

Ongoing Education

From the Editor's Bench

Shlomo Engelberg

Raising Our Future Engineers

Life is a process of continual learning, and for children and young adults this is even truer than for adults. As a father of children whose character and personality are still developing rapidly, I often think about what I want my children to learn and how I want them to learn it. As a parent and a teacher of young adults, I try to determine how to help my students and children to grow into the kind of people that they, their parents, and I would like to see them become.

As parents, we choose the schools our children will attend. We hope that the schools will try to inculcate in our children values that will serve them throughout their lifetimes. As parents and teachers, we determine how we will act around the children and young adults around us, and we try to provide them possible with the best possible example of how life should be lived. Sometimes those examples, rather than being provided directly by us, are provided by the books we encourage our children or students to read.

What with one thing and another, ethical behavior has been in the news a lot recently. There seem to be as many ideas about how to teach children to behave ethically as there are people who would like to see people behave ethically. I have found that many of my ideas about professionalism and ethical behavior come from the books I have read.

I am a big Robert Heinlein fan. Heinlein was trained as an engineer, and it shows. (Heinlein graduated from the United States Naval Academy with what one website calls the equivalent of a B.A. in Naval Engineering.) Many of his science fiction books are about fair play and about doing your job right. This is particularly true of the novels he wrote for young adults—his juvenile novels.

Another set of classic books for young adults from which one learns about doing the job right the first time is the *Hornblower* series. These books, written by C.S. Forester, also show how you can use your head, heart, and soul to make the world a better place. People who grow up reading books like these will be loathe to do a job poorly—even if the job does not seem to be very important. (Sometimes one may have to do a job poorly, but that lesson can be learned from real life, and it does not need to be reinforced.)

Though it may seem a bit cynical, I think that there is much to be learned about schools and large organizations from J.K. Rowling's *Harry Potter* series. Harry Potter is another character who always tries to do what is right and what is good, but some of the people around him are not made of the same stuff. A person who has read Harry Potter will realize that you do your best no matter what, and you work around the unavoidable bad apples. Back when I was a department chairman, I would sometimes tell students to read Harry Potter to get a more realistic view of academic life.

In Heinlein's *The Moon is a Harsh Mistress*, Mike, a computer who becomes self-aware and learns about life through reading fiction and nonfiction, refers to fiction as "not true data." My experience has been very similar to Mike's; there is much that can be learned about real life by reading fiction. I have seen people of mature years who are a bit naïve; I have often thought that they have probably not read widely enough.

It is very important that when we educate people we encourage them to read books that stress the values they should learn. If we want future generations of engineers to be trustworthy people who make sure that the job is done and done well, we must have them read stories in which people do the right thing just because it is right. The *Hornblower* novels, the Harry Potter series, and Heinlein's juvenile novels are just what the doctor ordered. People who grow up reading these books and books like them will always feel uncomfortable doing a less than perfect job. They will know that whatever the bean counters may say, you should try to do the best you can at everything to which you set your hand.

In the IEEE Instrumentation and Measurement Magazine, we try to give each issue our full attention, and we try to do the best job we can. In this issue, many people have contributed articles, tutorials, and columns. We have articles about power quality monitoring, a smart sensor payload, and the third in a series of articles that deals with patents. We have the second part of a nanophysics and nanotechnology tutorial and a tutorial that considers power theories for polyphase nonsinusoidal voltages and currents. As always, we have a nice assortment of columns. Enjoy,

Shlomo

President's Perspectives

Kim Fowler

More Valuable People in the IMS Structure

Throughout this year I plan to "advertise" the workings of the society and the Administrative Committee (AdCom) to you through the alliteration of volunteerism, value, and ventures. This short column will cover the at-large AdCom members, how the AdCom nominates candidates, how you vote in members, and the society's support staff.

The voting at -large members include Pasquale Daponte, Voicu Z.Groza, Steve Karlovic, and Matteo Pastorino. Reza Zoughi, became our Vice President of Education this year; he is also the current Editor-in-Chief of the society's IEEE *Transactions on Instrumentation & Measurement*.

Shlomo Engelberg is the Editor-in-Chief of the *I&M Magazine* and also attends AdCom meetings.

The society elects four members every year to serve on the AdCom for the following four years. Each year during the spring meeting, the AdCom proposes a slate of six to eight candidates, of whom you elect four to serve beginning with the following year's AdCom. The AdCom's Nominating Committee considers candidates and generates a slate, which the current AdCom approves for voting in late summer. You can see the current list of AdCom members at the IMS website at <http://www.ieee-ims.org/main/> by looking under the "About IMS" tab and clicking on the Administrative Committee roster link.

How do you get on the slate? You must be an IEEE member in good standing, and you must have demonstrated volunteer effort in society activities. There are many different activities, and investing yourself in any one of these activities will raise your visibility and demonstrate your effort. The activities include attending chapter meetings and conferences and helping the society by serving on ad hoc society committees or technical committees (I&M has 37 different technical committees) to promote specific technical areas and standards.

The newest members of the AdCom are Serge Demidenko, Cindy Harnett, and Ferdinanda Ponci. Each has dived into the work of the AdCom and is contributing to one or more committees.

The AdCom needs administrative support too. We have contracted with Conference Catalysts to provide administrative support for the society's conferences, symposia, workshops, and website. The Conference Catalysts staff includes Judy Scharmann, Sue Kingston, Chris Dyer, Brandon Ratzloff, and Rachel Edmunds. Most recently, Conference Catalysts supported AUTOTESTCON 2010. Judy Scharmann is the society's executive assistant and provides direct administrative support to the AdCom; she helps coordinate our meetings and conference calls; she books hotels and venues; and she keeps the calendar for the AdCom and records the minutes. Sue helps with conference administration and accounting for the society.

Finally, the society absolutely could not publish the Transactions or Magazine without the excellent support of capable staff: Cam Ingelin, Administrator, in concert with Reta Wehmeier, the Co-Administrator, provide the support for the IEEE *Transactions on Instrumentation & Measurement*. For the IEEE *I&M Magazine*, we have June Sudduth, Assistant to the Editor, in concert with Kristy Virostek, Administrative Assistant, who provide the administrative and technical support, and Gary Garvin, who prepares the photos and graphics. (*Note: A photo collage accompanies this column in the print magazine.*)

In the December issue, I will cover some of the ventures that the AdCom is supporting or considering. These provide value to you, our members and readers. If you have ideas for how the I&M Society might provide more value to you and the society, please contact me, Kim, at (kimf@ieee.org) or any one of the AdCom members. To contact any particular AdCom member, go to the I&MS website as explained earlier. If you are on an area page (e.g. Conferences, Education, Pubs, etc.), the AdCom officer who is the point of contact is there. Fill in the boxes that apply about your request. Your message is then automatically forwarded to the I&M officer. Thank you!

