD WINNER



*Mark E. Law*

The 2010 J.J. Ebers Award, the prestigious Electron Devices Society award for outstanding technical contributions to electron devices, was presented to Dr.

Mark Law of the University of Florida, Gainesville, Florida, at the IEEE International Electron Devices Meeting (IEDM) in San Francisco, California, December 5, 2010. This award recognizes Dr. Law "For contributions to widely used silicon integrated circuit process modeling."

Mark E. Law was born in St. Paul, Minnesota in 1959 to Paul and Bernice. The radio kit he built in high school sparked his interest in electronics, but he started college in physics before switching to engineering. Mark received his B.S. in Computer Engineering from Iowa State University in 1981, and his M.S. from Stanford in 1982. He

joined Hewlett Packard's computer aided design group working on device and process simulation. Stanford's Professor Robert W. Dutton enticed him back to school with his dynamic TCAD group, where he completed his Ph.D. in 1988. Mark joined the University of Florida as an assistant professor. He rose to full professor, then ECE Chair, and now is an Associate dean in the college of engineering.

As a graduate student at Stanford, he and Conor Rafferty co-authored SUPREM-IV. With several commercial versions, this became the most widely used 2D process-modeling tool. Florida's SWAMP research group full of bright and energetic students, co-directed by Dr. Kevin Jones, developed FLOOPS and FLOODS, object oriented multi-dimensional tools for process and device modeling. The FLOOPS/FLOODS development effort won the 1993 Semiconductor Research Corporation Technical Excellence Award. FLOOPS has

been commercialized as Sentaurus-Process.

Dr. Law was named a National Science Foundation Presidential Faculty Fellow in 1992, Outstanding Young Alumnus of Iowa State in 1994, College of Engineering Teacher of the Year in 1996-97, and a UF Research Fellow in 1998. He was named an IEEE Fellow in 1998 for his contributions to integrated circuit process modeling and simulation. He won the 2006 SRC Aristotle Award for Outstanding Graduate Student Advising and an Iowa State Professional Achievement Award in 2007. He chaired the 1997 Simulation of Semiconductor Process and Devices Meeting, the 1999, 2002, and 2008 silicon front-end processing symposium of the Materials Research Society, the 2005 Ultra-Shallow Junctions workshop and the 2000 International Electron Devices Meeting. Dr. Law has written over 200 papers in the area of process and device modeling and has advised 18 Ph.D.

students. He has been involved in more than \$15 million of funding during his career.

Mark and his wife Alison will soon celebrate 30 years of marriage in Gainesville, Florida, with their

children, Chris (22) and Heather (20). Mark and Alison play in a community string band and an old-time jam group. Mark is a season ticket holder for Florida Gator Football and bleeds orange and blue.

*Louis C. Parrillo  
2010 EDS J.J. Ebers Award Chair  
Parrillo Consulting  
Austin, TX, USA*

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## MESSAGE FROM THE EDS NEWSLETTER EDITOR-IN-CHIEF



*Ninoslav D. Stojadinovic  
EDS Newsletter  
Editor-in-Chief*

I would like to take this opportunity to thank two outgoing Regional Editors for outstanding service to the Newsletter and Electron Devices community. They are Ibrahim M. Abdel-Motaleb (Regions 1, 2 & 3) and Jamel Deen (Regions 4 & 7). Their outstanding voluntary contributions for the past six years, as regional editors, are exemplary to the rest of us. Replacing Jamel Deen on the Newsletter Editorial Staff is Peyman Servati, of the University of British Columbia, whose biography follows. It is my pleasure to welcome him as a new editor for the *EDS Newsletter*.



**Peyman Servati** (Ph.D., P.Eng.) is an Assistant Professor with the Department of Electrical and Computer Engineering at the University of Brit-

ish Columbia (UBC), Vancouver, Canada, where he leads the Flexible Electronics and Energy Laboratory (FEEL) (<http://feel.ece.ubc.ca/>) and is a member of the Clean Energy Research Centre (CERC). His research interest lies in scalable synthesis and characterization of nanowires and nanostructures, fabrication of flexible electronics and transistors, and development of low-cost photovoltaic devices. Before joining UBC in 2006, he was a research associate at the Centre for Advanced Photonics and Electronics (CAPE) of the University of Cambridge, UK, working on nanowires and printable nanocomposite materials. From 2004 to 2005, he was a senior research scientist with Ignis Innovation Inc., a spin-off company of the University of Waterloo, Ontario, Canada, working on novel organic light-emitting diode (OLED) displays. Dr. Servati has more than eighty papers in peer-reviewed journals and conferences, has four patents, and has co-authored three book chapters. His doctoral thesis on mechanically flexible and plastic electronics won the 2005 Doctoral

Prize from the Natural Sciences and Engineering Research Council (NSERC) of Canada. He is the winner of the 2006 Canada-UK Millennium Research Award and Bronze Medal in the XXV International Physics Olympiad, China, 1994.

Once again, I thank the outgoing editors for their dedicated service to the Newsletter and welcome the new editor and wish him success. Please contact your respective Regional Editor directly with news items. A listing of EDS Regional Newsletter Editors is available on page two of this publication.

*Ninoslav D. Stojadinovic  
EDS Newsletter Editor-in-Chief  
University of Nis  
Nis, Serbia*



## 2010 EDS Education Award Winner



Sorab (Soli) Ghandhi

The EDS Education Award recognizes an IEEE/EDS Member from an academic, industrial, or government organization with distinguished contributions to education within the fields of interest of the IEEE Electron Devices Society. The 2010 award was presented to Sorab K. Ghandhi at the IEEE International Electron Devices Meeting in San Francisco, California, December 5, 2010. The award cites Professor Ghandhi "For pioneering contributions to semiconductor and microelectronics education."

**Sorab (Soli) Ghandhi**, Professor Emeritus at Rensselaer Polytechnic Institute (RPI), received his BS from Benares Hindu University in 1947, and his MS and Ph.D. from the University of Illinois in 1948 and 1951, respectively. After graduation, he joined the Electronics Laboratory of the General Electric Company (GE) to work in the new field of transistors.

His first teaching experience involved participation in a company-wide course on transistors. This

convinced him that the acquisition of new knowledge made sense, only if it could be passed on for the benefit of others. Richard Shea, his group leader, firmly supported this concept, and they ended up writing *Principles of Transistor Circuits* in 1953, with Shea as the editor. This was followed by *Transistor Circuit Engineering* in 1957.

Soli joined RPI in 1963 as a Professor of Electrophysics. Here, he introduced microelectronics into the graduate curriculum and wrote *The Theory and Practice of Microelectronics* in 1968, followed by *Semiconductor Power Devices* in 1977. His final two books were *VLSI Fabrication Principles: Silicon and Gallium Arsenide* in 1983, followed by a completely revised edition in 1994.

In 1970, Soli started the world's first university program on the Organometallic Epitaxy of compound semiconductors, and conducted research in the growth and characterization of III-V and II-VI materials and devices. This work resulted in over 180 papers with his students.

Soli's aim at RPI has been to help students acquire knowledge in all aspects of semiconductors.

This includes research, which is the quintessential one-on-one form of education. He is most proud of the fact that he was awarded the Distinguished Teaching Award by his students at RPI in 1975. His "secret of success" is simple. First, you must love your subject, and be enthusiastic about it. Next, you must know the material cold. Finally, you should impart both your knowledge, as well as your enthusiasm, to the students.

Soli considers the reviewing of papers, and the editing of professional journals and special issues, to be an essential means of furthering the goals of engineering education. To this end, he served as an Editor of the *Solid State Electronics Journal* for a number of years.

He shares a love for Western classical music and Mesoamerican archaeology with his wife Cecille. And finally, he would like to thank her and his children, Khushro, Rustom and Behram, for their support, and his students and colleagues for their forbearance.

Mark Lundstrom  
EDS Education Award Chair  
Purdue University  
West Lafayette, IN, USA



### 2011 EDS Education Award Call For Nominations



The IEEE Electron Devices Society invites the submission of nominations for the 2011 Education Award. This award is presented annually by EDS to honor an individual(s) with distinguished contributions to education within the fields of interest of the IEEE Electron Devices Society. The recipient is awarded a certificate and a check for \$2,500, presented at the IEEE International Electron Devices Meeting (IEDM).

The deadline for the submission of nominations for the 2011 award is September 1, 2011 and nomination forms can be found on the EDS web site at <http://eds.ieee.org/education-award.html>.



## 2010 EDS EARLY CAREER AWARD WINNER

The EDS Early Career Award recognizes an IEEE/EDS Graduate of the Last Decade (GOLD) member at the time of nomination that is making exciting contributions in an EDS field of interest area.

The 2010 EDS Early Career Award was presented to Chen Yang of the University of California, Berkeley, California, at the EDS GOLD Lecture held in conjunction with the IEEE International Electron Devices Meeting in San Francisco, California, December 5, 2010.

**Chen Yang** was born in Tianshui, Gansu, PRC. He received the B.Eng. degree in Electronic Engineering and the Ph.D. degree in Microelectronics from Tsinghua University (THU), Beijing, China, in 2003 and 2008, respectively. He is currently a Postdoctoral Researcher with the Department of Mechanical Engineering, and the Berkeley Sensors and Actuators Center (BSAC), University of California at Berkeley.

Dr. Yang is an early advocate in developing on-chip super-compact nano-magnet-integrated inductors for RF SoC. His current research interests include novel materials, fabrication techniques, and devices for nanoelectronic systems. He received several awards including IEEE Elec-



(from left) Cor Claeys, EDS Jr. Past President, with Chen Yang, 2010 EDS Early Career Award Winner, along with Renuka Jindal, EDS President and Paul Yu, EDS Early Career Award Chair and EDS President-Elect

tron Devices Society Ph.D. Student Fellowship Award in 2007, the First-Place Award in the Agilent Cup Semiconductor Manufacturing Technology CFP Contest in 2005, the Best Student Paper at 2007 International Semiconductor Technology Conference, and the 2008 New Star in Academic Circles Award of Tsinghua University. He has authored or co-authored more than 30 peer-reviewed journal and conference papers.

