UFFC Newsletter

Ultrasonics, Ferroelectrics, and Frequency Control

2005 Joint IEEE International Frequency Control Symposium and Precise Time and Time Interval (PTTI) Systems and Applications Meeting
29-31 August 2005
Vancouver, BC, Canada

2005 IEEE International Ultrasonics Symposium
18 – 21 September 2005
Rotterdam, The Netherlands

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President's Message

Dear Colleagues:

It is about over – but more about that later. First – some thoughts about the health of our Society in 2005.

The State of the Society

Our symposia and Transactions are the 'heart of the matter' for most of us as Society members. While membership numbers have remained rather constant for a number of years, both the symposia and Transactions are showing positive growth.

This year two symposia are being sponsored by our Society:

- The annual Frequency Control Symposium on 28-31 August in Vancouver, Canada.
- The annual International Ultrasonics Symposium on 18-21 September in Rotterdam, the Netherlands.

Tutorials and short courses are an important component of both of these events.

In 2004 we celebrated our Society's 50th Anniversary with a successful Joint Conference involving all three of our major technical groups: Ultrasonics, Ferroelectrics, and Frequency Control. In 2006 the three groups will meet separately in the U.S. and Canada.

The Transactions are on sound footing and growing under the innovative leadership of our Editor-in-Chief. But challenges do face us. It would be good to increase the Ferroelectrics and Frequency Control research content of our journal. "Open access" – a broad move in the scientific community to provide free electronic access to published literature – will significantly impact the publishing community and IEEE's finances. Exactly how and to what extent depends on the mode of implementation, an evolving matter being closely scrutinized.

Parting Thoughts

Finally, I note that I am just about finished (as President) – but hopefully not as an active Society participant. In January '06 President-Elect Art Ballato will begin his two-year term as our Society President. At the Administrative Committee meeting being held in conjunction with the Ultrasonics Symposium in Rotterdam this September, our next President-Elect will be selected.

I do hope the Society is serving you well, in return for the service you are providing the Society: we are all in this together as member volunteers!

I would urge you to attend our symposia, read our Transactions, develop needed standards . . ., contribute as you are able. And on behalf of the Society, I thank you for your participation.

Sincerely,
Gerry Blessing
UFFC Society President, '04-'05
g.blessing@ieee.org

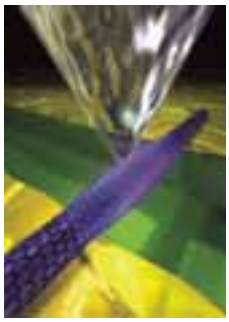
Cover Photos

Photo by John Sinal
Vancouver waterfront
Courtesy of Vancouver Tourism

Fotograaf taken by Maarten Laupmann
Erasmusbrug with the Maas Skyline
Courtesy of Rotterdam Marketing

Table of Contents

UFFC NEWSLETTER FALL 2005



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2005 Joint IEEE FCS and PTTI Conference

2005 Joint IEEE International Frequency Control Symposium and Precise Time and Time Interval (PTTI) Systems and Applications Meeting
29-31 August 2005
Vancouver, BC, Canada

Special Notes

Location: The Hyatt Regency Hotel, Vancouver, Canada.
Date: 29 – 31 August 2005
Tutorials: 28 August 2005

- Deadline for Hotel Registration: 7 August 2005
- Deadline for Early Conference Registration: 12 August 2005
- http://www.ieee-uffc.org/fcmain.asp

A Welcome from the General Chairs

It is our great pleasure to announce this meeting, which brings together for the first time two of the leading international technical conferences for research, development, and applications of frequency control and precision timekeeping.

The joint conference between the Frequency Control Symposium and the Precise Time and Time Interval Systems Applications Meeting will afford both attendees and exhibitors associated with each group a unique opportunity to interrelate both technically and socially.

On 28 August, the day prior to the meeting, a number of unique, educational and informative Tutorial Sessions will be offered to attendees. These sessions will cover topics of interest to both groups and will be presented by internationally recognized experts in their field.