Kim

Article Summaries

Smart Sensor Demonstration Payload

John Schmalzel, Andrew Bracey, Stephen Rawls, Jon Morris, Mark Turowski, Richard Franzl,
and Fernando Figueroa

(Summary)

This paper describes a project focused on demonstrating a number of new sensor and data acquisition technologies applied to a space-related application in work at NASA's John C. Stennis Space Center in the area of integrated systems health management (ISHM). Core ISHM technologies include smart and intelligent sensors, anomaly detection, root cause analysis, prognosis, and interfaces to operators and other system elements. Many of the lessons learned are applicable to a wide range of monitoring, evaluation, and control applications.

This summary includes text from the article.

Business and Legal Aspects of Advancing Your Patent Disclosure, Part 3 in a Series on Protecting Your Inventions with Limited Resources

Reuven K. Mouallem

(Summary)

In Part 3 of this series, the author discusses activities that inventors should typically consider during the priority year of the Provisional Patent Application including refining the invention, assigning patent rights, securing other forms of associated IP (e.g. copyrights and trademarks), seeking investors, obtaining non-disclosure agreements and non-circumvention agreements, selling an associated product or service, selling/licensing the invention, creating a company, and considering joint-development partnerships.

This summary includes text from the article.

Power Quality Monitoring in Modern Electric Distribution Systems

Carlo Muscas

(Summary)

In electric power systems, there may be disturbances in the supply voltage and the load current drawn by a user. These disturbances happen when the frequency and amplitude are not equal to their corresponding nominal values, when there are non-sinusoidal waveforms, and when there is the presence of negative and zero-sequence components in three-phase systems. Power quality is a generic expression used to characterize the disturbances. This paper offers an overview of the

methods and instruments currently used in power quality measurements and some research activity to improve them.

This summary includes text from the article.

Nanophysics and Nanotechnology Applied to Sensors Part 2: Tutorial 26

Edward Wolf

(Summary)

In Part 2 of this tutorial, the author discusses quantum sensor devices of magnetic flux; properties of superfluids; the magnetic flux quantum; the superconducting quantum interference detector (SQUID); the scanning tunneling microscope (STM); cuprate superconductors; and the working principles of magnetic resonance imaging (MRI). An explanation of how tunneling spectroscopy works in superconductors is offered, and a SQUID application is presented that has the potential to lower the cost of MRI. The scanning tunneling microscope (STM) affords the highest spatial resolution of any scanning sensor combined with a powerful spectroscopic capability, and its utility is illustrated in the tutorial with examples from the study of high temperature cuprate superconductors.

This summary includes text from the article.

The Fundamental Concepts of Power Theories for Single-phase and Three-phase Voltages and Currents: Tutorial 27

Jacques L. Willems

(Summary)

Various methods have been developed in the past decades for the generalization to polyphase nonsinusoidal voltages and currents of the classical active/reactive power concepts, standard for single-phase sinusoidal power transmission. Nevertheless, such generalization is still the subject of much of discussion. This paper presents one approach that was continued and generalized by various authors over the last several decades. Measuring these quantities in non-standard (distorted, unbalanced and polyphase) situations is not just a matter of accuracy, but first requires clarification of which physical properties we want to characterize to arrive at the definition of the concepts, and only then suitable measurement techniques can be developed.

This introduction includes text from the article.

Column Summaries

Instrumentation Notes

Lukasz Mukowski and Andrzej Michalski

Selected Aspects of Wireless Sensors Network Protocol Designs and Their Practical Use

(Summary)

Engineers have many wireless sensor network (WSN) algorithms to choose from when designing a wireless measurement system. However, it seems that each system with its specific requirements needs a corresponding algorithm, and existing algorithms cannot be effectively changed to fit the differences. In this column, the authors do not create a “one for all” solution, which is probably unattainable, but they present an approach to creating a WSN algorithm, an object-oriented WSN protocol using neighborhood discovery and clustering procedures, an explanation of a universally unique identifier (UUID) for nodes, the use of gradient-like functions for self-merging clustered network structures and the topic of security. Some practical applications based on their research are presented.

This summary contains text from the column.

Departments

TC News

John Schmalzel

Technical Standards Activities: 1st and 2nd Quarter, 2010

The Mission

Technical Standards & Activities is the component of IMS that is concerned with technical standards and other activities that range from workshop planning to technical paper preparation and reviews. Technical Committees (TCs) are formed around themes. A proposal is submitted to the AdCom for review and approval. Organizationally, a TC consists of a Chair, one or more co-Chairs, and members. A TC may also create Subcommittees (SCs) to reflect subdivisions of interest within the TC. A list of the Society’s 35 TCs along with their missions and Chairs is maintained on the IMS website www.ieee-ims.org. Once formed, a TC is reviewed biennially to determine vitality and relevance; dormant TCs are removed.

TC Opportunities

Browse the list of Technical Committees and their related Subcommittees to find one that best matches your interests. Contact the TC/SC Chair and ask how you can participate. If you are interested in immediate leadership opportunities, note the following open Chair positions:

TC-1, Measurement Precision, Sensitivity & Noise

TC-3, Frequency & Time

TC-35, Netcentric Operations Interoperability

A brief summary of highlights for a number of TCs that have reported on their progress and plans to date are presented here. The next update will cover third and fourth Quarter activities.

TC-4, High Frequency Measurements and Connectors

Chair: Yeou-Song (Brian) Lee

- Held a preliminary IEEE 287 working group (WG) meeting at Broomfield, Colorado in Dec. 2009.
- Participated in the P1785 standard review.
- Andy Brush (TEGAM) agreed to chair a WG to create a new standard for microwave & RF power sensors. The previous one, IEEE 470, is obsolete.

Plans:

- Initiate a project authorization request (PAR) for the power sensor standard.
- Coordinate with other professional societies in the high frequency measurement area.
- Host working group P378 and 287 meetings in conjunction with the MTT conference in June.

TC-9, Sensor Technology

Chair: Kang Lee

- WG on NCAP Information Model began work on P1451.1 standard revision.
- The Transducer to Microprocessor Communication WG met biweekly to revise 1451.2-2007 standard; separate meetings to discuss reference implementation.
- The Mixed-Mode Communication Working Group submitted a PAR to revise 1451.4; approved in March.
- The Sensor and RFID Integration WG obtained approval for IEEE 1451.7 as a full-use standard in March.
- The Precise Networked Clock Synchronization WG Interpretation Subcommittee met to address the issues brought to its attention on the interpretation of IEEE 1588.
- ISO/IEC JTC1 SC31 has fast-tracked the IEEE 1451.7 specification; the update is designated as ISO 21451-7, which is available for IEEE members for review and comment.
- Kang Lee contributed as IEEE 1451 sensor standards expert to ISO TC104 WG2 meeting to develop standards specification for shipping container tags.
- ISO/IEC JTC 1 has organized the WG on Sensor Networks (WG7) to develop standards. Good example of collaboration between ISO/IEC JTC1 WG7 and IEEE I&MS TC-9 on sensor networking standards to avoid duplication. WG7's first working group meeting was held in early March in England.