Dr. Yang was the founding Chair for the first IEEE EDS Student Chapter in China, i.e., the EDTsinghua Uni-

versity Student Chapter. He led the EDS student chapter to organize the 2007 EDS AdCom Meetings in Beijing. He served as the Tutorial Chair of the Silver Jubilee Conference on Communication Technologies and VLSI Design (CommV'09) held in India in 2009, and the secretary of 2007 International Workshop on Electron Devices and Semiconductor Technology (IEDST 2007) at Beijing.

*Paul K.L. Yu*

*EDS Early Career Award Chair  
University of California at San Diego  
La Jolla, CA, USA*

## CALL FOR NOMINATIONS - 2011 EDS J.J. EBERS AWARD

The IEEE Electron Devices Society invites the submission of nominations for the 2011 J.J. Ebers Award. This award is presented annually for outstanding technical contributions to electron devices. The recipient(s) is awarded a certificate and a check for \$5,000, presented in December at the IEEE International Electron Devices Meeting (IEDM).

The J.J. Ebers Award on-line nomination form can be found on at <http://eds.ieee.org/jj-ebers-award.html>. The deadline for submission of nominations for the 2011 award is July 1, 2011.

If you have any questions or need further information on this award, please do not hesitate to contact Laura Riello of the EDS Executive Office at [l.riello@ieee.org](mailto:l.riello@ieee.org).

## HIGHLIGHTS OF THE 2010 EDS GOLD EVENT AND AdCom DINNER

An EDS sponsored, career development strategy session, especially designed for graduate students and young professionals, who are Graduates of the Last Decade (GOLD) members, was held in conjunction with the EDS AdCom Dinner,

December 5, 2010, at the Hilton San Francisco Hotel.

The event, Your Career and Networking with IEEE Electron Devices Society AdCom Members, included a seminar on career development strategies for today's globally competitive

world and presentations to the winners of the EDS Paul Rappaport Award, the EDS George E. Smith Award and the EDS Ph.D. Student Fellowship. The proud winners can be seen below receiving their awards from Renuka Jindal, EDS President.



*Cor Claeys, EDS Jr. Past President (right) addressing the attendees of the EDS GOLD and AdCom Event, with appreciation being shown by Paul Yu, EDS President-Elect (right) and Renuka Jindal, EDS President (middle) for Cor's speech on the benefits of involvement in the IEEE EDS*



*The Electron Devices Society Ph.D. Student Fellowship Program was designed to promote, recognize, and support Ph.D. level study and research within the Electron Devices Society's field of interest. The winners of the EDS Ph.D. Student Fellowship (left to right), Can Bayram, Jing Zhuge, and Guruprasad Katti, were recognized for their contributions. Detailed articles about each Ph.D. Student Fellowship winner and their work will appear in forthcoming issues of the EDS Newsletter*



*Accepting the George E. Smith Award on behalf of all the winning authors, Pei-Lan Hsu (left) and Jakub T. Kedzierski (right), for the paper entitled "Graphene-on-Insulator Transistors Made Using C on Ni Chemical-Vapor Deposition." Their paper appeared in the July 2009 issue of Electron Device Letters and was authored by Jakub T. Kedzierski, Pei-Lan Hsu, Alfonso Reina, Jing Kong, Paul Healey, Peter Wyatt, and Craig Keast*



*Accepting the EDS Paul Rappaport Award on behalf of all the winning authors, Takao Someya (left) and Takayasu Sakurai (right), for the paper entitled, "Printed Nonvolatile Memory for a Sheet-Type Communication System." Their paper was published in the May, 2009 issue of the IEEE Transactions on Electron Devices, and was authored by Takao Someya, Tsuyoshi Sekitani, Koichiro Zaitzu, Yoshiaki Noguchi, Kiyoshiro Ishibe, Makoto Takamiya and Takayasu Sakurai*

## 36 EDS MEMBERS ELECTED TO THE IEEE GRADE OF FELLOW EFFECTIVE 1 JANUARY 2011



*Ilesanmi Adesida  
EDS Fellows Chair*

**Mark Allen**, Georgia Institute of Technology, Atlanta, Georgia, USA  
*for contributions to micro and nanofabrication technologies for microelectromechanical systems*

**Asen Asenov**, The University of Glasgow, Glasgow, Scotland  
*for contributions to the understanding and prediction of semiconductor device variability via modeling and simulation*

**Paul Berger**, The Ohio State University, Columbus, Ohio, USA  
*for contributions to the understanding, development, and fabrication of silicon-based resonant interband tunneling devices and circuits*

**Karl Bohringer**, University of Washington, Seattle, Washington, USA  
*for contributions to microelectromechanical systems, parallel and distributed robotic manipulation, and self-assembly*

**Albert Chin**, National Chiao Tung University, Hsinchu, Taiwan, China  
*for contributions to high-K dielectrics and metal gate electrodes for complementary metal-oxide semiconductor*

**Jen-Inn Chyi**, National Central University, Jhong-Li, Taiwan  
*for contributions to III-V compound semiconductor optoelectronic devices*

**Paul Davis**, Reading, Pennsylvania, USA  
*for development of bipolar integrated circuits*

**Vivek De**, Intel Corporation, Hillsboro, Oregon, USA  
*for contributions to low power microprocessor design*

**Kristin DeMeyer**, IMEC, Leuven, Belgium  
*for contributions to exploratory complementary metal-oxide semiconductor field-effect transistors*

**Veronique Ferlet-Cavrois**, ESA ESTEC, Noordwijk, The Netherlands  
*for contributions to understanding of radiation effects on electronic devices*

**Digh Hisamoto**, Hitachi, Ltd., Kokubunji, Tokyo, Japan  
*for contributions to complementary metal-oxide semiconductor devices*

**Mark Itzler**, Princeton Lightwave, Inc., Princeton, New Jersey, USA  
*for leadership in avalanche photodiode technologies*

**Shin'ichiro Kimura**, Hitachi, Ltd., Kokubunji, Tokyo, Japan  
*for contributions to advanced stack memory cells for high density dynamic random access memories*

**Thomas Kuech**, University of Wisconsin-Madison, Madison, Wisconsin, USA  
*for contributions to electronic materials growth for epitaxial devices*

**Kelin Kuhn**, Intel Corporation, Hillsboro, Oregon, USA  
*for contributions to high performance complementary metal-oxide*

*mechanical system device technology for microprocessors*

**Juin Liou**, University of Central Florida, Orlando, Florida, USA  
*for contributions to development of electrostatic discharge protection of integrated circuits*

**Paolo Lugli**, Technical University of Munich, Munich, Bavaria, Germany  
*for contributions to nanostructured materials and devices*

**Eun Kim**, University of Southern California, Los Angeles, California, USA  
*for contributions to microelectromechanical systems*

**Dirk M Klaassen**, NXP Semiconductors, Waalre, The Netherlands  
*for contributions to semiconductor device modeling and simulation*

**Santosh Kurinec**, Rochester Institute of Technology, Rochester, New York, USA  
*for leadership in integrating innovative microelectronics research in engineering education*

**Jianqiang Lu**, Rensselaer Polytechnic Institute, Troy, New York, USA  
*for contributions to three-dimensional integrated circuit technology*

**Joseph Lyding**, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA  
*for contributions to nanofabrication and metal-oxide semiconductor transistor reliability*

**Chris Mack**, University of Texas at Austin, Austin, Texas, USA  
*for contributions to semiconductor microlithography*



**Vladimir Mitin**, University at Buffalo, SUNY, Buffalo, New York, USA

*for contributions to sensors and detectors*

**Ken O**, University of Texas, Dallas, Richardson, Texas, USA

*for contributions to ultra-high frequency complementary metal-oxide semiconductor circuits*

**Ioannis (John) Papapolymerou**, Georgia Institute of Technology, Atlanta, Georgia, USA

*for contributions to flexible, microwave and wireless components and systems*

**Robert Puers**, Katholieke Universiteit Leuven, Leuven, Belgium

*for contributions to implantable microelectromechanical systems*

**Johann Reithmaier**, University of Kassel, Kassel, Germany

*for research in active semiconductor nanostructures*

**Elyse Rosenbaum**, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA

*for contributions to electrostatic discharge reliability of integrated circuits*

**Gurtej Sandhu**, Micron Technology, Inc., Boise, Idaho, USA

*for leadership in development of silicon complementary metal-oxide semiconductor process technology for semiconductor memory devices*

**James Stathis**, IBM Thomas J. Watson Research Center, Yorktown Heights, New York, USA

*for contributions to complementary metal-oxide semiconductor gate-oxide reliability*

**Tuviah Schlesinger**, Carnegie Mellon University, Pittsburgh, Pennsylvania, USA

*for contributions to electro-optic devices and heat-assisted magnetic recording*

**Rama Venkatasubramanian**, RTI International, Research Triangle Park, North Carolina, USA

*for contributions to nanoscale thermoelectric technologies for thermal management*

**Jeffrey Welser**, IBM Almaden Research Center, San Jose, California, USA

*for leadership in emerging device technologies for computer applications*

**Jie Xue**, Cisco Systems, Inc., San Ramon, California, USA

*for leadership in electronics packaging technology*

**Kevin Zhang**, Intel Corporation, Portland, Oregon, USA

*for contributions to static random access memory for high-performance microprocessors*

*Ilesanmi Adesida  
2010 EDS Fellows Chair  
University of Illinois  
Urbana-Champaign, IL, USA*

## STATUS REPORT FROM THE 2010 EDS MASTERS STUDENT FELLOWSHIP WINNERS



**Meyya Meyyappan**  
EDS Vice-President  
of Educational  
Activities



**Agis Iliadis**  
EDS Masters  
Student Fellowship  
Chair

The EDS Masters Student Fellowship program is designed to promote, recognize, and support Masters level study and research within the Electron Devices Society's Fields of Interest.

