



MTT-S Society News

COMCAS 2008

■ Shmuel Auster and Barry Perlman

The First Annual IEEE Conference on Microwaves, Communications, Antennas, Solid State Circuits, and Electronic Systems (IEEE COMCAS 2008) took place at the Hilton Hotel in Tel-Aviv, 13–14 May 2008. This two-day international IEEE conference was organized as a multidisciplinary international forum with contributions from the global community, building on the traditional IEEE Israel AP/MTT&AES Chapters Symposium held each year. This was an exciting international conference and exposition that was attended by many top internationally recognized scientists and engineers active in the field of microwaves and related electronics today. Last year's very successful 21st IEEE AP/MTT&AES Chapters Symposium, with more than 500 participants from many companies and research and development (R&D) institutions, encouraged and inspired the organizers to take on the challenge of organizing an even greater event with the help of the larger IEEE and global technical community. This diverse and

multidisciplinary conference was organized where students, engineers, and scientists from various complementary disciplines could meet and discuss subjects of common interest. Three additional IEEE societies together with the European Microwave Association (EuMA) got involved, resulting in excellent technical support from the Solid State Circuits Society (SSCS), the Communications Society (ComSoc), the Electromagnetic Compatibility Society (EMC) and the EuMA in addition to the Microwave (MTT), Antennas and Propagation (AP), and Radars (AES) program. The COMCAS 2008 event delivered on the promise of attracting the global community to Israel with more than 700 participants, 146 papers, 15 technical sessions, five parallel meeting rooms, and a relatively large professional exhibition with 62 booths.

The 2008 program offered a very impressive list of speakers, including expert R&D engineers, students, top scientists, and managers from Asia, the United States, Europe, Latin America, the Far East, and Israel. One keynote speaker you all will recognize was Prof. Linda Katehi, provost, University of Illinois, United States, whose talk was titled "Advanced Component Architectures for Detection and Communications Systems." Another

keynote speaker was Raviv Melamed, general manager, Mobile Wireless Group, Intel Corp., Haifa, Israel. The title of his talk was "Future Wireless Applications and Technologies." Both talks were very well received.

The IEEE-COMCAS conference had an interesting breadth of technical papers; from leading edge microwave devices, ingenious architectures, advanced analog and mixed-signal circuits to clever antenna technology, and information on new and old RADAR and Communication systems. Many local practitioners, engineers and decision makers from the technology, communication, radar and electronic systems communities participated and many presented papers on technology, circuits, system aspects and innovations in these fields. Many up-to-date and fascinating topics were presented by the many speakers to enrich the microwave, antenna, communication, EMC, solid-state circuits (RFIC) and electronic systems communities with knowledge, ideas, applications and challenges. Emphasis was on applications oriented research and development, from devices and components to circuits and systems, to antennas, communications and networking, sensors and radar and software. Papers were presented on a variety of subjects including: RFICs; low-power

Shmuel Auster served as the COMCAS 2008 Conference Chair and Barry Perlman served as Technical Program Chair.

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Fall 2008 ARFTG Microwave Measurement Symposium

www.arftg.org

Conference, Short Course, Two Workshops and a User Forum.

Date: December 9th to 12th, 2008

Venue: Red Lion Jantzen Beach Hotel, Portland, Oregon, USA

- 72nd ARFTG Microwave Measurement Conference: "Time Domain and Frequency Domain Measurement".
- NIST/ARFTG Short Course: time-domain and frequency-domain measurement, connectorized and on-wafer S-parameters, power; thermal noise, phase noise, nonlinear measurements and uncertainty analysis.
- Nonlinear Measurement Workshop: time-domain waveform measurements, high power transistors, passive and active loadpull waveform engineering, large signal network analysis, time domain measurement of very high power, strongly mismatched devices.
- Multiport/Differential Measurement for Signal Integrity Workshop. RF multiport and differential measurement techniques.
- NVNA Users' Forum - program available one month before meeting.