Plans:

- Continue work on P1451.1, 1451.2, 1451.4.
- Prepare the approved IEEE 1451.7 standard for publication; submit a new PAR for joint development with ISO/IEC JTC1 SC31 on the next version of 1451.7.
- Continue planning for the 2010 International IEEE Symposium on Precision Clock Synchronization (ISPCS) for Measurement, Control, and Communication to be held September 27-October 1, 2010 in Portsmouth, NH. A plug-fest of hardware and software prototypes based on the IEEE 1588 standard is being organized. See web site: <http://www.ispcs.org>.
- K. Lee to host ISO/IEC JTC 1 WG7 meeting August 23-27, 2010 at NIST, Gaithersburg, MD.

TC-9 Subcommittee on Capacitive Sensors

Chair: Georg Brasseur

- Prepared conference CD for the 6th Int. Conf. for Conveying and Handling of Particulate Solids (CHoPS), August 3-7, 2009, Brisbane, Australia. IMS was a technical co-sponsor. A track focused on capacitive sensing.
- Organized lectures on Capacitive Sensors for Europractice workshop on “Smart Sensor Systems.”

Plans:

Organization of courses and workshops in the field of sensors with special attention for the topic “Capacitive Sensors.”

TC-10 Waveform Generation, Measurement & Analysis

Chair: Tom Linnenbrink

- Conducted meetings in Dec 2009 and Feb 2010 using WebEx and face-to-face to report progress.
- Met at I2MTC-2010, 03-07 May in Austin, TX

Plans:

Preparing for a Data Converter forum in 2011, Perugia, Italy.

TC-10 Subcommittee on Pulse Techniques

Chair: Nick Paulter

Working on revision of 181 in coordination with IEC 60469-1 MT-18 responsible for adopting 181-1974 and 194-1974. Revision is 30% complete.

TC-10 Subcommittee on ADCs

Chair: Steve Tilden

PAR extension to P1241 to provide adequate time for responses to ballots. A new draft is currently out for ballot.

TC-10 Subcommittee on DACs

Chair: Steve Tilden

Held several meetings to complete draft. After I2MTC-2010, final draft should be ready for ballot by fall and completed by Dec 2010.

TC-10 Subcommittee on Probe Standards

Chair: Travis Ellis

New members recruited; deliverables for P1696 have been defined.

TC-11 ATLAS Coordination (SSC-20)

Chair: Joseph Stanco

Conducted meeting in Piscataway, NJ, April 2010.

Plans: Conduct meeting in conjunction with AUTOTESTCON-2010.

TC-11 Subcommittee on Diagnostic and Maintenance Control

Updating 1636.1.

- P1636.2 completed ballot recirculation and is in ballot review.
- P1232 is in ballot resolution.

TC-11 Subcommittee on Test Information and Integration

- P1671 is in ballot resolution.
- Companion trial use standards 1671.3 and 1874.4 have been upgraded to full use.

TC-11 Subcommittee on Test and ATS Description
P1641 has completed ballot resolution.

TC-11 Subcommittee on Hardware Interface
P1505 completed ballot and is in ballot resolution.

TC-19 Imaging Systems

Chair: George Giakos

Organization of Int. Conf. on Imaging Systems & Techniques (IST-2010), July 1-2, 2010,
Thessaloniki, Greece.

Plans:

Co-organizing the Life Sciences Systems and Applications (LiSSA-2010) IEEE-NIH Workshop
in Imaging, Sept. 9-10, 2010, Washington, D.C.

TC-23 Education for I&M

Out-going Chair: Theodore Laopoulos

In-coming Chair: Sergio Rapuano

- WG on Web-Laboratories and E-Learning Tools is open to interested persons.
- Developing environmental education modules on I&M for high-school thru college levels.
- Developing educational tools for incorporating microcontroller architecture to students with limited computer engineering backgrounds.

TC-25 Medical Measurement

Chair: Marco Parvis

Organized Medical Measurement and Application (MEMEA) Workshop, April 30- May 1, 2010,
Ottawa, Canada.

TC-25 Subcommittee on Blood Pressure Measurement

Chair: Voicu Groza

Developing the draft of P1721; the SC is still seeking volunteers.

TC-26 Radar Cross Section

Chair: Mark Yeary

Working to promote the national multi-function phase array radar (MPAR) initiative in
collaboration with NOAA, ONR, FAA, and Lockheed-Martin.

In Memoriam

I wrote a column for I&M Magazine in 2004 (vol. 7, no. 1) that was spawned by some parking
lot conversations I had with fellow engineers at Stennis Space Center [2]. Dr. Robert (Bob) Field
was the leader of many a stimulating conversation into the finer—and fringier—points of the
enterprises of engineering, science, and the unknown. A mechanical engineer adept at thermal
system design and analysis, he brought a depth of experience and insight gained from his many
years at Pratt-Whitney designing turbine blades and solving other equally complex problems.
Bob recently passed away just months after retiring from NASA—he is sorely missed.

New Products

Robert Goldberg

Wide-Bandwidth Oscilloscope for Accurate Characterization of High-Speed Digital Designs

Agilent Technologies Inc. has expanded its digital communications analyzer (DCA) portfolio with the introduction of the 86100D DCA-X wide-bandwidth oscilloscope. The DCA-X provides engineers with the tools needed to characterize their high-speed digital designs easily and accurately.

The DCA-X mainframe platform will allow engineers to make next-generation measurements that include integrated de-embedding capability. At the same time, the DCA-X is 100 percent backwards compatible with all previous DCA modules and completely code compatible with the 86100C. With future modules, the DCA-X will be able to support up to 16 measurement channels. Higher channel counts will enable electrical and optical engineers to test their parallel designs efficiently, and it offers higher throughput for manufacturing.

The high analog bandwidth, low noise, and low jitter measurements offered by the DCA helps engineers see the true performance of their designs on signals from 50 Mb/s to more than 40 Gb/s. The modular DCA platform can be configured for optical, electrical, TDR/TDT, and S-parameter measurement capability.

The 86100D DCA-X improves upon the accuracy and ease-of-use of the 86100C DCA-J by offering:

- integrated de-embedding and embedding capability (using the 86100D-SIM InfiniiSim-DCA license);
- usability enhancements, including:
 - graphical signal processing
 - dual user interfaces (FlexDCA -- a new customizable vector-based user interface for scope, eye and jitter measurements -- and DCA-J, the “classic” user interface)
 - up to 64 simultaneous measurements
 - new measurements, including data-dependent pulse-width shrinkage (DDPWS), uncorrelated jitter (UJ), pre- and de-emphasis measurements and more.