Meeting highlights will include plenary talks encompassing both FCS and PTTI areas of interest, presentation of awards, an exhibit area staffed by representatives of leading manufacturers of Frequency Control and Precision Timekeeping Equipment, a reception and banquet, and of course, the technical and poster sessions themselves. The Chairs and members of both the FCS and PTTI Technical Program Committees are dedicated to providing a stimulating and educational technical program for all attendees.

The meeting location at the Hyatt Regency Hotel in Vancouver will provide attendees with a wonderful venue: Vancouver attractions include Stanley Park, Gastown, Chinatown, and Granville Island. The Hyatt Regency is located in the heart of the city, walking distance to many fine restaurants, shops, etc. It is also the departure city for many Alaskan Cruise Lines for those interested. We strongly recommend attendees plan to spend a few extra days in Vancouver to allow time to enjoy the many attractions that the city has to offer. We look forward to seeing all of you at this meeting in our beautiful host city.

Mike Driscoll
Joe White

An Invitation from the Technical Program Chairs

In August, 2005 two of the most influential meetings in "Frequency" and "Time" will meet together for the first time. The 2005 Joint IEEE FCS and PTTI Systems and Applications Meeting will provide attendees a unique opportunity to participate in a single, comprehensive forum covering recent time and frequency advances spanning basic research to applications and operational systems.

On 29-31 August the 3 day technical meeting will include a full program of oral and poster presentations encompassing traditional areas of interest to both IEEE FCS and PTTI.

Complementing the technical program will be an extensive exhibit area staffed by representatives from leading manufacturers of Frequency Control and Precision Timekeeping Equipment. On 28 August, the day prior to the meeting, a full day of informative tutorials will also be offered, presented by recognized experts in their field.

We look forward to seeing you in 2005 in Vancouver, BC Canada at what promises to be a very stimulating and comprehensive meeting.

Robert Tjoelker
Christopher Ekstrom

An Invitation from the Exhibit Chairs

It is our pleasure to announce that the Joint IEEE International Frequency Control Symposium (FCS) and Precise Time and Time Interval (PTTI) Systems and Applications Meeting will also include a combined exhibition area that will allow all of the conference participants and exhibitors the opportunity to explore the science and technology of both groups.

We expect that over 40 different vendors, covering a wide range of current cutting-edge technology, will participate in the exhibit area. The exhibit area will also be the location of the session coffee breaks and an exhibitors' reception.

With an expected attendance of 500 scientists and technologists, 40 international vendors from many parts of the

world, and a great opportunity for viewing the exhibits and interaction between vendors and attendees, we believe that the exhibit area will be a significant part of the overall conference experience.

The exhibit hall is in the Hyatt Regency Hotel in Vancouver, Canada. We will obtain the necessary permits to enable United States vendors to ship their equipment to a forwarding address in the US which in turn will forward all exhibit material directly to the conference centre. This allows you to send your equipment to the exhibition without problems associated with customs paperwork or carnets.

We look forward to seeing you in Vancouver.

Jack Kusters
Sheila Faulkner

Hotel Registration

The Hyatt Regency Vancouver is located at 655 Burrard Street in Vancouver, British Columbia, Canada. The special reduced group room rate for general attendees is $160.00(US). A limited number of government rate rooms are available at $151.00(US) to U.S. Government employees only and are available on a first-come first-served basis. Government ID and/or government travel orders must be presented at time of check-in to qualify for these rates. These reduced group rates are available from August 25th through September 5th, 2005.

The easiest way to reserve rooms is to use the on-line link to the hotel on-line reservation system from the conference hotel registration web page: http://www.ieee-uffc.org/2005fcs/hotel.htm.

PLEASE NOTE THAT THE ROOM RATE IS POSTED IN CANADIAN CURRENCY.

Reservations can also be made by fax (1 604 689 3707) or phone by calling 1 888 421 1442 (North America only) or 1 604 683 1234. Reservations must be made by mentioning the IEEE IFCS PTTI Meeting in order to get discounted rates.

The cutoff date for all reservations is August 7th, 2005. Any reservation made after this cutoff date will only be honored on a space available basis. Check-in time at the Hyatt Regency Vancouver is 4:00 p.m. and check-out time is Noon. Individual reservations may be canceled without penalty 24 hours prior to the date of arrival.