Fall 2008 ARFTG Symposium - schedule of events

Tuesday, December 9th—8:00am - 5:00pm	NIST / ARFTG Short Course
Wednesday, December 10th—8:00am - 12:00noon	
Wednesday, December 10th—1:15pm - 5:00pm	Nonlinear Measurement Workshop
Thursday, December 11th—8:00am - 5:00pm	72nd Microwave Measurement Conference
Friday, December 12th—8:00am - 12:00noon	
Friday, December 12th—1:15pm - 3:15pm	NVNA Users' Forum
Friday, December 12th—1:15pm - 5:00pm	Signal Integrity Workshop

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solid-state circuits; microwave plasmonics and nanometa materials; novel antennas and spectrum database issues; phased arrays; communications networking; C3/C4 modeling, simulation, and analysis (MS&A); RF propagation to MMW wavelengths, high-power amplifiers; advanced devices for communications; RF filters; modeling for EMC; MEMs; ultrawideband technology; metrology and parameter extraction; space-time adaptive processing; cognitive radios/radar; and spectral processing. These are just a few examples of the many disciplines covered. The combination of many diverse technical areas made for a very exciting, robust, and interesting two-day meeting.

Some specific examples of the many diverse technology papers presented were:

- “Low Voltage 45nm CMOS Fully Differential Amplifier for 10 Bit/160 Msps Pipeline ADC,” David Gidony and Sophia Maerkovich, Intel Corporation, Israel
- “Layer Fusion Radio (LFR) for Future Communication and Radar,” Joy Laskar, Georgia Tech, United States
- “Slow Light and Photonic Beamforming Applications,” Moshe Tur, Tel Aviv University
- “Digital Phased Array Radars—Trends and Technology,” Israel Lupa, Elta Systems Ltd., Israel
- “Front-End Technology for Phased-Arrays with Digital Beamforming,” Frank van Vliet TNO, Defense, Security and Safety, The Hague, The Netherlands
- “A Highly Integrated Fractional-N Synthesizer for FMCW Radar,” Ralf Eickhoff, Frank Ellinger, Dresden University of Technology, Germany, T. Ussmueller, University of Erlangen-Nuremberg, Germany, Solon Spiegel, RIO Systems Ltd., Israel
- “Enabling Technologies for a Digital Array Radar,” Michael J. Walsh et al., Lockheed Martin, United States and William J. Chappell, Purdue University, United States
- “Reducing Spectral Growth of Phase Coded Radar Pulses,” Menachem Asher, Elta Systems Ltd. Israel
- “Advanced Product Design from Components to Smart Antenna Systems,” Nick Buris, Motorola, United States
- “A 1×2 MIMO Multi-band Transceiver with an Integrated LNA and PA in 90nm CMOS for 802.11a/g/n Applications,” Ofir Degani, Mark Ruberto, Emanuel Cohen, Yishai Eilat, Benjamin Jann, Fabian Cossoy, Nikolay Telzhensky, Tzvi Maimon, Shay Wail, Gregory Normatov, Rotem Banin, Shai Gross, Assaf Ben Bassat, Mario Zajac, Eyal Shaviv, Ori Ashkenazi, Sharon Zaguri, Gabriel Hara, Amir Fridman, and Richard Lin, Intel Corp., Israel and United States
- “Novel Paper-Based Inkjet-Printed Antennas and Wireless Sensor Modules,” M.M.Tentzeris, R.Vyas, A.Rida and L.Yang, Georgia Tech, United States
- “Frequency and Time-Domain Adaptive RF Front-Ends and Antennas,” Hao Han Hsu, Xin Wang, Xiaoguang Liu, Wesley Allen, Dimitrios Peroulis, Purdue University, United States; Linda P.B. Katehi, UIUC, United States
- “RF-Power Technology Overview:



Nick Buris, Motorola.



Mark Ruberto from Intel receives a certificate of appreciation.



Joy Laskar, Yehuda Levitan, Shmuel Auster, Linda Katehi, Barry Perlman, Yael Nemirovski, and Reuven Shavit.



Agilent exhibit.



Yonah Adelman receives the certificate of appreciation.



Colleagues and friends at the COMCAS reception.