As data rates increase, fixtures and probes play a larger role in degrading waveform fidelity and reducing measurement margins. Engineers are often required to remove these unwanted effects to see the true performance of their devices during verification or compliance testing. Likewise, it is very common to measure a clean transmitter and simulate the signal at the output of a typical channel loss model. The 86100D-SIM InfiniiSim-DCA waveform transformation toolset, a powerful new option for the 86100D, allows engineers to perform both of these tasks quickly and accurately.

Additional information about Agilent's 86100D DCA-X is available at www.agilent.com/find/dcax.

Submillimeter Optical Lenses as Small as 0.2 mm

Bern Optics, Inc. has announced the availability of submillimeter optical lenses as small as 0.20 mm. These precision lenses can be ground and polished in a variety of difficult configurations, including plano convex, plano concave, bi-concave, bi-convex, as well as positive and negative meniscus.

Created from optical and filter glasses, these microscopic elements – some as small as a grain of salt – can be produced with spherical and cylindrical radii with submillimeter curvatures and diameters. These lenses are used in endoscopic medical devices, as well as other optical instrumentation where precision and high quality is required.

Bern Optics can also cement doublets (achromats) and triplets, furnishing exceptionally accurate alignment. The centration of each element is verified before and after cementing. Custom designed anti-reflection coatings can also be provided on all lenses.

For more information, visit Bern Optics at www.bernoptics.com.

Wireless Sensors for Energy and Environmental Monitoring

Onset announces the HOBOWare® ZW Series, a family of wireless data nodes for centralized monitoring of energy use and environmental conditions in buildings.

HOBOWare ZW Series data nodes reduce the cost and complexity of data collection by measuring, recording and transmitting real-time energy use and environmental data, from dozens of points, to a central PC. Different from traditional data loggers, HOBOWare data nodes work together in a self-healing wireless network to transmit logged data to a PC at regular intervals. This eliminates the need of having to spend time retrieving collected data from individual data loggers deployed throughout a facility.

The wireless nodes can measure temperature, relative humidity, kilowatt hours, CO₂, AC voltage, amps, gauge pressure and a variety of other parameters.

Easy to install in any facility, HOBOWare data nodes harness the power of self-healing MESH networking technology. This ensures that data are automatically routed back to a PC without manual intervention, while making it fast and easy to set up a sensor network.

Accompanying HOBOWare® Pro 3.0 software lets you quickly and easily configure data node networks, view real-time energy and environmental data, and set alarms for any sensors on the network. Alarm notifications can be sent via text messaging to your cell phone, and/or email to your PC. The software also provides a Network Map feature that provides an at-a-glance view of your network, and allows exporting of data to Microsoft Excel and other spreadsheet programs with a single click.

Visit www.onsetcomp.com/indoor-wireless-hobo-data-nodes for more information.

Single-Box Tester for Multi-Mode Handsets

The Aeroflex 7100 tester now supports multiple Radio Access Technologies (RAT) including CDMA EV-DO and eHRPD as well as LTE (Long Term Evolution) to accelerate the development of multi-mode cellular terminal devices for new LTE deployments.

As CDMA network operators migrate towards LTE, the devices used by their subscribers will need to operate with both the legacy EV-DO sectors of the network and those that have been upgraded to LTE, as well as being able to hand over seamlessly between them. Option 104 for the Aeroflex 7100 tester has been developed to allow testing of these multi-mode devices across all the standards they are required to support and also to test hand-over between LTE and eHRPD.

The Aeroflex 7100 with Option 104 provides test capabilities for EV-DO Release 0, EV-DO Revision A and eHRPD, which is an important stepping stone in a CDMA and LTE network rollout. The deployed terminal devices will need to support all of these legacy standards and could be required to operate in any one of the revisions of the CDMA standard. By supporting all of these standards in a single box, the 7100 provides manufacturers of both cellular terminals and chipsets with a simple unified test environment to fully test all the RATs supported by the device under test. Applications such as throughput for EV-DO Release 0, Rev A and eHRPD can be tested with just a simple parameter reconfiguration of the 7100, without any need to change test platforms. The test system also provides support for advanced multi-RAT handoff scenarios, such as eHRPD to LTE hand-down and system selection/re-selection testing, to verify correct device provisioning.

For more information, contact your local Aeroflex sales office via telephone at +1 800 835 2352 or email info-test@aeroflex.com.

Single Channel Non-Contact Displacement Amplifier

Capacitec, Inc. has announced the launch of the model 410-XSC, a new family of single channel, stand-alone, capacitance amplifiers with superior stability, resolution, signal-to-noise ratio and bandwidth in a standard OEM package.

Measuring just 55 x 100 x 12.7mm (2.2 x 3.9 x 0.50 in.), the compact Capacitec model 410-XSC amplifier is designed to be compatible with new and existing non-contact displacement and gap probes. It features an open frame for maximum flexibility, or optional compact enclosure with power supply, to suit a variety of measurement environments. For applications that require use of multiple sensors, the boards can be rack mounted and optionally connected to Capacitec Bargrafx™, a LabView® based data acquisition and display software, providing additional linearization and signal conditioning capabilities.

Because of its flexible design, the model 410-XSC can support a variety of standard and customer displacement and gap sensor signal amplification requirements, including support for very small sensors with high-displacement range and long cable lengths, as well as those with especially wide displacement and gap ranges. It is useful for high sensitivity application

requirements, such as parallelism measurements or laser alignment mechanism monitoring and similar applications.

For more information about the model 410-XSC or other products available from Capacitec, please visit www.capacitec.com.

Free CD of Nanotechnology Test Tutorials

Keithley Instruments, Inc. has announced its new Nanotechnology Technical Test Library is now on CD. The content of this free CD is helping to advance electrical measurements by providing technical papers, articles, data sheets, and links to online seminars covering a wide range of nanotechnology test applications. These applications include measurements that reveal important parameters of nanoscale semiconductor devices and materials, carbon nanotubes, Hall Effect devices, materials with non-linear resistance, and many others. Test and measurement solutions on the CD are organized by type of instrument: current sources, electrometers and picoammeters, integrated source/measure instruments, nanovoltmeters, parametric analyzers, and pulse/pattern generators.

To receive a free copy of this CD, please visit www.ggcomm.com/Keithley/Jun10_PR_NanoCD.html.

Ethernet Link Controller I/O Module

Emerson Process Management introduces the Ovation™ Ethernet Link Controller I/O Module. This flexible, redundant module offers I/O-level Ethernet interface capability that is tightly coupled with the Ovation™ expert control system. This translates into a number of integration, decision-support, and security benefits for power and water utilities that utilize Ovation technology in their plants.