The 2010 EDS Masters Student Fellowship winners were:

**Shimeng Yu**, Stanford University, Oguz Hanoglu, Bilkent University, and Desmond. C. Y. Chek, Universiti Teknologi Malaysia (UTM). The winners are pursuing distinctly different research topics in electron devices for their Masters degrees. The following are brief progress reports provided by the award winners.



**Shimeng Yu** is expected to obtain his M.S. degree in Electrical Engineering at Stanford University, USA, in June 2011, and will continue to pursue

the Ph.D. degree there. Recently, he has been working on investigating the switching dynamics of the metal-oxide resistive switching memory device with the aim of designing energy efficient programming strategies. Also, he is exploring the multilevel operation capability of resistive switching memory for the application as artificial synapse element in the neuromorphic computation system. In the past year, he has published his works in IEDM 2010 (San Francisco, USA), IMW 2010 (Seoul, Korea), Electron Device Letters and Nanotechnology, and contributed to a review paper in Proceedings of the IEEE.



**Oguz Hanoglu** is continuing to pursue his M.S. degree in the Nanotechnology track of Electrical and Electronics Engineering at Bilkent University in Ankara, Turkey. His research project on capacitive based biosensors continues, as well as his other project on high TCR materials. He plans to continue his academic career with a PhD study in USA.



**Desmond Chek Chang Yih** has completed his M. Eng degree in Electrical Engineering (Computational Nanoelectronics) at Universiti Teknologi Malaysia in Skudai, Malaysia Campus. He has modeled and simulated an analytical carbon nanotube field effect transistor and has verified its capabilities and performance in circuit and logic gate application. During his Master studies he has published work in 4 journals (IEEE Transaction of Education, Microelectronics Journal, Journal of Nanomaterials, Journal of Applied Physics), 2 book chapters and more than 10

conferences. Currently, he is joining the Penang Design Center of Intel Microelectronic Company in Penang, Malaysia as a design engineer.

The IEEE EDS is proud to support Engineering Education in Electron Devices world-wide.

*Meyya Meyyappan*  
EDS Vice-President of  
Educational Activities  
NASA Ames Research Center  
Moffett Field, CA, USA

*Agis A. Iliadis*  
EDS Masters Student  
Fellowship Chair  
University of Maryland  
College Park, MD, USA

## CALL FOR NOMINATIONS IEEE ELECTRON DEVICES SOCIETY EARLY CAREER AWARD

The IEEE Electron Devices Society invites the submission of nominations for the 2011 Early Career Award. The award is presented annually to promote, recognize and support early career technical development within the Electron Devices Society's field of interest.

**Prize:** \$1,000, a certificate, and travel expenses to attend the award presentation at the annual EDS GOLD Lecture that is held in conjunction with the IEEE International Electron Devices Meeting (IEDM).

**Eligibility:** Candidate must be an IEEE EDS GOLD (Graduate of the Last Decade) member and must have received his/her first professional degree within the 10<sup>th</sup> year defined by the August 15 nomination deadline and has made contributions in an EDS field of interest area. Nominator must be an IEEE EDS member. Previous award winners are ineligible.

**For more information, please visit:**  
<http://eds.ieee.org/early-career-award.html>

**Deadline:** August 15, 2011



**GROW WITH EDS**



## IEEE Electron Devices Society PhD Student Fellowship

### CALL FOR NOMINATIONS

#### 2011 IEEE EDS PhD Student Fellowship

**Description:** One year fellowships awarded to promote, recognize, and support PhD level study and research within the Electron Devices Society's field of interest: The field of interest for EDS is all aspects of engineering, physics, theory, experiment and simulation of electron and ion devices involving insulators, metals, organic materials, plasmas, semiconductors, quantum-effect materials, vacuum, and emerging materials. Specific applications of these devices include bioelectronics, biomedical, computation, communications, displays, electro and micro mechanics, imaging, micro actuators, optical, photovoltaics, power, sensors and signal processing.

It is expected that three fellowships will be awarded, with the intention of at least one fellowship being given to eligible students in each of the following geographical regions every year: Americas, Europe/Middle East/Africa, and Asia & Pacific. Only one candidate can win per educational institution.

**Prize:** US\$5,000 to the student and if necessary funds are also available to assist in covering travel and accommodation costs for each recipient to attend the IEDM for presentation of award plaque. The EDS Newsletter will feature articles about the EDS PhD Fellows and their work over the course of the next year.

**Eligibility:** Candidate must: be an IEEE EDS student member at the time of nomination; be pursuing a doctorate degree within the EDS field of interest on a full-time basis; and continue his/her studies at the current institution with the same faculty advisor for twelve months after receipt of award. Nominator must be an IEEE EDS member. Previous award winners are ineligible.

**Basis for Judging:** Demonstration of his/her significant ability to perform independent research in the fields of electron devices and a proven history of academic excellence.

#### Nomination Package:

- Nominating letter by an EDS member
- Two-page (maximum) statement by the student describing his or her education and research interests, accomplishments and graduation date
- One-page biographical sketch of the student (including student's mailing address and email address)
- One copy of the student's under-graduate and graduate transcripts/grades. Please provide an explanation of the grading system if different from the A-F format.
- Two letters of recommendation from individuals familiar with the student's research and educational credentials. Letters of recommendation can not be from the nominator.

#### Timetable:

- Nomination packages are due at the EDS Executive Office no later than May 15, 2011
- Recipients will be notified by July 15, 2011
- Monetary awards will be given by August 15, 2011
- Formal presentation of the awards will take place at the IEDM Awards Ceremony in December 2011.
- Nomination packages can be submitted by mail, fax or e-mail, but a hard copy must be received at the EDS Office.

**Send completed package to:** IEEE Operations Center  
EDS Executive Office  
EDS PhD Student Fellowship Program  
445 Hoes Lane, Piscataway, NJ 08854 USA

**For more information contact:** [edsfellowship@ieee.org](mailto:edsfellowship@ieee.org) or visit: <http://www.ieee.org/society/eds/education/fellowship.xml>

## GOLD SUMMIT — COLOMBIA GOLD MEMBERS MEETING

On September 15, 2010, the GOLD Colombia Team along with the professional activities coordination of the IEEE Colombia Section, organized the first ever GOLD Summit held in this country. This event lasted for 6 hours, and comprised of 4 main talks and lunch for the 60 people that attended. The GOLD Summit was held during the IEEE Andean Conference Andescon 2010.

The meeting was opened by Tania Quiel, Region 9 Coordinator, speaking on the advantages of being an IEEE member and how involvement in the organization benefits your personal development. She gave many examples of how IEEE support can help in goals accomplishment.

Keeping in mind the IEEE mission of Advancing Technology for Humanity, the meeting highlighted the IEEE Humanitarian Technology Challenge (HTC) as one of its main topics. A presentation given by Eduardo Navarro, Region 9 HTC Representative, offered to GOLD members and other attendees many exciting opportunities to volunteer and also help society.

Edwin Echeverry, IEEE Medellin Subsection Chair and a successful businessman in Colombia, shared his experience of being an entrepreneur and leading his own company, Compuredes. In his speech, 'Making enterprise, my life experience,' he seeks to motivate volunteers to take risk, be leaders and generate employment, and develop their own ideas, goals and businesses.



*Ravi Todi presenting on "Leadership skills for young engineers and scientists in the 21st Century"*

Leadership is one of the most important skills that an engineer must have and the encouragement of this skill is one of the main tasks of GOLD. Keeping this in mind, the final talk by Ravi Todi, Ph.D.- IBM Microelectronics and IEEE Electron Devices Society GOLD Representative, was titled 'Leadership skills for young engineers and scientists in the 21st Century,' in which he discussed several abilities that any engineer, especially a young one, should have and develop, resulting in a very motivating experience for GOLD members.

As a result of these talks, the GOLD summit became the first

GOLD members' meeting. Some of the main benefits were that it provided a forum for members' needs to be listened to, along with tools and supportive information for achieving their goals. It also provided a great opportunity for attendees to network not only with each other but also with the speakers who joined them in the event. If you attended the meeting and have suggestions for the organizers, please feel free to contact the GOLD Colombia team at [gold@ieee.org.co](mailto:gold@ieee.org.co).

*Jenifer Castillo  
GOLD Affinity Group Chair  
GOLD Colombia*



## CONGRATULATIONS TO THE 34 EDS MEMBERS RECENTLY ELECTED TO IEEE SENIOR MEMBER GRADE!

Svetlana Anisimova\*  
M. P. Anantram  
Carl Blake  
Huiming Bu\*  
Jeffrey Paul Calame\*  
Rob Candler  
Ting-Chang Chang  
Robert Dobyns  
Michael Estes  
Paul Feinberg  
Frederick Giles  
Justin Hodiak

Michel Houssa  
Mikhail Itskovich  
Chia-Hong Jan  
Yasunao Katayama  
Ali Khakifirooz  
Vladimir Kolchuzhin\*  
G. Koutsoyannopoulos  
Volkan Kursun  
Antonio Martinez  
Shunri Oda  
Claudio Paoloni  
Eric Pop

Marko Radosavljevic  
Seetharamaiah Ramiseti  
Shigehiko Sasa\*  
Fred Semendy  
Thomas N. Theis  
George J. Valco  
Hirobumi Watanabe  
Shaw Fong Wong  
Ren-Ichi Yamada\*  
Toshishige Yamada

\* = Individual designated EDS as nominating entity

If you have been in professional practice for 10 years, you may be eligible for Senior Membership, the highest grade of membership for which an individual can apply. New senior members receive a wood and bronze plaque and a credit certificate for up to US \$25 for a new IEEE society membership. Upon request a

letter will be sent to employers, recognizing this new status. For more information on senior member status, visit <http://www.ieee.org/web/membership/senior-members/status.html>

To apply for senior member status, fill out an application at <http://www.ieee.org/organizations/rab/md/smelev.htm>

## EDS DISTINGUISHED LECTURER VISITS ED SANTA CLARA VALLEY CHAPTERS

On December 2, 2010, the IEEE Electron Devices Society (EDS) President, Professor Renuka Jindal from the University of Louisiana at Lafayette, visited the IEEE ED Santa Clara Valley (SCV) Chapter and ED Santa Clara University (SCU) Student Chapter. In conjunction with his visit, the ED SCV and SCU Student Chapters jointly organized an EDS Distinguished Lecture (DL) entitled, "Millibits to Terrabits per Second and Beyond – Over 60 Years of Innovation," by Prof. Jindal at the SCU campus. There were about 40 attendees including students and engineers and researchers from the semiconductor industry.