Parking at the hotel is $24.00 (Canadian) per day. Parking garages are available at rates which vary from day to day.

Symposium Registration Information

Registration Fees

Each Symposium participant must register and receive a badge. The badge must be worn to gain admission to the technical sessions and the exhibit area. You will save time and money by registering in advance.

IEEE Member Fees

The advanced registration fee for IEEE members is $425 US for registrations received NO LATER THAN 12 August 2005. After 12 August, the registration fee for IEEE Members is $475 US.

Non-Member Fees

The advanced registration fee for Non-Members, received prior to 12 August 2005 is $450 US. After 12 August, the registration fee for Non-Members is $500 US.

In order for attendees to receive the reduced rate for advanced registration, payment must be submitted with the advanced registration form. The registration fee entitles the registrant to admission to the technical sessions (but not the Tutorials), the exhibits, the refreshment breaks, two lunches, (Monday and Tuesday, 29 & 30 August) the Vendor Reception (Monday evening), the Welcoming Reception (Tuesday evening) and a CD containing the Proceedings of the Symposium. Proceedings will be mailed to attendees a few months after the Symposium.

One Day Registration

In addition, those individuals who wish to register for one day only may do so for a fee of $240 US. Lunch is available for $30 US per day. Proceedings are available on CD at $100 US.

Student/Retiree Fees

The registration fee for FULL-TIME students and FULL-TIME retirees is $70 US; this includes admission to the technical sessions (but not the Tutorials), the exhibits, the refreshment breaks, two lunches, (Monday and Tuesday, 29 & 30 August) the Vendor Reception (Monday evening), the Welcoming Reception (Tuesday evening) and a CD containing the Proceedings of the Symposium.

Life Members

IEEE Life Members may register at no charge. Lunch is available for $30 US per day. Proceedings are available on CD for $100 US.

Guests

Guests are welcome to join attendees at the lunches provided at a cost of $30 US per day and to attend the Welcoming Reception on Tuesday evening at $35 US each.

Deadline for Advance Registration is 12 August 2005.

NOTE

The registration fee is fully refundable up to five business days before the Symposium/Tutorials. After that date, there will be a service charge of $50 US. Refunds will not, however, be issued once the Symposium and/or Tutorial begins. Attendee substitutions may be made at any time.

Transportation and Tour Information

We have partnered with Uniglobe Advance Travel - a leading travel management company located in Vancouver, Canada to provide inbound airfare to Vancouver for the symposium as well as providing pre and post vacation opportunities for our delegates.

Uniglobe GUARANTEES the lowest published airfare to Vancouver by placing each request through their airfare technology that searches at least 30 airlines and websites as well as offering their own negotiated inbound rates to ensure the best value. Contact Uniglobe Advance Travel for the best airfares to Vancouver.

Extend your stay in beautiful British Columbia or Set Sail for an Exciting Cruise Vacation

Alaska Cruise Vacations - Vancouver is your departure point for the exciting Alaska Cruise programs. Sail away from Vancouver to experience the most breathtaking landscapes in the world/

The Whistler Excursion - hike, bike and explore the Coastal Mountains of British Columbia.

The Victoria Getaway - relax in this intimate, sophisticated destination and capital city of British Columbia.

Contact Uniglobe Advance Travel at (888) 221-5221 or email airdesk@uniglobe-advance.com to receive the best rates on air travel and to arrange your pre or post symposium travel.

Plenary Session Speaker

MEMS Technology for Timing and Frequency Control

Clark T.-C. Nguyen
DARPA/MTO

The performance of our electronic systems is generally limited by the accuracy and stability of the clocks or frequency references they use. Unfortunately, our best clocks and frequency references are often too large or consume too much power to be used in portable applications. This forces us to keep our best electronic systems on tabletops and out of the hands of users, who must then access them through sometimes unreliable remote channels. Indeed, a technology capable of miniaturizing and lowering the power consumption of our best timekeepers and frequency references would be most welcome.