- Accomplishments and Challenges,” Franz Dielacher, Infineon, Germany
- “Miniature 3D Micro-Machined Solid State Power Amplifiers,” Anthony A. Immorlica Jr., BAE, United States, Deepu Nair, Kenneth Vanhille, Christopher Nichols, Jean-Marc Rollin, Dara Fleming, Ronnie Varghese and David Sherrer, Rohm and Haas, United States, and Zoya Popovic, University of Colorado, United States
 - “Reconfigurable Front End Micro-systems,” John Papapolymerou, Georgia Tech, United States
 - “Design of RF-CMOS Integrated Circuits for Wireless Communications,” Georg Boeck, Berlin University of Technology, Germany
 - “Practical Approaches to Behavioral Modeling of RFIC/MMIC Amplifiers for Non-linear Simulation,” Larry Dunleavy and J. Liu, Modelithics, United States
 - “Experimental Evidence of Surface Mobile Holes on GaN HEMT Structure,” C. P. Wen, J. Y. Wang, Y. L. Hao, and B. Shen, Peking University, Beijing, China
 - “Terahertz Plasmonics and Energy

Concentration,” Mark I. Stockman, Maxim Durach, and Anastasia Rusina, Georgia State University, United States

- “Coherent Meta-Materials and the Lasing Spaser,” Nikolay I. Zheludev, S. L. Prosvirnin, N. Papisimakis, and V.A. Fedotov, University of Southampton, United Kingdom
- “Essential Elements of Military Communications Network Modeling and Simulation,” Newton Love, Steven A. Stegmann, and Northrop-Grumman, United States.

One very special paper was given by Dr. Ruth Rotman, daughter of Walter Rotman (see “Walter Rotman”). Her paper was titled “Walter Rotman and the Lost Art of Antenna Design.” The following are excerpts from her paper:

Walter Rotman, who passed away in May 2007, was well known for the invention called on his name, the Rotman antenna lens. The lens was an integral part of many EW and radar systems in Israel and the world. It allows Multi-Beam

capability for defense systems—tracking and investigating multiple targets simultaneously. It allows Multi-Beam capability for defense systems—tracking and investigating multiple targets simultaneously. But my father had equally important inventions that are found in the first “Phased Array” radars—(radars which look in many directions simultaneously without moving the antenna mechanically)—which were built in Israel and contribute today to the defense of the country. My father was also considered a pioneer in the area of “metamaterials.” He developed all these ideas in the fifties and sixties without the help of computers but rather via unique intuition—a rare art today. He managed to do all this and still remained modest and pleasant. He wrote less than ten articles—Not enough today to be even an Associate Professor—but every article was important and special and he won almost every known prize from the US Air Force.



Keynote speaker Raviv Melamed, GM Intel Mobile Wireless.



Keynote speaker Linda Katehi, Provost UIUC.



Prof. Zoya Popovich



David Braddock, Joy Laskar and Mike Golio enjoying the conference.



Plenary session.



Exhibit area.



Group lunch on the Mediterranean coast.

Walter Rotman

Walter Rotman was a Life Fellow of the IEEE and Chief of the Plasma Electromagnetics Branch of the Air Force Cambridge Research Laboratories (AFCRL) for many years. He was born in St. Louis, Missouri, in 1922 and served in the Army Air Force Signal Corps, where he worked on radar equipment from 1942 through 1945. He received the B.S. and M.S. degrees in electrical engineering from the Massachusetts Institute of Technology (MIT) in 1947 and 1948, respectively. While at MIT, he worked as a research assistant in the research laboratory for electronics. He joined AFCRL in 1948, and held many supervisory positions until he retired in 1980. He was the driving force behind many important antenna innovations. Probably one of his most important contributions was his invention of a unique electromagnetic lens that has the capability of producing multiple beams over a wide angular range with low phase error. This lens has been widely used for many civilian and military communications and radar systems, and is now known as the Rotman Lens. He was the recipient of the 2005 John Kraus Award for this work. He also received the United States Air Force Decoration for Exceptional Civilian Service in 1980 and the IEEE Centennial Medal in 1984.

I believe that I discovered my father's legacy not when I read his papers but rather when I talked with his co-workers. They all stressed that my father was the kindest of people, most generous with his time and always encouraging to the youngest generation. This I believe was his true legacy and what mattered.