His lecture was divided into two sessions: interactive conversations (question and answer) with the attendees and DL. In the interactive session, Prof. Jindal asked the attendees their feedback on the state of IEEE and EDS and suggestions for improvement. The discussions

included improving IEEE member benefits, attracting new membership, reaching out to members, and so on.

Prior to his DL, Prof. Jindal introduced the IEEE and EDS to the audience. He discussed the purpose of the institution, activities, member benefits, and his visions in moving forward the IEEE and EDS.



*Professor Jindal giving his distinguished lecture*

In his DL, he raised three key elements making evolution over 60 years possible: (1) the point-contact transistor invented by Bardeen, Brattain, and Shockley in 1947 and the metal-oxide-semiconductor transistor by Kahng and Atalla in 1960; (2) information theory by Shannon in 1948 for the signal and noise relation; and (3) laser invented by Schawlow and Townes in 1958. Serious efforts to transform this understanding into high-performance lightwave systems started using MOS technology around 1980. The lecture also included Prof. Jindal's work not only having led to a deeper understanding of the noise behavior of MOS devices but produced an order of magnitude improvement in their performance. This set the stage for MOS to become the technology of choice for lightwave and now low-cost wireless terminal applications. More detailed information can be found at <http://www.ewh.ieee.org/>



*Professor Jindal during the question and answer session*

[r6/scv/eds/announcements/2010-Dec-2-Jindal.htm](http://r6/scv/eds/announcements/2010-Dec-2-Jindal.htm).

After the DL, the ED SVC Chair, Dr. Prasad Chaparala, discussed chapter activities and presented the newly elected officers for 2011 with

a motion for approval. The motion was passed anonymously by the attended EDS voting members.

About 40 engineers from local industry, and SCU students and faculty attended the event, even though

it was final exam time at SCU. During Prof. Jindal's lecture, there were many fruitful exchanges of opinions between the audience and speaker on the technical topics, as well as the IEEE related topics. Snacks and coffee were also served.

The event was organized by EDS Vice-President of Publications, Dr. Samar Saha, SuVolta; the SCU Student Chapter President, Mr. Jason Tan; the ED SCV Secretary, Prof. Toshishige Yamada, ED SCV members and advisor, Prof. Cary Y. Yang.

*Toshishige Yamada  
Santa Clara Valley Vice-Chair  
Santa Clara University  
Santa Clara, CA, USA*

## **EDS DISTINGUISHED LECTURERS PARTICIPATE IN THE EDS MINI-COLLOQUIUM HELD IN BEIJING, CHINA**

The IEEE EDS Mini-colloquium (MQ) on Advanced IC Technology for Logic and Memory, organized by the ED Peking University (PKU) Student Chapter, in collaboration with the ED Tsinghua University (THU) Student Chapter, was successfully held November 6, 2010, at Peking University, Beijing, China. The event was initiated by the ED PKU Chapter Advisor, Prof. Ru Huang, and coordinated by the ED THU Chapter Advisor, Prof. Tian-Ling Ren. This one-day MQ was supported by the following guest lecturers: Prof. Cor

Claeys of IMEC, Prof. Steve S. Chung of National Chiao Tung University and Dr. Yi-Chou Chen of Macronix. The event was attended by more than 90 people, including a group of THU students and professors.

In the morning, Prof. Huang gave the welcome address, followed by a brief introduction to IEEE EDS by Prof. Claeys, who is the Junior Past President of EDS. The Workshop began with Prof. Claeys's DL on "Nanotechnology Research Challenges for More Moore and Beyond," followed by Prof. Chung, speaking

on "Guidelines for Developing High-performance and High-reliability strained CMOS: The strategies and Related Measurement Techniques." The organizers provided a free lunch for student participants, followed by Dr. Chen presenting on "Recent Progress of Nonvolatile Memories." These lectures covered a broad range of topics on current interests and also produced lively, interactive discussions. After the technical talks, Dr. Runsheng Wang (Chair of ED PKU) and Mr. Pinggang Peng (Chair of ED THU), shared their respective



*First row, left: Dr. Yi-Chou Chen, Prof. Cor Claeys, Prof. Steve S. Chung, Prof. Ru Huang and Prof. Jun Xu, with some of the participants of the MQ*

student chapters' activities as well as planned events for 2011.

Rounding out the program was a panel discussion with students and professors having great discussions together. Prof. Huang gave

her concluding remarks encouraging students to be proactive in initiating ideas and participating in volunteer activities. She also thanked the guest lecturers and the two chapters for their participation in this MQ.

*Dr. Runsheng Wang  
ED Peking University Student  
Chapter Chair  
Peking University  
Beijing, China*

## IEEE EDS MINI-COLLOQUIUM HELD IN PALMA DE MALLORCA, SPAIN

An IEEE EDS Mini-Colloquium was held in Palma de Mallorca, Spain, February 9–12, 2011, as a core part of the 8th Spanish Conference on Electron Devices (CDE'2011). The CDE'2011 was organized by the Universitat de les Illes Balears (UIB, Illes Balears, Spain). UIB also organized the IEEE EDS Mini-Colloquium that was integrated into the CDE'2011. The Chairman of CDE'2011 and the IEEE EDS Mini-Colloquium was Prof. Eugeni Garcia, from UIB. The venue of the conference was the "Es Baluard" museum, which is one of the most emblematic places of the city, located just in front of the Mediterranean Sea.

The goals of the conference and the IEEE EDS Mini-Colloquium were to present and discuss recent advances in all topics related to electron devices, with topics ranging from materials to circuits and systems, including devices, fabrication methodologies, and also modeling techniques. Partial financial support for both the Symposium and the Mini-Colloquium was obtained from the IEEE EDS Distinguished Lecturer Program, the Govern de les Illes Balears (Conselleria d'Innovació, Interior i Justícia, Direcció General d'Innovació, Desenvolupament Tecnològic i Justícia), the European FEDER funds, the Spanish Ministry of Science and Innovation, and the Universitat de les Illes Balears. The other major sponsors were Agilent Technologies, Keithley (through its Spanish representative: Instrumentos de medida, S.L.).

Five EDS Distinguished Lecturers participated in the CDE'2011, and four



*Some of the attendants to CDE'2011 and the accompanying EDS mini-colloquium, in front of the city wall of Palma, Spain. From left to right: Miquel Roca, Eugeni Garcia-Moreno, Wojciech Knap, M. Jamal Deen, Lluís Marsal, Benjamin Iñiguez, and Rodrigo Picos*

of them gave talks at the IEEE EDS Mini-Colloquium. Prof. Lluís Marsal (URV, Spain) talked about "Development of fabrication methods and characterization of polymer micro- and nanostructures." Professor M. Jamal Deen (McMaster University, Canada) addressed in his talk the issues in "Low-cost, high-sensitivity sensing systems for environmental and biomedical applications." Prof. Enrique Miranda (UAB, Spain) presented his work entitled "A power-law logistic model for the current-time characteristic of metal gate/high-K/III-V semiconductor capacitors." Finally, Prof. Benjamin Iñiguez (URV, Tarragona, Spain) gave a lecture on "Organic thin film transistors." The fifth IEEE EDS DL, Prof. Eugeni Garcia-Moreno (UIB, Spain) was the Conference General Chair. Other plenary talks given by speakers not in the DL program included those given by Prof. Wojciech Knap, (CNRS & Université Montpellier 2, France), "Nanotransistors Terahertz for Detection and Imaging," and Isabel Vergara (Project Officer, Micro and Nanosystems, ICT

Programme, European Commission, Directorate-General Information Society and Media), "Trends of Components and Systems in the European R&D Programme."

The CDE'2011 and the IEEE EDS Mini-Colloquium were attended by more than 150 people, coming from both academia and industry. The social program included a gala dinner and a tourist visit of the historical downtown of Palma, which is nowadays one of the leading touristic cities in the Mediterranean basin. Attendees considered the conference as very successful in terms of organization, technical quality of the contributions and opportunities for discussions. As a result of this positive impression, it is planned to organize again the CDE and the related IEEE EDS Mini-colloquium in 2013, this time in the Spanish city of Valladolid.

*Rodrigo Picos  
CDE'2011 Publications Chair  
Universitat de les Illes Balears  
Palma de Mallorca (Illes Balears),  
Spain*



# REGIONAL AND CHAPTER NEWS

## USA, CANADA & LATIN AMERICA (REGIONS 1-6, 7 & 9)

### ED/MTT Orange County

—by Dzung Le



Dr. Jacobus Swart,

ed the talk “*Microsensors based on CNT’s and SAW devices*.”

Since 2007, Dr. Swart has served as Director of the *Centro de Tecnologia da Informação Renato Archer* (CTI), a 500-person national research center occupying a 320,000 sq. meter campus in Campinas, Brazil, on leave from his position as Full Professor at the State University of Campinas. The center’s R&D focuses on microelectronics, software development, and applications. He is ranked as fellow researcher, level 1A (highest), at Brazil’s *National Council of Scientific and Technological Development* (CNPq). A Senior Member of IEEE, he is also a member of ECS and SBMicro, and has been president of SBMicro twice, 1988–90 and 1998–2000. He is currently the leader of Brazil’s NAMITEC, a network spanning 23 research facilities in 13 (of 26) states in Brazil, with 136 researchers, and also of the IC-Brazil Program, a government-assisted program to develop Brazil’s microelectronics capabilities. Dr. Swart’s current research activities and interests include CMOS, HBT and MEMS devices, process integration, thin gate

dielectrics and carbon nanotubes. He received his Dr. Engineer degree from the Polytechnic School of the University of São Paulo, Brazil, in 1981, and held a post-doctoral fellowship at K. U. Leuven, Belgium, from 1982–83.