In this regard, Micro Electro Mechanical Systems (MEMS) technology, with its ability to shrink mechanical features and mechanisms down to micron (and even nano) scales, already provides substantial size and power reduction for applications spanning wireless communications, sensors, and fluidic systems, and is now emerging to provide similar advantages for frequency and timing references.

In particular, vibrating micromechanical resonator devices based on silicon micromachining technologies have now been achieved with frequency-Q products exceeding 2.75e13, temperature stability better than 18 ppm over 25 to 125 oC, and aging stabilities better than 2 ppm over 1 year. They have also been embedded into oscillator circuits to achieve phase noise performance satisfying GSM specifications for reference oscillators. In addition, a combination of MEMS and microphotonic technologies have now achieved 10 cubic centimeter complete atomic clocks consuming less than 200mW of power, while still attaining Allan deviations better than 5e-11 at 100 s. Continued MEMS-based scaling of such devices that take advantage of compressed control time constants and lower heating power consumption is expected to soon yield complete atomic clocks in less than 1 cubic centimeter, consuming less than 30mW of power, while retaining an Allan deviation of 1e-11 at 1 hour.

This presentation will describe not only how MEMS technologies have achieved the above, but also what other capabilities it might enable for timing and frequency control in the coming years.

Dr. Clark T.-C. Nguyen is the Program Manager of the Micro Power Generation (MPG), MEMS Exchange (MX), RF Microelectromechanical Systems (RF MEMS), Harsh Environment Robust Micromechanical Technology (HERMIT), Radio Isotope Micro Power Sources (RIMS), Micro Gas Analyzers (MGA), and Chip-Scale Atomic Clocks (CSAC) Programs in the Microsystems Technology Office of DARPA.

Dr. Nguyen received the B.S., M.S., and Ph.D. degrees from the University of California at Berkeley in 1989, 1991, and 1994, respectively, all in Electrical Engineering and Computer Sciences. In 1995, he joined the faculty of the University of Michigan, Ann Arbor, where he is presently on Leave from an Associate Professor position in the Department of Electrical Engineering and Computer Science.

From 1995 to 1997, he was a member of the National Aeronautics and Space Administration (NASA)'s New Millennium Integrated Product Development Team on Communications, which road mapped future communications technologies for NASA's use into the turn of the century.

During his period with the University of Michigan, his technical interests focused upon microelectromechanical systems and included integrated vibrating micromechanical signal processors and sensors, merged circuit/micromechanical technologies, RF communication architectures, and integrated circuit design and technology. He has more than 72 publications and holds 12 patents on this subject matter.

In his faculty position, Dr. Nguyen received the 1938E Award for Research and Teaching Excellence from the University of Michigan in 1998, an EECS Departmental Achievement Award in 1999, the Ruth and Joel Spira Award for Outstanding Teaching in 2000, and the University of Michigan's Henry Russell Award in 2001. Together with his students, he received the Roger A. Haken Best Student Paper Award at the 1998 IEEE International Electron Devices Meeting for work on the first micromechanical mixler: a device capable of both low-loss mixing and filtering for communications in a single passive micromechanical structure.

In 2001, Dr. Nguyen founded Discera, Inc., a company aimed at commercializing communication products based upon MEMS technology, with an initial focus on the very vibrating icromechanical resonators pioneered by his research in past years. He served as Vice President and Acting Chief Technology Officer (CTO) of Discera from 2001 to mid-2002.

Student Paper Competition

Abstracts submitted by students for the Student Paper Competition have been reviewed by the Joint Technical Program Committee.

Selection criteria are:

- Student is first author.
- Work is of high quality and done by the student.
- Abstract clearly describes the work and includes results.
- Student has not won the student prize previously.

At the time of judging the judges will evaluate:

- Clarity of student's presentation.
- Depth of student's knowledge.
- Degree of the student's contribution to the project.
- Relevancy of the work to the field.