A full copy of this paper and others can be found in the conference archives under *IEEE Xplore*.

Overall, the quality level of the papers and presentations was extremely high. This may have been due to the fact that most of the papers were invited. The tone of the COMCAS conference also seemed to help promote or encourage activity and friendly interchange among the leading innovators in the field by facilitating networking. The atmosphere was very collegial allowing for innovation and the formation of collaborations that leads to real advancement. The relaxed and less formal setting of the conference facilitated many discussions between the top-level microwave scientists and engineers in attendance. These scientific discussions, which tend to build relationships that further result in real work, are vital to the advancement and progress of

microwave electronics and the associated electronic systems industry. Many of the select leaders that attended the COMCAS conference are those responsible for the majority of innovation and advancement in the field worldwide. The continuation of this conference especially because of its quality and excellent atmosphere for building international partnerships is important to the development of advanced technology in the microwave and electronics industry. For a more detailed look at the program see www.comcas.org.

The exhibition was organized alongside the symposium halls with 52 institutions represented in 62 booths. Companies and agencies presented their CAD tools, test equipment, RF, MW and MMW components, and modules for electronic systems applications. The two main platinum sponsors were Agilent Technologies and Intel Corporation. The many cosponsors included Herley General Microwave Israel, EYAL Microwave, WIN Semiconductors, MTI, ORBIT/FR, TE (M/A-COM), STG, Interlligent, CST, and *Microwave Journal* (media sponsor).

One can more fully understand the COMCAS conference by contrasting it with the IEEE International Microwave Symposium (IMS) held each year in the United States. The IMS is the premier

annual showcase for microwave technology. The conference is very large and the tone is certainly more complex than most conferences with a wide variety of activities compressed into one week. The atmosphere tends to be somewhat formal with many, many technical and networking activities going on. The IEEE IMS is a very important, successful and significant conference and our flagship conference. The IMS is about visibility, acceptance, recognition and marketing. Many young academics, engineers and scientists in our industry make presentation at the IMS conference to gain recognition and share their ideas. Many small and large companies showcase their products and present their work to gain acceptance and recognition. But many of our members, especially those from outside of the United States are unable to attend. Smaller high quality conferences like COMCAS and others such as the Asia Pacific MW Conference (APMC, Far East), COMITE and RADIOELEKTRONIKA 2008 (Czech Republic), EuWiT (Europe, held during the European MW Week), IMOC (Brazil), KJMC (Korea-Japan), MMS (Mediterranean), MIKON and IRS (Poland), MWP (Europe, Asia Pacific, United States), ICMMW (China) have a complementary and vital role to play to help our members in other regions participate, listen and share ideas, meet with international speakers and leaders in the field and report scientific innovation. Having such conferences in various locations around the world is a very good way to encourage members and potential new members to participate to improve recognition and grow the IEEE-MTT society and the microwave industry.

The COMCAS conference also provided an excellent opportunity to recognize two outstanding entrepreneurs and contributors to the field of microwaves, who were given Certificates of Appreciation. One is Harvey Kaylie, president of Mini-Circuits, a global supplier of IF/RF/microwave signal-processing components with numerous design and manufacturing facilities worldwide.

Harvey Kaylie started Mini-Circuits in 1969, designing and building double-balanced mixers in the

living room of his home in Brooklyn, New York. His philosophy at the time, which he maintains to this day, was based on offering the highest component performance for the lowest price possible. Mr. Kaylie pioneered many of the high-volume manufacturing practices and quality concepts universally applied in the RF/microwave industry today. Mr. Kaylie and his engineering team have been awarded numerous patents for component design, circuit design, and innovative packaging approaches. In 2007, Mr. Kaylie was named by *Microwaves & RF Magazine* a "Microwave Legend," one of the key people in the history of the RF/microwave industry. Mr. Kaylie is a long-time member of the IEEE and has sponsored many radio amateur and IEEE chapter events. Together with his wife Gloria, through the Gloria and Harvey Kaylie Foundation, Mr. Kaylie generously supports many worthwhile causes in medical and scientific fields. For Harvey Kaylie the citation reads, "For his visionary leadership in developing cost-effective RF and microwave component technology in Israel and his significant contributions to IF/RF/microwave mixer design."