Dr. Swart’s three-part talk began with an overview of CTI/NAMITEC/IC-Brazil. He indicated that in the IC-Brazil initiative EDA tools are provided to for-profit/non-profit IC design facilities and research fellowships to chip designers. In addition, support for IC fabrication/packaging/testing is also available, as well as an IC design training program which consists of 12-months of training and a 12-month industry internship.

In the second section, Dr. Swart discussed gas sensors using short multi-wall CNTs, particularly, based on changing the CNT resistance due to gas interaction. He pointed out that while suspended CNTs can enhance the sensors’ sensitivity and accuracy, this structure requires an additional process step to etch away the substrate or insulator directly under the CNTs. He also discussed “micro-reactors,” which are chambers housing MWCNT sensors that allow the sensors’ speed to be in the range of hundreds of milliseconds. He concluded this part by presenting similar research for gas sensors using graphene.

His third and final presentation showed a “lab-on-chip” in which SAW resonator/actuator/sensor on a  $\text{LiNbO}_3$  crystal substrate can manipulate droplets of a chemical mixture (moving, stretching, evaporating by atomization) to facilitate monitoring & testing, etc.

The event’s attendees included professionals from local companies (Broadcom, Mindspeed and Micro-Machines).

For additional information, contact Mr. Dzung Le at [dle@newportmediainc.com](mailto:dle@newportmediainc.com) or Mr. Hector J. De Los Santos at [hector.delossantos@ieee.org](mailto:hector.delossantos@ieee.org).

### ED Phoenix

—by Charles Weitzel



Prof. Sayfe Kiaei

The Phoenix IEEE Waves and Devices Chapter was pleased to have Dr. Sayfe Kiaei from Arizona State University give a seminar entitled “Bio-

Medical Integrated Circuits” on Dec. 3, 2010. Prof. Kiaei is the Associate Dean of Research at ASU college of Engineering as well as the Director of the Connection One Center (NSF I/UCRC Center) and Motorola Chair in Analog and RF Integrated Circuits. Previously he was a Senior Member of Technical Staff with the Wireless Technology Center and Broadband Operations at Motorola. He is an IEEE Fellow and a member of IEEE Circuits and Systems Society, IEEE Solid State Circuits Society, and IEEE Communication Society.

Prof. Kiaei presentation gave an overview of two recent research projects on Bio-Medical Integrated Circuits at ASU. The first part of the presentation described low power Medical Implantable Communication Services (MICS) transceivers. A Dual band MICS transceiver with a reconfigurable RF front-end was presented. The receiver reused the same circuit core for I) super-regenerative wake-up receiver, II) receive-mode LNA, and III) transmit power amplifier. The transceiver used an All Digital Frequency Locked-Loop (ADPLL) for LO signal generation and transmitter’s modulation. The second part of the presentation gave an overview of a dual-channel directional digital hearing aid (DHA). The DHA uses MEMS microphones, and an adaptive-power analog processing signal chain.

~Adam M. Conway, Editor



# EUROPE, MIDDLE EAST & AFRICA (REGION 8)

## MTT/ED/AP/CPMT/ SSC West Ukraine

—by Mykhaylo Andriychuk

The XVth International Seminar/Workshop on Direct and Inverse Problems of Electromagnetic and Acoustic Wave Theory (DIPED-2010) was organized by the MTT/ED/AP/CPMT/SSC West Ukraine and MTT/ED/AP/EMC Georgian Chapters. The event was held at the Tbilisi State University, Tbilisi, Georgia, September 27–30, 2010.

The DIPED-2010 Seminar/Workshop celebrated its 15th anniversary and was dedicated to the 70th birthday of Prof. Nikolai N. Voitovich, who has been its permanent Organizing Committee Co-Chairman since 1995. The successful holding of all DIPEDs in many aspects are indebted to Prof. Voitovich because of his enthusiasm, organization efforts and permanent care.

The IEEE Electron Devices (EDS), Antennas & Propagation (APS), and Microwave Theory & Techniques (MTTS) Societies provided technical co-sponsorship for DIPED-2010. The IEEE Solid State Circuits Society (SSCS) and Ukraine Section were the supporting IEEE institutions.

The DIPED-2010 technical program consisted of 42 papers, including 4 invited talks. Scientists from Bulgaria, China, Georgia, Germany, India, Israel, Japan, Poland, Russia, USA and Ukraine brought forward their papers, which were arranged in the following categories:

- Theoretical Aspects of Electrodynamics
- Diffraction and Scattering
- Modelling, Analytical and Numerical Methods
- Propagation in Complex Media
- Waveguide, Layered and Cable Structures
- Antennas and Arrays
- Acoustics



*Prof. G. Kevanishvili discussing the correct electrodynamic theory of horn antennas*

The DIPED Organizing Committee traditionally pays significant attention to the professional development of young scientists and Ph.D. students. Providing special travel grants and awarding prizes for the best papers and presentations are the ways to recognize their contribution to the work of DIPED. This year, four young participants were granted the Best Young Speaker Award for their valuable scientific results.

## ED Germany

*Chapter Supports Semiconductor Conference Dresden (SCD) 2011*

After hosting the spring EDS ExCom and AdCom meetings in Stuttgart, Germany, June 5–6, 2010, as well as an EDS mini-colloquium, June 7, 2010, the ED Germany Chapter is currently supporting the organization and promotion of the Semiconductor Conference in Dresden (SCD) 2011. The conference is scheduled for September 27–28, 2011, and is dedicated to advances, research, and development in the area of semiconductor technology, circuits, and systems. One of the central themes within the conference is the reduction of energy consumption in semiconductor



*Semper Opera house in Dresden*

devices, circuits and applications. The conference includes scientific presentations, workshops, tutorials, short courses, an exhibition and social events.

With approximately 1,200 companies and more than 40,000 engineers, the area around Dresden forms the largest microelectronic center in Europe. Moreover, Dresden is home of the German Excellence Cluster Cool Silicon, aimed at significantly reducing the energy consumption in microelectronic systems. Hence, Dresden is an excellent place to meet leading players and experts in microelectronics.

The conference takes place at Dresden University of Technology (TUD) with Gerotron Communication taking care of the conference management. The conference organizers are currently seeking technical co-sponsorship of the IEEE Electron Devices Society (EDS) and the IEEE Microwave Theory and Techniques Society (MTT-S). The major conference topics are: integrated circuit and system design, interconnection technologies, advanced system and wafer level packaging, optical devices, photonics, semiconductor technologies including More than Moore and Beyond Moore technologies, materials and processes, assembly, manufacturing, quality, reliability, modeling and simulation.

We at the ED Germany Chapter would greatly welcome paper submissions by EDS members in these areas, particularly from members outside Germany, to make this conference

a truly international event. The paper submission deadline was March 1, 2011. Joachim N. Burghartz, IMS CHIPS, is the ad-interim ED Germany Chapter Chair and SCD 2011 TPC Chair.

*~Jan Vobecky, Editor*

## ASIA & PACIFIC (REGION 10)

### ED/SSC Hong Kong

*~by Anthony Choi*

The IEEE ED/SSC Hong Kong Chapter successfully organized the 2010 IEEE International Conference on Electron Devices and Solid-State Circuits 2010 (EDSSC 2010). The EDSSC 2010 was held December 15–17, 2010 in Hong Kong. This is the sixth in the series of conferences under the name of EDSSC. The previous meetings were held in 2003, 2005, 2008 (HK) and 2009 (Xian), respectively. EDSSC has its roots in nine meetings known as the Hong Kong Electron Devices Meeting, which were held annually between the years 1994 and 2002. The conference is organized by the IEEE Electron Devices and Solid-State Circuits Hong Kong Chapter, technically co-sponsored by the IEEE Electron Devices Society, sponsored by the Hong Kong Applied Science and Technology Research Institute (ASTRI), K.C. Wong Education Foundation and The University of Hong Kong.

The goals of this conference are to bring together scientists, engineers and research students from around the world to discuss their

most recent advancements in the areas of electron devices and solid-state circuits. This year we received 148 submissions from 16 countries or regions: Australia, Bangladesh, Canada, China, Egypt, Hong Kong, India, Iran, Italy, Japan, South Korea, Malaysia, Mexico, Singapore, Taiwan, Thailand, The Netherlands and the U.S.A. After a rigorous paper selection process, the technical program co-chairs assembled an outstanding technical program consisting of 125 technical papers (which included plenary and invited papers) distributed over 27 thematic oral sessions. Judging from the turnout, the goals were successfully met.

Two outstanding plenary speakers, Professor M. Shur of Rensselaer Polytechnic Institute, U.S.A. and Professor J.J. Liou of the University of Central Florida, U.S.A., shared their insight and experience with the audience on the topics of ballistic transport and terahertz electronics, and electrostatic discharge, respectively. We were also honored to have 11 distinguished invited speakers who gave talks on timely and important topics in the areas of electron devices and solid-state circuits.

Look forward to the next EDSSC, which will be hosted by Tianjin University in 2011. Mark this event on your calendar!

### ED Peking University

*~by Runsheng Wang*

The ED Peking University (PKU) Student Chapter recently held an EDS Distinguished Lecture (DL), an EDS Mini-colloquium and many other lectures. Detailed information can be found on the chapter's website, <http://www.ime.pku.edu.cn/soi/edpku.html>.