Student Poster Finalists - 2005

Prizes will be given for one paper in each of the following areas of the Technical Program. The Student paper finalists are:

Group 1: Materials and Resonators

Drive Level Dependency in Piezoelectric Resonators
by Mihir Patel, Yook-Kong Yong, Masako Tanaka, Tsutomu Imai

Self-Switching Vibrating Micromechanical Filter Bank
by Sheng-Shian Li, Yu-Wei Lin, Zeying Ren, Clark T.-C. Nguyen

Vibrating Micromechanical Resonators with Solid Dielectric Capacitive-Transducer "Gaps"
by Yu-Wei Lin, Sheng-Shian Li, Zeying Ren, Clark T.-C. Nguyen

Group 2: Oscillators, Synthesizers, and Noise

Novel Design of an All-Cryogenic RF Pound Circuit
by R. Basu, G. J. Dick, R. T. Wang

Sapphire resonators+SiGe transistors based ultra low phase noise oscillators
by Rodolphe Boudot, Sebastien Gribaldo, Vincent Giordano, Olivier Llopis

Optical Links for Ultra Low Phase Noise Microwave Oscillator Measurement
by Bertrand Onillon, Stéphanie Constant, Olivier Llopis

Group 3: Atomic and Optical Standards and Time Keeping

A Solid-State Atomic Frequency Standard
by Christopher White, Ali Hajimiri

Optimization of FM and AM Pumping light for CPT Resonances at High Buffer Gas Pressure
by A. Post, Y.Y. Jau, F. Gong, N.N. Kuzma, W. Happer

High Precision Laser Spectroscopy with Femtosecond Frequency Combs
by Daniel Farkas, Gerald Gabrielse

Group 4: Sensors and Transducers

High-frequency Bulk Acoustic Resonant Microbalances in Liquid
by Hao Zhang, Wei Pang, Eun Sok Kim

The Study of Interaction of Superhydrophobic Materials with Fluids using TSM Sensors
by Sun Jong Kwoun, C. Jeffrey Brinker, Richard Craincross, Pratik Shah, Ryszard Lec

Implementation of Orthogonal Frequency Coded SAW Devices using Apodized Reflectors
by Derek Puccio, Don Malocha, Nancy Saldanha

Combination of TSM and AFM for Investigating an Interfacial Interaction of Particles with Surfaces by Qiliang Zhang, Johann Desa, Ryszard Lec, Guoliang Yang, Kambiz Pourrezaei

2005 Frequency Control - PTTI Tutorials

This year the Tutorials will be held on Sunday, August 28th from 8:15AM until 5:45PM. Our tutorial leaders have been selected from among the best experts in the world. The tutorial presentations are designed for newcomers to the field, as well as containing state-of-the-art material for experienced practitioners desiring to keep up-to-date. The attendance at each tutorial will be recognized with Continuous Education Units (CEUs) to help maintain the Professional Engineer (PE) License. We look forward to your participation.

A single registration fee will allow attendees to participate in the Tutorials, in all of the sessions, and includes lunch as well as morning and afternoon refreshment breaks, and a CD containing copies of the tutorial presentations.

The advanced registration fee for IEEE members and non-members is $225 US, if received no later than 12 August, and $250 US for on-site registration. The registration fee for FULL-TIME students and FULL-TIME retirees is $50 US. All registration fees MUST BE PAID IN US DOLLARS. In order to receive the reduced rate, you must submit your payment with your registration form.

A limited number of additional copies of the instructional material (CD only) will be available at a cost of $75 US at the registration desk.

Tutorials on the Web

The slides from previous tutorial presentations may be viewed http://www.ieee-uffc.org/fc.

Tutorial Session1A - Optical Schemes for Generation of Spectrally Pure Microwave Signals

Lute Maleki, Jet Propulsion Laboratory, USA

Optical schemes have been recently developed to effective-

ly meet the challenge of spectrally puree signal generation in the microwave domain. This is a growing area of interest associated with a general desire to develop high performance communications and radar systems at frequencies in the range of 10 to 100 GHz.

In this tutorial a review of various schemes for generation of ultra-high spectrally pure microwave signals will be made. The aim is to discuss various approaches, and identify the strengths and shortcomings of each scheme. The tutorial will be self-contained; no familiarity will optical schemes will be assumed.