The module's dedicated processor significantly expands the number and type of third-party devices and systems that can be supported by an Ovation controller, as well as the increasingly sophisticated data they provide. The module, which offloads all communications protocol processing previously handled by the controller, also offers faster access to the data from these devices and more efficiently integrates the information into the Ovation system.

A protocol can be easily deployed on diverse Ovation platforms – in either the Ethernet Link Controller I/O Module itself or, for example, the Ovation Supervisory Control and Data Acquisition (SCADA) server, which supports a wide range of protocols and physical communications layers, including dial-up, leased lines and wireless.

With the module, data exchanged with other devices can be easily applied to Ovation control schemes and displayed in graphics. The local processing power and memory of the module make it ideal for protocol handling applications, such as interfaces with turbine vibration systems, burner management and safety systems, SCADA systems, PLCs, electrical relays, process analyzers and many others that support Ethernet communications.

Applications protocol packages can be loaded onto the Ethernet Link Controller I/O Module, enabling Emerson to extend its PlantWeb™ digital architecture and Ovation system beyond traditional plant boundaries. One such protocol package is IEC (International Electrotechnical Commission) 61850, which has emerged as a global standard for Substation Automation (SA). Integrating data from electrical devices used in generators, switchgear, transmission lines, transformers and substations drives more-informed decision making throughout the organization.

For more information please visit www.emersonprocess.com.

Miniature RFID Data Loggers and Readers

Omega's new CE compliant OM-80 series of data loggers and readers are economical, accurate and provide a reliable solution for cold chain environmental monitoring. The OM-84 model features a miniature weather-resistant design with a factory replaceable battery. Each logger can store up to 10,000 readings and is reusable. Stored data can be downloaded and saved to your computer using the reader and software that is included. Each package of data loggers comes with a certificate stating NIST-Traceability. Built-in LEDs display high and low alarm verification indicating whether or not measured temperatures have remained within the user programmable alarm window throughout deployment. This product is ideal for any applications where temperature monitoring is needed.

Please visit www.omega.com for more information.

Three-Component Triaxial Force Link Sensor

Kistler Instrument Corporation has announced recent enhancements to its three-component triaxial force link product range, to include expanded measurement capabilities from $\pm 1.8\text{k}$ to $\pm 33.7\text{k}$ lbf and other design enhancements for greater measurement flexibility and performance.

Kistler three-component dynamic force links are compact, fully calibrated and preloaded for reliable high-precision dynamic force measurements in three orthogonal directions, in both tension and compression modes, across a variety of applications, regardless of the acting point of the force, with a large useable frequency range. All dynamic sensing elements are housed in rust-free, sealed stainless steel housings.

General product line improvements to all Kistler three-component triaxial force link models include improved resolution and an expanded operating temperature range of -40 to $+248^\circ\text{F}$, reduced hysteresis, an optional IP67 rated environmental sealing and plug connection via highly robust V3 multi-pole connector, which replaces the legacy three 10-32 neg. connection. The newer versions are drop-in replacements for legacy models and use the same cable type as those with Types 93x7C already introduced. Specific enhancements to the Kistler Type 9327C triaxial quartz force link include a more rigid construction and expanded measurement range of $\pm 0.8\text{k}$ lbf across the x and y axes (previously $\pm 0.6\text{k}$ lbf) $\pm 1.8\text{k}$ lbf across the z-axis (previously $\pm 1.1\text{k}$ lbf).

Please find more information by visiting www.kistler.com.

RF Power Limiter

Mini-Circuits new VLM-73+ extends a popular line of SMA connectorized, high power limiter protection circuits to 7 GHz. Ideally suited for protecting low noise receivers from exposure to unwanted high level signals, the VLM-73+ has only 0.3 dB typical insertion loss in the linear region, yet reacts almost instantaneously (2 ns typ. response time and 10 ns recovery time) to signals up to 1 Watt input power by limiting the output power to less than +15 dBm across the frequency band. Housed in Mini-Circuits patented Uni-Body construction, the VLM series is a tough unit for the most rugged receiver applications.

Please visit www.mini-circuits.com for more information.

High-Precision VME Data Acquisition Modules,

Highland Technology has announced the latest in a series of high-precision VME data acquisition modules, the V490 analog signal digitizer.

The module features sixteen channels with differential input ranges from ± 10 millivolts to ± 40 volts, with 16 bit resolution and 500 KHz sampling rate. Each channel includes programmable digital filtering and both real time and FIFO buffered data. Channel inputs can be switched to a separate test connector for in-system calibration verification without disconnecting field wiring. Built-in-self-test is available.

Visit www.highlandtechnology.com/DSS/V490DS.html for more information.

Electron Backscatter Diffraction Software

EDAX Inc. has recently released OIM™ 6.0-the first microanalysis package to be written for a 64 bit processor and Microsoft® Windows 7 compatibility with datasets reaching >40 million data points.

OIM™ software offers easier access to the most commonly used functions along with one button analysis. Among the latest features incorporated into OIM™ 6.0 are expanded QuickGen and Template functionality, full-image area mapping, easier data rotations, interactive page colors, and password protected system level settings. OIM™ 6.0 also offers improved user access with advanced visualization tools, an interactive status bar, and data processing log to automatically record post processing performed on datasets.

In addition, improvements to the patented Chi-Scan technology, a combined EDS-EBSD tool for multiphase analysis developed by EDAX, offers enhanced phase differentiation, especially for nanoscale measurements. Coupled with the latest features in OIM™ 6.0, EDAX offers the most comprehensive software package available for EBSD.

EDAX is a leader in Energy Dispersive Microanalysis, Electron BackScatter Diffraction and X-ray Fluorescence Instrumentation. EDAX designs, manufactures, installs and services high-quality products and systems for leading companies in the semiconductor, metals, geological,

pharmaceutical, biomaterials and ceramics markets. Since 1962, EDAX has used its knowledge and experience to develop the latest silicon drift detector technology, digital electronics and specialized application software that facilitate solutions to research, development and industrial requirements.

For additional information please visit www.edax.com.

Microminiature Coaxial Interconnect Connectors

Radiall USA, Inc. expands its microminiature coaxial product line with new cost-effective MML Series connector solutions that include plugs, receptacles, jacks, adapters, pigtails and cables assemblies. They address the market demand for smaller miniaturized connectors for applications such as Wi-Fi access points, GPS and other mobile terminals.

The MML Series features two types of PCB receptacles and three corresponding types of space saving plugs with mated heights of 2.5 mm, 2.0 mm and 1.5 mm. They also have an operating frequency range of DC-6 GHz and a typical VSWR of 1.35.