On November 8, 2010, Prof. Hiroshi Iwai of the Tokyo Institute of Technology, was invited to deliver an EDS DL entitled, "Silicon Nanowire FET Modeling and Technology." Prof. Iwai believes that the Si nanowire FET will be the ultimate structure for



*Professor J.J. Liou of the University of Central Florida, U.S.A. and Professor M. Shur of Rensselaer Polytechnic Institute, U.S.A.*



Prof. Hiroshi Iwai (2nd from right, front row) with Prof. Ru Huang (2nd from left), the chapter advisor, Dr. Runsheng Wang (2nd from right, second row), the chapter chair and other members of ED Peking University Student Chapter

ultra-small CMOS devices towards their downscaling limit. He presented the compact modeling, band structure, quasi-ballistic transport and technology of the Si nanowire FETs. There were about 30 attendees at this talk and afterwards Prof. Iwai held a discussion with our members and some of the students to share his research experience.

## ED Taipei

—by Steve Chung

The ED Taipei Chapter held a series of Distinguished Lectures and invited talks during the fourth quarter of 2010. The first talk, “Scaling Trends for Memory Technologies” held October 20th, at the National Chiao Tung University (NCTU) campus, in Hsinchu, was given by Dr. Betty Prince, an IEEE SSCS DL. Dr. Prince introduced the most up-to-date scaling trend for memory technologies, with focus on emerging memories such as MRAM, PCM, RRAM, etc. More than 60 students and professors attended.

On October 22nd, another DL, Prof. Kenji Shiraishi of the University of Tsukuba, gave a talk entitled “New Finding of Nano-Interface Physics Discovered in High-k Gate Dielectrics and Its Application to Semiconductor Devices.” In Prof. Shiraishi’s talk, he presented the findings in the high-k gate dielectric research, in which the oxygen ions in the high-k were diffused into the  $\text{SiO}_2$  and form a covalent bond. This provides the stability of high-k materials as well as a better understanding of interface physics. More than 80 students and professors attended.

On November 20th, invited speaker, Prof. Milton Feng from UIUC, the inventor of transistor laser, spoke on the high frequency wideband power amplifier fabricated by CMOS technology with up to 100 GHz frequency range. Current efforts on the research were also reviewed. Prof. Feng’s talk was attended by more than 150 participants, including students and professors from local universities.

In addition, the annual conference, 2010 IEDMS, sponsored by the IEEE ED Taipei and ED Tainan Chapters, was successfully held November 18 – 19, at National Central University, with more than 350 attendees.

~ Mansun J. Chan, Editor

## ESciNano2010

—by Vijay Arora and Abdul Manaf Hashim

The 2010 International Conference on Enabling Science and Nanotechnology (ESciNano 2010) was held at the Kuala Lumpur Convention Center, Kuala Lumpur, Malaysia, December 1–3, 2010. ESciNano 2010 was the first international technical conference organized by the Material Innovations and Nanoelectronics (MINE) Research Group, University Teknologi Malaysia and technically co-sponsored by the IEEE Electron Devices Society. Prof. Vijay Arora of Wilkes University, U.S.A., was the General Chair.

The ED Malaysia Chapter supported the event, providing an important forum for researchers and engineers from industries, as well as professors and graduate students from academia. This networking opportunity fostered discussions of new ideas and development in emerging areas of several fields and applications of both micro- and nanotechnology, with a wide emphasis on materials, devices and systems. The conference had 146 papers submitted from 10 countries on various aspects of nanotechnology and devices including NEMS and Bio-Nanodevices.



Events at ED Taipei – October 20th DL (left) T. H. Hou, Steve Chung (Chapter Chair), Betty Prince (speaker), Simon Sze, Wei Hwang (right) and on November 20th, Milton Feng (speaker)



Plenary and Invited Speakers with the UTM team at ESciNano 2010





*Participants of ESciNano 2010*

The technical program included 8 plenary talks and 12 invited papers. The plenary speakers included Prof. Toru Maekawa of Tokyo University, Japan; Prof. Arokia Nathan of London Nanotechnology Centre UK; Dr. M. K. Radhakrishnan of NanoRel Singapore; Dr. Shinji Matsui of University of Hyogo, Japan; and Prof. Chua Soo Jin of IMRE Singapore. The theme of the conference was "Taking up the nanotech challenge through creative and innovative minds." All accepted extended abstracts were published in *IEEE Xplore*. The next conference, ESciNano 2012, will be held in Johor, Malaysia, January 5–7, 2012.

### **ED Nepal**

*–by Bhadra Pokharel*

The ED Nepal Chapter organized a one-day Distinguished Lecture program on the Prithvi Narayan campus of Tribhuvan University, Pokhara, Nepal, October 25, 2010. Prof. Hiroshi Iwai and Prof. Shunri Oda of the Tokyo Institute of Technology gave EDS DLs on "Past and Future of IC Technology" and "Neo-silicon based Nanoelectromechanical Information Devices," respectively as well as a technical talk by Prof. Bhadra Pokharel on "Ageing Behaviour of Lead Barium Zirconate Ceramics." More than 90 participants from various institutions attended the one-day technical program.

### **ED/Rel/CPMT Singapore**

*–by Andrew Tay*

One of the major events during the last quarter was the 12th IEEE Electronic Packaging Technology Conference (EPTC 2010) held at Shangri-La Hotel Singapore, December 8–10, 2010. EPTC is one of the flagship conferences of the IEEE ED/Rel/CPMT Singapore Chapter. Keynote talks, invited tutorials and research presentations were the key activities of EPTC 2010. Keynote speakers were Tom Gregorich of MediaTek, USA and Prof. Reinhard Baumann of Fraunhofer Institute Germany. More than 200 participants from various countries in Europe, the U.S. and Asia participated in the event, which was

technically sponsored by the IEEE CPMT Society.

On October 15th, the Chapter organized an EDS Distinguished Lecture at Nanyang Technological University. The DL talk, given by Prof. Souvik Mahapatra of IIT-Bombay, was entitled "Alternative Charge Storage Materials for NAND Flash - Requirements."

The 18th IEEE International Symposium on the Physical and Failure Analysis of Integrated Circuits (IPFA 2011) will be held July 4–7, 2011, at the Songdo Convensia, Incheon (a city near Seoul), Korea. The focus of the symposium is the three-day plenary sessions that will be devoted to the fundamental understanding of the physical mechanisms of semiconductor device failures and issues related to semiconductor device reliability and yield, especially those related to advanced process technologies. Original work that demonstrates new or innovative failure analysis techniques and cases for Silicon based as well as novel devices will be covered. A one-day tutorial session will also be organized. The IPFA 2011 will be organized by the IEEE ED Korea Chapter in cooperation with the IEEE Reliability/CPMT/ED Singapore Chapter and technically co-sponsored by the IEEE Electron Devices Society and IEEE Reliability Society

*~M.K. Radhakrishnan, Editor*



*ED Nepal EDS DL program participants with speakers and guests*



## ED Japan

—by Shin'ichiro Kimura

A distinguished lecture entitled, "Charge-Trap NAND Flash Memory," was given by Prof. Souvik Mahapatra, IIT Bombay, India, at the Tokyo Institute of Technology, Yokohama, Japan, October 1, 2010. Several topics regarding, i) FG NAND Flash scaling challenges, ii) SiN based charge trap flash – material dependence, iii) Program/Erase simulation of SiN Flash, iv) Metal nano-dot Flash, and Scalability simulation of NAND Flash, were explained in detail. Good discussions took place between the lecturer and audience on the future of non-volatile memory.

Dr. Fernando Guarin, Semiconductor Research and Development Center, IBM Microelectronics, visited the Tokyo Institute of Technology, Yokohama, Japan, November 15, 2010, and gave an EDS Distinguished Lecture entitled, "Reliability Challenges for Leading Edge CMOS Technologies." Approximately 40 people attended the lecture, including 10 from local industry. Afterwards, a very active Question and Answer with related discussions was exchanged between the lecturer and the audience, resulting in the DL schedule extending more than 30 minutes. We learned much about the recent status of CMOS reliability issues.

## ED Kansai

—by Michinori Nishihara

The ED Kansai Chapter hosted the 10th annual Kansai Colloquium Electron Devices Workshop, October 22, 2010, at Kansai University Centenary Memorial Hall, Osaka, Japan with 39 participants. In this workshop, 14 excellent papers, whose authors were from the Kansai area, were specially selected from major conferences such as the IEDM or SSDM and technical papers on electron devices published during the past 12 months. The original authors presented the papers and the program was divided into four sections as follows:



Attendees of the DL given by Prof. Souvik Mahapatra (center, first row) held at the Tokyo Institute of Technology on October 1, 2010



Attendees of the EDS DL given by Dr. Fernando Guarin (6th from left, second row) held at the Tokyo Institute of Technology on November 15, 2010

- (1) CMOS Device, Process, Circuit and Nanoelectronics
- (2) Modeling, Reliability
- (3) Power, Compound, Quantum
- (4) Display, Sensor, Emerging.

The Award Committee selected two papers from student presenters for the 10th IEEE EDS Kansai Chapter MSFK (Message From Spirited Kansai) Award and the winners were Mr. Yoshihiro Yamada of Kobe University for his paper titled, "Quantum Transport Simulation of Silicon-Nanowire Transistors Based

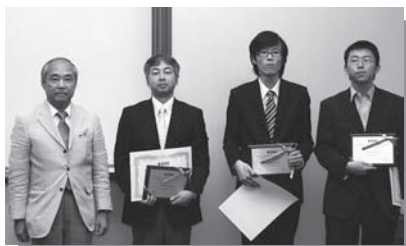
on Direct Solution Approach of the Wigner Transport Equation" and Mr. Yuichiro Nanen of Kyoto University for his paper titled, "Enhanced Drain Current of 4H-SiC MOSFETs by Adopting a Three-Dimensional Gate Structure."

The committee also selected one paper for the IEEE EDS Kansai Chapter of the Year Award, titled, "Integration of Cell Sheet Sucking and Tactile Sensing Functions to Retinal Pigment Epithelium Transplantation Tool," by Prof. Satoshi Konishi of Ritsumeikan University.