The other recipient is Yonah Adelman, General Manager of Herley General Microwave Israel, a leading international designer and manufacturer of sophisticated microwave components. Mr. Adelman began his professional career in 1978 as a Research and Development Microwave Engineer at General Microwave Corporation in New York. In 1983, he immigrated to Israel where he joined Tadiran to establish a Microwave Integrated Circuit Department. In 1985, together with Dr. Hopfer, he took part in the establishment of General Microwave Israel, a subsidiary of General Microwave Corporation. He has served as Chief Microwave Engineer, Assistant General Manager and since 1990, as General Manager of the company. Mr. Adelman has led the design and development of a broad range of microwave components. These include millimeter wave control components, microwave sources, integrated microwave assemblies and a broadband external lithium

niobate electro-optic modulator, for which the company received two patents. At Herley General Microwave Israel, he has established a world class facility for the development and manufacture of state-of-the-art microwave components and super-components. Herley General Microwave Israel has recently received an Outstanding Supplier Award from Elta Systems. Mr. Adelman is a long-time Member of the IEEE. For Yonah Adelman, the citation reads, "For his visionary leadership in creating a center for state-of-the-art microwave technology and production in Israel and his significant contributions to the design of microwave con-

trol components, sources and integrated assemblies."

The COMCAS conference was highly successful, and those who attended provided very positive feedback and advice. We believe it will be well attended in the future by the technologists that lead innovation and carry impact in the microwave and electronic systems fields.

Plans for next year's conference are already underway. Tradition is very important and next years meeting will be a valuable, enriching, and fun event and an excellent opportunity to share ideas, learn about exciting technology developments, and meet and socialize with friends and colleagues. 

The IMS is about visibility, acceptance, recognition, and marketing.



Dev and Linda Gupta Professorship in Biomedical Sensing and Signal Processing

Department of Electrical and Computer Engineering

The Department of Electrical and Computer Engineering (ECE) at the University of Massachusetts (UMass) Amherst invites applications for the Dev and Linda Gupta Professorship, a full-time tenure-track position at the level of Assistant Professor, starting as early as January 2009.

The ECE Department is launching an interdisciplinary research center in biomedical sensing and signal processing to develop noninvasive sensing systems for detection and diagnosis in medical treatment. This effort will combine research strengths of the College of Engineering, the UMass Medical School (UMMS) in Worcester, and Baystate Health Services (BHS) in Springfield.

The ECE Department conducts leading research in microwave and terahertz remote sensing, broadband antennas and high-frequency electronics, and has state-of-the-art facilities for instrument design, fabrication and testing. Related current research efforts include THz system design utilizing nanoelectronic devices and the development of new architectures for fast wideband signal processing. Collaborations with medical scientists and physicians at UMMS and BHS provide access to skills and facilities for clinical assessments. The Commonwealth of Massachusetts has recently proposed \$95 million for a new life sciences center at the Amherst campus. Information about the ECE Department can be found at <http://www.ecs.umass.edu/ece>

Candidates must have an earned doctorate and have demonstrated research expertise in the area of biomedical sensing or biomedical signal processing. The successful candidate will be expected to develop a strong externally funded research program, supervise graduate students, collaborate with other faculty and be committed to teaching at the graduate and undergraduate levels. Applications will be reviewed starting September 15, 2008. The search will remain open until a suitable candidate is found. Appointment is contingent upon funding. Interested applicants should send a CV, statement of research and teaching interests, and a list of at least four references to Biosp_Search@ecs.umass.edu, or printed copy to: Search Committee, Biomedical Sensing and Biomedical Signal Processing, Department of Electrical and Computer Engineering, University of Massachusetts, 100 Natural Resources Way, Amherst, MA 01003-9292.

The University, College, and Department are committed to increasing diversity of the faculty, student body, and curriculum, and welcome applications from women and other underrepresented groups. UMass is an Affirmative Action/Equal Opportunity Employer.