Lute Maleki is a principle member of the technical staff and the Technical Group Supervisor of the Quantum Sciences and Technology Group at JPL. His current research interest include ion confinement and trapped ion frequency standards, development of laser-cooled atom traps, study of various aspects of the physics of frequency standards, photonics reference frequency generation and distribution, investigations of the noise and stability properties of rf and optical frequency sources, and test of fundamental laws of physics using atomic clocks. He received his B.S. in Physics from the University of Alabama in 1969 and his Ph.D. in Experimental Atomic Physics in 1975 from the University of New Orleans (Louisiana State Universities). Dr. Maleki is a member of the American Physical Society, and the Optical Society of America and a Fellow of the IEEE.

Tutorial Session 1B - Introduction to Quartz Frequency Standards

John R. Vig, US Army Communications-Electronics RDEC, USA

The subject of quartz frequency standards will be reviewed. Emphasis will be on those aspects, which are of greatest interest to users (as opposed to designers). The discussion will include:

- crystal resonator and oscillator basics;
- the characteristics and limitations of temperature compensated crystal oscillators (TCXOs) and oven controlled crystal oscillators (OCXOs);
- oscillator instabilities: aging; noise; and the effects on frequency stability of: temperature, acceleration, radiation, warm-up, pressure, magnetic field, and the oscillator circuitry;
- guidelines for oscillator comparison, selection and specification.

A preview of this tutorial can be found on the web at: http://www.ieee-uffc.org/fc

John R. Vig was born in Hungary in 1942. He immigrated to the United States in 1957, received the B.S. degree in physics from the City College of New York in 1964, and the M.S. and Ph.D. degrees from Rutgers - The State University, New Brunswick, NJ in 1966 and 1969, respectively. Since 1969 he has been employed as a research scientist and program manager in a US Army research laboratory, working primarily on the experimental aspects of frequency control devices. He has published more than 100 papers and book chapters, and has been awarded 54 patents.

John was President of the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S) in 1998-99, and was also the founding President of the IEEE Sensors Council. In 1988, John was elected a Fellow of the IEEE "for contributions to the technology of quartz crystals for precision frequency control and timing." He received the 1990 IEEE Cady Award "for outstanding contributions to the development of improved quartz crystals and processing techniques..." He was the UFFC-Society's Distinguished Lecturer for 1992-93, served as the General Chairman from 1982 to 1988 of what is now the IEEE Frequency Control Symposium. He was Chair of the Symposium Technical Program Committee in 2002; he has served as a member of the Committee since 1972. He has also served on the Technical Program Committee of the IEEE Ultrasonics Symposium since 1986. He was twice elected to the IEEE UFFC-Society Administrative Committee, for the 1986-89, and 1995-98 terms. He was awarded the UFFC-S' highest award, the Achievement Award, in 2001. He served on the Board of Directors of the IEEE in 2002-2003, and was elected to serve as the 2005 Vice-President for IEEE Technical Activities.

Tutorial Session 1C - Time and Frequency Transfer

Judah Levine, National Institute of Standards & Technology (NIST), USA

Tutorial Session 2A - Phase Noise I: PM and AM Noise Measurement Techniques

Craig Nelson, National Institute of Standards & Technology (NIST), USA

Part II describes the practical aspects of phase and amplitude noise measurements. Basic measurements as well as advanced measurement techniques will be discussed. The use of PM and AM noise standards and wide-band modulators for system calibration is discussed. Two channel systems for AM and PM noise measurements that have noise floors approaching -195 dBc/Hz will be described.

Craig Nelson received his BSEE from the University of Colorado in Boulder in 1990. After working in the optical disk market and co-founding SpectraDynamics, he joined the staff at the Time and Frequency Division of the National Institute of Standards and Technology. He has worked on synthesis and control electronics, as well as software for both the NIST-7 and F1 primary frequency standards. He is presently involved in research and development of ultra-stable synthesizers, low phase noise electronics, and phase noise metrology. Current areas of research include high-speed pulsed phase noise measurements and phase noise metrology in the 100 GHz range. He has published over 20 papers and frequently presents tutorials on the practical aspects of high-resolution phase noise metrology.

Tutorial Session 2B - Passive Atomic Frequency Standards

Len Cutler, Agilent Laboratories, USA

This tutorial will cover much of the basic physics and electronics of passive atomic frequency standards. Particular attention will be paid to the design aspects that affect the accuracy and frequency stability of the standards and ways to optimize the performance. The cesium atomic beam standard will be treated in the most detail.