The presented papers were all excellent and motivated many questions and discussions from the audience, as they were selected from already qualified papers of major conferences and technical journals.

workshop is playing an important role in encouraging students and young engineers in the industry to extend their technical knowledge and career.

~ Kazuo Tsutsui, Editor



The winners of the 10th MFSK Award and "The Chapter of the Year" at the 10th Kansai Colloquium Electron Devices Workshop: Prof. Yasuhisa Omura, Prof. Satoshi Konishi, Yoshihiro Yamada, Yuichiro Nanen (left to right)

# EDS MEETINGS CALENDAR

## (As of 3 March 2011)

THE COMPLETE EDS CALENDAR CAN BE FOUND AT OUR WEB SITE:  
[HTTP://EDS.IEEE.ORG/EDS-MEETINGS-CALENDARS.HTML](http://eds.ieee.org/eds-meetings-calendars.html) PLEASE VISIT!

April 4 - 7, 2011, @ **IEEE International Conference on Microelectronic Test Structures**, Location: Royal Academy of Arts and Sciences, Amsterdam, The Netherlands, Contact: Annemiek Janssen, E-Mail: a.m.r.j.janssen@utwente.nl, Deadline: 9/17/10, www: <http://www.utwente.nl/ewi/icmts2011>

April 7 - 8, 2011, T **IEEE/NIH Life Science Systems and Applications Workshop**, Location: NIH Campus, Bethesda, MD, USA, Contact: Ut-Va Koc, E-Mail: u.koc@ieee.org, Deadline: 12/15/10, www: <https://roan2.wustl.edu/>

April 10 - 14, 2011, \* **IEEE International Reliability Physics Symposium**, Location: Hyatt Regency Monterey, Monterey, CA, USA, Contact: David Barber, E-Mail: dbarbsta@aol.com, Deadline: 10/1/10, www: <http://www.irps.org>

April 22 - 22, 2011, T **IEEE Workshop on Microelectronics and Electron Devices**, Location: Boise State University, Student Union Bldg., Boise, ID, USA, Contact: Vishwanath Bhat, E-Mail: wkbhat@micron.com, Deadline: 1/24/11, www: <http://www.ewh.ieee.org/r6/boise/wmed2011/WMED2011.html>

April 25 - 28, 2011, T **International Symposium on VLSI Design, Automation and Test**, Location: Ambassador Hotel, Hsinchu, Taiwan, Contact: Elodie Ho, E-Mail: elodieho@itri.org.tw, Deadline: 10/15/10, www: <http://vlsidat.itri.org.tw/>

April 25 - 27, 2011, T **International Symposium on VLSI Technology, Systems and Applications**, Location: Ambassador Hotel, Hsinchu, Taiwan, Contact: Clara Wu, E-Mail: clara@itri.org.tw, Deadline: 7/1/10, www: <http://vlsitsa.itri.org.tw>

May 6 - 8, 2011, T **IEEE Sarnoff Symposium on Advances in Wired and Wireless Communications**, Location: Nassau Inn, Princeton, NJ, USA, Contact: Pantelis Monogioudis, E-Mail: pantelis.monogioudis@alcatel-lucent.com, Deadline: 12/17/10, www: <http://www.sarnoffsymposium.org>

May 15 - 18, 2011, \* **IEEE/SEMI Advanced Semiconductor Manufacturing Conference**, Location: Hilton Saratoga, Saratoga Springs, NY, USA, Contact: Margaret Kindling, E-Mail: mkindling@semi.org, Deadline: 12/13/10, www: <http://www.semi.org/asmc2011>

May 16 - 19, 2011, T **International Electrostatic Discharge Workshop**, Location: Stanford Sierra Conference Center, Lake Tahoe, CA, USA, Contact: Lisa Pimpinella, E-Mail: lpimpinella@esda.org, Deadline: 11/20/10, www: <http://www.esda.org/iew.htm>

May 19 - 20, 2011, T **IEEE International Meeting for Future of Electron Devices**, Location: Kansai University Centenary Memorial Hall, Suita, Osaka, Japan, Contact: Akira Hiroki, E-Mail: hiroki@kit.ac.jp, Deadline: 1/31/11, www: <http://www.imfedk.org>

May 22 - 26, 2011, @ **International Symposium on Power Semiconductor Devices & Integrated Circuits**, Location: Paradise Point Resort & Spa, San Diego, CA, USA, Contact: Mohamed Darwish, E-Mail: mdarwish@maxpowersemi.com, Deadline: 10/25/10, www: <http://www.ispsd2011.com/>

May 22 - 26, 2011, \* **IEEE International Memory Workshop**, Location: Hyatt Regency Hotel, Monterey, CA, USA, Contact: Tamer San, E-Mail: t-san@ti.com, Deadline: 1/20/11, www: <http://www.ewh.ieee.org/soc/eds/imw/>

May 31 - June 3, 2011, T **International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication**, Location: JW Marriott Resort and Spa, Las Vegas, NV, USA, Contact: Alan Brodie, E-Mail: alan.brodie@kla-tencor.com, Deadline: 9/1/10, www: <http://www.eipbn.org>

June 5 - 7, 2011, T **IEEE Radio Frequency Integrated Circuits Symposium**, Location: TBD, Baltimore, MD, USA, Contact: David Ngo, E-Mail: davidngo@ieee.org, Deadline: 1/11/11, www: <http://www.rfic2011.org>

June 5 - 9, 2011, @ **TRANSDUCERS - International Conference on Solid-State Sensors, Actuators and Microsystems**, Location: China National Convention Center, Beijing, China, Contact: Qing-An Huang, E-Mail: hqa@seu.edu.cn, Deadline: 12/1/10, www: <http://transducers11-beijing.org>

June 8 - 11, 2011, T **International Image Sensor Workshop**, Location: Onuma Quasi-National Park, Hokkaido, Japan, Contact: Eric Fossum, E-Mail: fossum@imagesensors.org, Deadline: 1/17/11, www: <http://www.image-sensors.org/Current%20Workshop/2011%20Main%20page.htm>

June 9 - 10, 2011, T **International Workshop on Junction Technology**, Location: Kyoto University (Uji Campus), Kyoto, Japan, Contact: Kyoichi Suguro, E-Mail: kyoichi.suguro@toshiba.co.jp, Deadline: 3/1/11, www: <http://www.iwailab.ep.titech.ac.jp/IWJT/>

June 12 - 16, 2011, T **International Conference on Noise and Fluctuations**, Location: Ryerson University, Toronto, ON, Canada, Contact: Jamal Deen, E-Mail: jamal@mcmaster.ca, Deadline: 12/1/10, www: <http://www.icnf2011.org>

June 12 - 13, 2011, @ **IEEE Silicon Nanoelectronics Workshop**, Location: Rihga Royal Hotel Kyoto, Kyoto, Japan, Contact: Ken Uchida, E-Mail: uchidak@ssn.pe.titech.ac.jp, Deadline: 2/15/11, www: [diana.pe.titech.ac.jp/~snw2011/](http://diana.pe.titech.ac.jp/~snw2011/)

June 13 - 16, 2011, @ **IEEE Symposium on VLSI Technology**, Location: Rihga Royal Hotel, Kyoto, Japan, Contact: Phyllis Mahoney, E-Mail: phyllism@widerkehr.com, Deadline: 1/24/11, www: <http://www.vlssymposium.org>

June 19 - 24, 2011, \* **IEEE Photovoltaic Specialists Conference**, Location: Washington State Convention Center, Seattle, WA, USA, Contact: Americo Forestieri, E-Mail: pvsc@wowway.com, Deadline: 2/21/11, www: <http://www.ieee-pvsc.org>

June 20 - 22, 2011, T **Device Research Conference**, Location: University of California, Santa Barbara, Santa Barbara, CA, USA, Contact: Miguel Urteaga, E-Mail: murteaga@teledyne-si.com, Deadline: Not Available, www: <http://www.deviceresearchconference.org>

June 21 - 24, 2011, T **IEEE International Nanoelectronics Conference**, Location: Chang Gung University, Tao-Yuan, Taiwan, Contact: Jer Chyi Wang, E-Mail: jcwang@mail.cgu.edu.tw, Deadline: 12/31/10, www: <http://www.inec2011.org.tw/>

July 4 - 7, 2011, T **IEEE International Symposium on the Physical and Failure Analysis of Integrated Circuits**, Location: Songdo Conventia, Incheon, Korea, Contact: Jeongkyoung Kim, E-Mail: ipfa2011@gmail.com, Deadline: 1/17/11, www: <http://www.ieee.org/ipfa>

August 1 - 3, 2011, T **International Symposium on Low-Power Electronics and Design**, Location: Fukuoka Convention Center,

Fukuoka, Japan, Contact: Hiroshi Nakamura, E-Mail: [hiroshi@ieee.org](mailto:hiroshi@ieee.org), Deadline: 3/7/11, www: <http://www.islped.org/>

August 28 - 31, 2011, T **Topical Workshop on Heterostructure Microelectronics**, Location: Nagaragawa Convention Center, Gifu, Japan, Contact: Masaaki Kuzuhara, E-Mail: [kuzuhara@fuee.u-fukui.ac.jp](mailto:kuzuhara@fuee.u-fukui.ac.jp), Deadline: 4/15/11, www: <http://www.twhm.net>

September 7 - 10, 2011, T **International Conference on Simulation of Semiconductor Processes and Devices**, Location: Tokyo International Exchange Center, Tokyo, Japan, Contact: Akira Hiroki, E-Mail: [hiroki@kit.ac.jp](mailto:hiroki@kit.ac.jp), Deadline: 3/1/11, www: <http://www.si.eei.eng.osaka-u.ac.jp/sispad/2011/>

September 11 - 16, 2011, T **Electrical Overstress/Electrostatic Discharge Symposium**, Location: Disneyland Hotel, Anaheim, CA, USA, Contact: Lisa Pimpinella, E-Mail: [lpimpinella@esda.org](mailto:lpimpinella@esda.org), Deadline: 1/14/11, www: <http://www.esda.org>