In addition, Radiall offers a variety of MML Series cable assemblies with three RoHS compliant 50 ohm high-performance cables: 1.3 mm for MML H2.5, 1.13 mm for MML H2.0 or 0.81 mm for MML H1.5. Adapters and customized cable assemblies are also available.

For more information on MML Series and other microminiature coaxial solutions, please visit www.radiall.com.

Solid-State Power Amplifier for Wireless Broadband Network

AR Modular RF has introduced a new solid-state power amplifier module for the wireless broadband network. Model KMS2010 (1.75 GHz - 1.85 GHz, 150 watts) is a 52 dBm linear power amplifier with a scaleable gain of 57 dB. It is designed to meet most communication protocols, including various types of OFDM.

The module consists of a printed circuit board housed in a machine aluminum enclosure. The amplifier is protected from thermal overload, over-power, over-voltage or wrong voltage polarity as well as having an internal isolator.

For more information about AR Modular RF products and services please visit www.ar-worldwide.com.

Ethernet Cables with High-Flex Jackets Resist Harsh Environmental Conditions

TURCK announces new Cat 5e Ethernet cables that are Gigabit capable and incorporate flexlife® cable jackets. This jacket material is resistant to abrasion, crushing forces and chemicals, making it particularly suitable for harsh duty environments.

The Ethernet cables are available with 4 or 8 conductors (2 and 4 pair counts). The cables may be specified with straight or right-angle RJ45 or M12 connectors, accommodating diverse application requirements.

For other TURCK product or technical information please visit www.turck.us.

Membership Notes

Mihalea Albu

Defined by its vision of advancement in the professional field, our Society exists because its members have chosen to strengthen their values by sharing knowledge with their peers on all aspects of measurements. Many of them value the collaboration on specific topics, including those with local relevance, and this is enhanced by various meetings, cooperation with other societies on common projects, organizing technical events, sponsoring contests, involving students and so on. All these activities can be fostered by a local chapter.

Chapters can either be formed by members of the Instrumentation and Measurement Society active in a specific region or together with the members of other societies as a joint chapter. Chapters and joint chapters provide the most direct link with our 'members in action'. Currently Kristen Donnell, our chapter chair liaison, is in continuous dialog with our 38 I&M Chapters and Joint Chapters.

Recognizing their importance, the Chapter Funding Program was re-launched in June 2010, and the guidelines for the funding application process are found on the I&M website. Put your chapter on the IEEE I&M membership map!

A few examples of excellent activity recently reported by two of the chapter chairs follow. Shu Wen Li, on behalf of I&M Taipei Chapter Officers, highlights the Chapter Activity from August 2009 through May 2010:

Shu Wen reports that, The IMS Taipei Chapter has gained wider exposure through organizing or sponsoring symposiums, an innovation competition, and international conferences. Our recent activity includes organizing the 2nd i-ONE Instrument Technology Innovation Competition; calling for a Taiwan delegation to attend the I2MTC 2010; launching the very first model of a formal chapter meeting with the IM society officers; sponsoring the International Symposium on Optical Memory (ISOM) 2010 and the Asia-Pacific Data Storage Conference (APDSC) 2010; and Sponsoring the 2010 International Scientific Instrument Technology Workshop.

Through this constant activity of hosting meetings, the Taipei chapter has become better known within the academic, research and industry circles in Asia. The chapter also invited a number of professionals for short symposiums, including the chair of the New Zealand chapter, Prof. Mukhopadhyay. The paper submission and participation from Taiwan in the annual I2MTC conference saw double growth in 2010 from 2009, while the membership of the IM Taipei Chapter has grown 48% over the last 9 months and is expected to grow more significantly in the near future.

Vince Lalli, on behalf of I&M Cleveland Chapter Officers, reports recent activities in Cleveland where beyond having fun, members are staying active, while Chapter officers are serving the needs of the members:

We are supporting meetings and conferences with papers, tutorials, proposals for session Chairs, and suggested topics. The Chapter Staff are all working to build our membership. Our golf outing, social events, and technical meetings are working to keep the members active. Each member is trying to bring an associate to activities when they can. The Spring Roast, Election of Officers, took place in June 2010. It was a special event celebrating our 50th Anniversary. The Picnic Grounds were packed. Many longtime members gave short speeches on the good things the Chapter has done for them. Ernie Bartone and Jimmy Simek took care of the logistics. The steaks and fish were excellent again this year. There are a few changes in the Officers and Committee Chairs for next year. It was a great roast with a lot of news, fun, and good cooking for a delicious meal. Our next meeting will be in September.

The STEP Conference was held at the Ohio Aerospace Institute in 2009. There were presentations, exhibits, training, and splinter meetings in the three and one half days of activities. Awards for technical excellence and I&M Transactions were received. These activities provide the Safety and Mission Assurance (SMA) community and Project personnel with a unique opportunity for interchange and interaction on innovative assurance technologies and tools. It promoted dialog and co-operation with the Project Managers, Contractors, and Safety and Mission Assurance Managers.

A January 2010 meeting was on “Healthy Heart for You.” Marietta Joyce, R. N., and Valerie Graybowski, R. N., Southwest General Health Center, explained heart disease – what is our risk? They described what a heart attack is, what causes heart attacks, how can we recover, how to avoid a heart attack, how can we learn more, what are the warning signs of heart attack and stroke, and do you have questions or comments for your doctor or nurse? They brought hand-outs for us to take with us and review. It was a great meeting. Thanks Jimmy for arranging this excellent training.

A March 2010 meeting was on Ohio DOT Snow and Ice Training. Howard Huebner, Roadway Services Manager, gave the training. He covered many interesting subjects in the course: Snow and ice control has the single largest impact to our maintenance budget, while winter road maintenance accounts for 20% of our maintenance budget. We need to watch tires on passing vehicles. If slush fans out like water, melting materials are still working. If snow is thrown directly back off of tires, it is time to plow and salt. Snow and ice control is our signature event for Ohio drivers. It is a big business statewide using 3,000 people, 1700 trucks, and cost \$76.6 million in 2009.

The April meeting was on ‘The History of Satellites.’ Scott Marabito talked about the satellite research work done at NASA GRC and other places. Companies around the world contributed to the discovery of the wireless industry. Starting with Sputnik, he went to TAT-8 showing how the industry grew to where it is today. He made a very important point that a space dumpster contractor is needed. Space is getting crowded with nonoperating equipment that needs to be removed. He showed eight videos to make his points clear. We need to work on making planet earth a great home for future generations.

In Memoriam

J. Barry Oakes

21 January 1928–1 May 2010

I have lost a friend, Mr. J. Barry Oakes. Many of you knew him, for he was an institution unto himself within the I&M Society. In fact, his service to the IEEE-at-large, as well as to the I&M Society, was beyond exemplary. In my view, it was sacrificial, although Barry would have never characterized it as such. To him it was a responsibility that he felt as a member of the profession. Perhaps, more aptly, it was a calling. And, for him, it was fun.