September 12 - 17, 2011, T, **International Conference on Electromagnetics in Advanced Applications**, Location: Torino Incontra Conference Center, Torino, Italy, Contact: Roberto Graglia, E-Mail: [roberto.graglia@polito.it](mailto:roberto.graglia@polito.it), Deadline: 2/25/11, www: <http://www.iceaa.net>

September 15 - 16, 2011, T **IEEE International Siberian Conference on Control and Communication**, Location: Siberian Federal University, Krasnoyarsk, Russia, Contact: Oleg Stukach, E-Mail: [toms@ieee.org](mailto:toms@ieee.org), Deadline: 5/10/11, www: <http://conf.sfu-kras.ru/sibcon>

September 18 - 21, 2011, T **IEEE Custom Integrated Circuits Conference**, Location: Double Tree Hotel, San Jose, CA, USA, Contact: Melissa Widerkehr, E-Mail: [melissaw@widerkehr.com](mailto:melissaw@widerkehr.com), Deadline: 6/1/11, www: [www.ieee.cicc.org](http://www.ieee.cicc.org)

September 26 - 29, 2011, T **IEEE International Seminar/Workshop on Direct and Inverse Problems of Electromagnetic and Acoustic Wave Theory**, Location: PIAPMM, Lviv, Ukraine, Contact: Mykhalyo Andriychuk, E-Mail: [andr@iapmm.lviv.ua](mailto:andr@iapmm.lviv.ua), Deadline: 7/10/11, www: <http://www.ewh.ieee.org/soc/cpmt/ukraine/>

September 28 - 30, 2011, T **International Conference on Solid-State Devices and Materials**, Location: Aichi Industry & Labor Center, Aichi, Japan, Contact: Shigeru Asari, E-Mail: [ssdm\\_secretariat@intergroup.co.jp](mailto:ssdm_secretariat@intergroup.co.jp), Deadline: 5/13/11, www: <http://www.ssdsm.jp/>

October 3 - 6, 2011, \* **IEEE International SOI Conference**, Location: Tempe Mission Palms Hotel & Conference Center, Tempe, AZ, USA, Contact: Joyce Hooper, E-Mail: [joyce@imf.la](mailto:joyce@imf.la), Deadline: 5/6/11, www: <http://www.soiconference.org>

October 9 - 14, 2011, T **IEEE European Microwave Integrated Circuits Conference**, Location: Manchester Central, Manchester, United Kingdom, Contact: Ian Hunter, E-Mail: [i.c.hunter@ee.leeds.ac.uk](mailto:i.c.hunter@ee.leeds.ac.uk), Deadline: 2/14/11, www: <http://www.eumweek.com>

October 9 - 11, 2011, \* **IEEE Bipolar/BiCMOS Circuits and Technology Meeting**, Location: Global Learning Center, Atlanta, GA, USA, Contact: Janice Jopke, E-Mail: [ccsevents@comcast.net](mailto:ccsevents@comcast.net), Deadline: 5/2/11, www: <http://www.ieee-bctm.org/>

October 16 - 19, 2011, \* **IEEE Compound Semiconductor IC Symposium**, Location: Hilton Waikoloa Village, Waikoloa, HI, USA, Contact: Lisa Boyd, E-Mail: [l.boyd@ieee.org](mailto:l.boyd@ieee.org), Deadline: 5/8/11, www: <http://www.csics.org/>

October 16 - 20, 2011, \* **IEEE International Integrated Reliability Workshop**, Location: Stanford Sierra Conference Center, South Lake Tahoe, CA, USA, Contact: Rolf Geilenkeuser, E-Mail: [rolf.geilenkeuser@globalfoundries.com](mailto:rolf.geilenkeuser@globalfoundries.com), Deadline: 6/16/11, www: <http://www.iirw.org>

October 17 - 19, 2011, \* **International Semiconductor Conference**, Location: Hotel Sinaia, Sinaia, Romania, Contact: Cristina Buiulescu, E-Mail: [cas@imt.ro](mailto:cas@imt.ro), Deadline: 6/1/11, www: <http://www.imt.ro/cas>

November 7 - 9, 2011, @ **IEEE International Conference on Microwaves, Communications, Antennas and Electronic Systems**, Location: David Intercontinental Hotel,

Tel Aviv, Israel, Contact: Ortra Ltd., E-Mail: [comcas@ortra.com](mailto:comcas@ortra.com), Deadline: 6/15/11, www: <http://www.comcas.org>

November 30 - December 3, 2011, \* **IEEE Semiconductor Interface Specialists Conference**, Location: Key Bridget Marriott Hotel, Arlington, TX, USA, Contact: John Robertson, E-Mail: [jr@eng.cam.ac.uk](mailto:jr@eng.cam.ac.uk), Deadline: 7/24/11, www: <http://www.ieeesisc.org/>

December 5 - 7, 2011, \* **IEEE International Electron Devices Meeting**, Location: Hilton Washington, Washington, DC, USA, Contact: Phyllis Mahoney, E-Mail: [phyllism@widerkehr.com](mailto:phyllism@widerkehr.com), Deadline: Not Available, www: <http://www.his.com/~iedm/general/future.html>

April 15 - 19, 2012, \* **IEEE International Reliability Physics Symposium**, Location: Hyatt Regency Orange County, Garden Grove, CA, USA, Contact: David Barber, E-Mail: [dbarbsta@aol.com](mailto:dbarbsta@aol.com), Deadline: Not Available, www: <http://www.irps.org>

June 3 - 8, 2012, \* **IEEE Photovoltaic Specialists Conference**, Location: TBD, Austin, TX, USA, Contact: Americo Forestieri, E-Mail: [pvsc@wowway.com](mailto:pvsc@wowway.com), Deadline: Not Available, www: <http://www.ieee-pvsc.org>

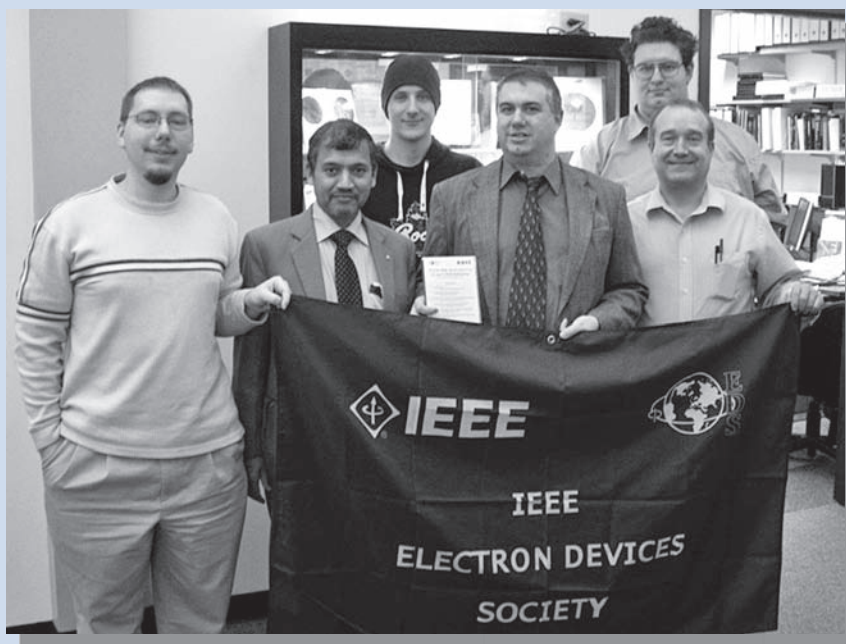
June 12 - 14, 2012, @ **IEEE Symposium on VLSI Technology**, Location: Hilton Hawaiian Village, Honolulu, HI, USA, Contact: Phyllis Mahoney, E-Mail: [phyllism@widerkehr.com](mailto:phyllism@widerkehr.com), Deadline: Not Available, www: <http://www.vlsisymposium.org>

December 6 - 8, 2012, \* **IEEE Semiconductor Interface Specialists Conference**, Location: Catamaran Resort Hotel, San Diego, CA, USA, Contact: Michel Houssa, E-Mail: [michel.houssa@fys.kuleuven.be](mailto:michel.houssa@fys.kuleuven.be), Deadline: Not Available, www: <http://www.ieeesisc.org>

December 10 - 12, 2012, \* **IEEE International Electron Devices Meeting**, Location: Hilton San Francisco, San Francisco, CA, USA, Contact: Phyllis Mahoney, E-Mail: [phyllism@widerkehr.com](mailto:phyllism@widerkehr.com), Deadline: Not Available, www: <http://www.his.com/~iedm/general/future.html>

## PRESIDENT'S MESSAGE

(continued from page 1)



RIT establishes a new student chapter of EDS. (From left) David Pawlik (new student chairperson), Renuka Jindal (EDS President), Paul Thomas, Sean Rommel (Chair, ED Rochester Section), Nate Kane, and Robert Pearson

were outreach programs spearheaded by Prof. Santosh Kurinec, Prof. Sean Rommel, and Prof. Michael Jackson which are designed to engage K-thru-12 students, and

educate their teachers on the microelectronics industry. Dr. Jindal was also given a tour of the Semiconductor & Microsystems Fabrication Laboratory (SMFL); RIT's primary,

student run, full CMOS microelectronics fabrication facility.

While there, Dr. Jindal gave two presentations which were open to the general student and faculty population. The first presentation was mainly directed towards undergraduate students and explained what the EDS is about, and how the students can be benefited by society membership. After that, Dr. Jindal gave an EDS Distinguished Lecture presentation on the history of the microelectronics industry. Key events along the development of the integrated circuit were highlighted, using several anecdotes to bring the history alive and into context. The visit ended with a discussion between Dr. Jindal, Prof. Rommel, and Ph.D. student David Pawlik, who has taken on the task of getting the local EDS student chapter up and running.

Sean Rommel  
ED Rochester Chapter Chair  
Rochester Institute of Technology  
Rochester, NY, USA