This year was to mark the final year of Barry's service in his most-recent four-year term as a Member-at-Large on the Society's Administrative Committee—service which began in the 1970s. Barry was the Society President in 1976 and again in 1996 and 1997.

There's a multi-page list of positions that he filled within the Society and within the larger IEEE—an abbreviated list appears below—which includes positions such as Vice President of Educational Activities for the IEEE and member of the IEEE Board of Directors representing Division II. He was the Chairman of the 1989 IMTC. That's when I first actually met Barry.

I heard about Barry very briefly in 1985, when my spouse Ruth and I visited the Johns Hopkins Applied Physics Laboratory (APL). Barry spent most of his career as a physicist on the principal professional staff at APL—from 1951 through 1982 and from 1987 until his retirement in 1993. Much of his tenure at APL involved spacecraft design. Barry was an expert in satellite design and electronics, serving in APL's Space Department as a Section Supervisor and a Group Supervisor. In the several years prior to his retirement, he served variously as Spacecraft System Engineer, Lead System Engineer, and Study Team Leader for a number of space-related programs, missions and studies. In addition, he worked as a clinical engineer in the 1970s, and he became assistant professor of biomedical engineering at Johns Hopkins in 1972. Barry's list of achievements during his career is long.

In addition to his career highlights, I have some personal remembrances of Barry that are just as important—at least to me. I always admired his quiet demeanor—his ability to listen more than talk during our AdCom meetings within the I&M Society. Whenever he decided to say something, it always turned out to be well-reasoned and of importance to the issue at hand. I particularly appreciated his help in the early 1990s, when I took on the job of TRANSACTIONS Editor. Barry was Secretary–Treasurer for the Society during that time, and he was very helpful in acquainting me with the financial aspects of my new responsibilities.

I remember visiting his and Lois' home outside of Woodbine, MD, where he tended a small vineyard and made some extraordinarily good wine. Their living room was his listening room. Lois conceded its use for that purpose. There was one oversized chair, positioned in the midst of the room, in the sweet spot between two monstrous Magneplanar speakers, also set well into the room. Large tubular acoustic dampeners took up corner space, a Krell preamp and high-end CD players and turntables guarded the wall behind the chair, and racks of perfectly organized and catalogued CDs graced the side walls. That Barry was an audiophile is a perfect understatement. His speaker cables alone cost more than any of my more expensive amplifiers.

When one of my students became enthralled with the warm, orange glow of a vacuum tube, Barry sent me a vintage Partridge output transformer, an item worth \$1,000 today on e-bay—and which became the seed for a project to replicate a 1949 Williamson audio amplifier. The completed amplifier has since turned dozens of my undergraduate students on to electronics.

If any of you have half as much fun with electronics as I do, I invite you to hunt down a copy of Barry's textbook, *Linear Vacuum Tube and Transistor Circuits*, co-authored with A. J. Cote, Jr. and published by McGraw-Hill in 1960. I have dozens and dozens of electronics textbooks (much to Ruth's chagrin), and if I had the mandate to part with all but two or three, Barry's unusual book would be among the keepers.

Barry always seemed to enjoy life. And he considered family to be most important. His life-partner Lois, with whom he shared 55 years of marriage; his five children, Gail, David, Karen, Jeff and Brian; his eleven grandchildren; and one great-granddaughter all brought him pleasure. And his extended family—the I&M Society and its AdCom—were almost as important.

Barry intended to be at I2MTC/2010 in early May, but that was not to be. He passed from this life on 1 May. I hope that if you knew Barry well you might find a few moments during your busy schedule to reflect on what Barry meant to you. And if you didn't know Barry, my hope is that you will make a note to find an I&Mer who did and let that person tell you a story or two.

I will miss Barry, and along with my mourning, I will celebrate his life, for I know that right now he's off to some new adventure!

Steven A. Dyer

Barry, the I&M Society, and the IEEE

Fellow of the IEEE, Class of 1986:

“For leadership in the application of electrical measurement instrumentation”

Recipient, I&M Society Career Excellence Award (2006):

“For outstanding contributions to the I&M Society, including two decades of service as a member of the Administrative Committee, two terms as Society President, and holding most of the Society offices; for service to the IEEE as a member of the IEEE Board of Directors and as IEEE Vice-President for Education; and for a career of service to the Johns Hopkins Applied Physics Laboratory in the field of instrumentation for a multiplicity of programs”

Recipient, I&M Society Distinguished Service Award (1995)

I&M Society Positions and Activities

1974–1977, 1991–1994, 1995–1998, 2002–2005, 2007–2010 –

Elected Administrative Committee (AdCom) Member-at-Large

1976, 1996, 1997 President

1998–1999 Junior Past President

2000–2001 Senior Past President

1975, 1994, 1995 Vice President
2004, 2005, 2006 Vice President, Finance
1974, 1991, 1992, 1993 Secretary–Treasurer
1989 IMTC’89 Conference Chair
1988–1990 Member, IEEE IMTC Committee
2000, 2001, 2002, 2003, 2004 Chair, Long-Range Planning Committee
2000, 2002, 2004, 2005, 2006, 2007 Chair, Awards Committee
1999 Chair, Nominations Committee
1999 Chair, Organization Committee

A Few Major Positions within IEEE

1983–1984 Vice President, Educational Activities, IEEE
1981–1982 Director, Division II, IEEE
1981–1984 Member, IEEE Board of Directors
1979–1982 Eastern Vice President, Oceanic Engineering Council (OEC)

I2MTC 2010 Report

Ruth A. Dyer and John L Schmalzel, Co-Chairs
Vincenzo Piuri, Technical Program

The venue for I2MTC 2010 was in Austin, Texas at the Austin Hilton located in the downtown area close to the Capitol and Lake Lady Bird. The Congress Street Bridge was an attraction within walking distance. It is host to the largest urban bat population in the U.S.

Pre-Conference Tutorials

Four parallel tutorial tracks were conducted on Monday afternoon May 3. The topics included: DSP in Measurement, Data Acquisition, Environmental Sensing, Nonlinear Distortion Analysis in Circuits and Systems, Frequency Domain Signal Parameter Estimation, ADC Architectures, Sensors, Fundamentals of Power Measurements, Medical Instrumentation Development, Uncertainty in Measurement, and Advanced Topics in ADC Testing.

Keynote Address

The conference kicked off Tuesday morning May 4 with a keynote address by Dr. Vinton Cerf, Vice President and chief Internet evangelist with Google. He spoke on measurement and modeling of Internet behavior. The continued rapid growth of the Internet presents new measurement challenges; Google initiatives involve distributed monitoring nodes and acquisition software. As one example, the collaborative Measurement Lab (M-Lab), available online at www.measurementlab.net, is an open distributed platform created to deploy measurement tools that are freely available to researchers.

Technical Program

The main theme of the conference was “Innovative and Integrated Applications of Instrumentation and Measurement.” Authors and sessions focused their presentations on these specific aspects since integration within the application environment is a critical issue for creating advanced solutions to empower the industry to remain on the leading edge of the

economy and for citizens to achieve a better life. The technical program spanned two and one-half days. Oral presentations were given in four parallel tracks. Also, additional poster sessions were set up in the coffee break area, which gave attendees and poster presenters multiple opportunities to meet and discuss their work.

The conference addressed many new developments and results from research and engineering practice in instrumentation and measurement as well as in their related applications. A number of hot topics were discussed, ranging from sensors to ADC/DAC recent outcomes, from calibration to advanced signal processing, from image processing to quality assurance, from electrical to dielectric/magnetic measurements, from temperature to flow, from physical/ mechanical quantities to energy, from chemical to biological measurements, and all related applications.

Awards

A number of Society and I2MTC-2010 awards were given during Wednesday's lunch:

IEEE Fellows, Class of 2010:

James Baker-Jarvis
Georg Brasseur
George Giakos
Nicholas Paulter
George Zentai

2009 Outstanding Young Engineer Award: Jenny Wirandi

2009 Technical Award: Jacques Willems

2009 Distinguished Service Award: Emil Petriu

2009 Career Excellence Award: Stephen Dyer

Undergraduate Student Paper Award: Guisepe Montenero

Graduate Student Paper Award (1st): Rigel Woodside

Graduate Student Paper Award (2nd): Jon Daniels

Social Activities

Tuesday's reception was held in conjunction with the Austin Chamber of Commerce annual "Brain Party." The venue included live music and the chance to network with area engineers.

May fifth's dinner banquet was held at the hotel and featured a Mexican theme in keeping with Cinco de Mayo, and live music was provided as after-dinner entertainment.

Other Conference Highlights

Several special activities included:

An AdCom Meet & Greet:

AdCom members circulated during coffee breaks to meet conference and IMS attendees. This afforded them a chance to find out what members are interested in and gave direct input to the AdCom.

Industry Track: A new format for the conference was offered. Papers were solicited from industry representatives; one option provided was to give a presentation without submitting a full-length paper.

Technical Committees:

Several TCs conducted business meetings in conjunction with the conference including TC-10: Waveform Generation, Measurement, & Analysis. Other TCs organized sessions and supported the tutorials.

A Graduate Student Panel Discussion was conducted to give students a chance to network with their peers and discuss issues encountered prior to and after completion of a graduate degree.

Conference Statistics

- I2MTC continues to be a highly international conference as evidenced by the 32 countries represented—very much a World Cup of I&M!
- I2MTC 2010 Summary
Papers submitted: 427
Papers accepted: 341
Acceptance rate: 79.8%
Papers published: 320
Attendees: 280
Countries represented: 32
- Sponsors
I2MTC-2010 was co-sponsored by the IEEE Instrumentation & Measurement Society and the Central Texas Section of the IEEE.
- Conference Co-Chairs:
Ruth Dyer, Kansas State University, USA
John Schmalzel, NASA - Stennis Space Center, USA

Technical Program Chair: Vincenzo Piuri, University of Milan, Italy

Technical Program Co-Chairs:
Mark Yeary, University of Oklahoma, USA
Annamaria Varkonyi-Koczy, Budapest Univ., Hungary
Wendy Van Moer, Vrije Universiteit Brussel, Belgium

Local Conference Assistant Chair: Thuy Dao, IEEE Central Texas Section, USA

Local Arrangements, Industry Exhibits, Patrons Chair: Kenny Rice, IEEE Central Texas Section, USA

Local University Liaison Chair: Robert Flake, IEEE Central Texas Section, USA

Educational Activities Chair: Kim Fowler (IMS Pres.) IEEE *I&M Magazine*, USA

Conference Management: Conference Catalysts LLC, USA

Arrangements: Sue Kingston, IEEE I&M Society, USA

Exhibitors

I2MTC-2010 gratefully acknowledges the following exhibitors for their support of the conference: National Instruments, Austin, Texas, www.ni.com, Advanced Test Equipment Rentals, San Diego, CA, www.atecorp.com, and Rowan University, Glassboro, NJ, www.rowan.edu.

I2MTC-2011: May 10-12, 2011

I2MTC-2011 will be held at the Four Points by Sheraton, Hangzhou, China. More detailed information is available at the I2MTC 2011 website at www.imtc.ieee-ims.org, including the call for papers and important deadlines.

See you in Hangzhou in 2011!

Report on the Graduate Student Panel Discussion during I2MTC 2010

Kristen Donnell

Since 2008, the International Instrumentation and Measurement Technology Conference, I2MTC, has featured a Graduate Student Panel Discussion. This year's Panel Discussion featured a "Life after Graduation" theme. The Panelists represented academia and industry and spoke about career opportunities in Instrumentation and Measurement, as well as the benefits of IEEE involvement.

Dr. Yan Zhai, an Algorithm Development Specialist at Micron Technology, opened the discussion by speaking about his industry experience following graduate school. An interesting discussion resulted that involved the similarities and differences between (graduate) research and post-graduation industry experiences.

Dr. Sarah Seguin, Assistant Professor in the Department of Electrical Engineering and Computer Science at the University of Kansas, spoke about pursuing a career in academia. Her experiences and insights as a young professor were very useful to anyone considering a career in academia.

The final Panelist, Ms. Kristi Hummel, a High-Speed Digitizers Hardware Group Manager at National Instruments, spoke about her experience with IEEE and career opportunities in industry. She also highlighted best practices for interviewing and targeting a specific job within a company.

The Instrumentation and Measurement Society would like to thank all of the Panelists for their participation this year, along with the student attendees. Be sure to check the Instrumentation and Measurement Society magazine and web site in the coming months for information about next year's Panel!

I2MTC 2010 in Austin, Texas

Kim Fowler

(Note: A photo collage of participants accompanies this text in the print magazine.)

Another year and another successful International Instrumentation and Measurement Technical Conference (I2MTC) was held in Austin, Texas USA. Nearly 300 people attended the conference and tutorials. We enjoyed a delightful keynote speech by Vin Cerf, the true inventor of the internet. We celebrated the awards and achievements of our colleagues, and we mourned the passing of Barry Oakes, a long-time member of the society and a past president. Next year we open a new venue and era for I2MTC with the first conference to be held in China. Please consider joining us in Hangzhou, China, May 9 through 12, 2011!