Leonard S. Cutler received the PhD degree in theoretical physics from Stanford University in 1966. He has been heavily involved in the theory and design of atomic frequency standards and precision quartz oscillators since 1957. His present position is Distinguished Contributor, Technical Staff, Agilent Laboratories.

Tutorial Session 2C - The Role of Time and Frequency in GPS

Joe White, Naval Research Lab, USA

The Global Positioning System is best known as a navigation system that will also do time dissemination. Those who know GPS will tell you that it is really a time comparison system that can do navigation. Precise clocks are the heart of GPS. Ranges from the GPS satellites to the user receivers are based on precisely measuring the time difference between the receiver's clock and the GPS satellite clock.

This tutorial will present GPS first as a history of the technology that has made it work and then describe the critical time and frequency elements of the system as it is today with some projections on the future.

Joe White has been involved in the development of the Global Positioning System since the beginning of the Joint Program in 1973. He has been involved in the development, testing, and monitoring of clocks in GPS blocks I, II, IIA, IIF. He is currently working on the development of a digital rubidium clock for GPS III.

Tutorial Session 3A - Phase Noise II: PM and AM Noise Measurement Techniques

Enrico Rubiola, Universite' Henri Poincare', France

The measurement of the phase noise of radiofrequency and microwave devices is a relevant issue in time and frequency metrology and in some fields of electronics, physics and optics. Special attention is given to two-port components because they impact on oscillators, and because their low noise is difficult to measure. While phase noise is the main concern, amplitude noise is often of interest. The highest sensitivity is achieved with the interferometric method, which consists of amplification and synchronous detection of the noise sidebands after suppressing the carrier by vector subtraction of an equal signal. The interferometer can also be regarded as an AC bridge in which the fluctuation of the zero point is amplified and detected.

A substantial progress has been made in understanding the flicker noise mechanism and the noise reduction by correlation, which results in new schemes that improve the sensitivity by 20-30 dB upon the previous interferometers. These schemes also feature closed-loop carrier suppression control, simplified calibration, high immunity to electromagnetic pollution, and low microphonicity.

At the state of the art, a 100 MHz noise measurement systems exhibits a residual noise as low as dBrad^2/Hz at 1 Hz off the carrier, in favorable conditions, and in real-time measurements. Exploiting correlation and averaging, the sensitivity exceeds dBrad^2/Hz at 1 Hz. A residual noise of dBrad^2/Hz at 250 Hz off the carrier has been obtained, which is equivalent to a ratio of with a frequency spacing of 2.5E-6. The noise floor is limited by the averaging capability of the correlator, and ultimately by thermal uniformity rather than by the absolute temperature. The above results have been obtained in a relatively unclean electromagnetic environment, without using a shielded chamber, and without controlling the room temperature.

Applications include the measurement of the properties of materials and the observation of weak flicker-type physical phenomena. For demonstration purposes, it has been measured the flicker noise of a by-step attenuator (dB[rad^2]/Hz at 1 Hz), of a reactive power divider based on a ferrite transformer (dB[rad^2]/Hz at 1 Hz), and of some microwave circulators (-160 to -170 dB[rad^2]/Hz at 1 Hz, extrapolated from 10 Hz measurements). These measurements, out of reach for other techniques, have been made without need of correlation. While ultimate sensitivity may be difficult to achieve for technical reasons, methods are simple and easy to understand. The talk covers interferometric method, calibration strategies, correlation techniques, low flicker schemes, and examples.

Enrico Rubiola is professor of electronics at the Université Henri Poincaré (ESSTIN and LPMA) Nancy, France, and guest researcher at the Dept. LPMO of the FEMTO-ST Institute, Besançon. Prof. Rubiola has worked on various topics of electronics and metrology, namely, navigation systems, time and frequency comparisons, atomic frequency standards, and gravity. His main fields of interest are precision electronics and phase noise metrology, which include frequency synthesis, high spectral purity oscillators, photonic systems, and noise. In the domain of phase noise, he has developed a new generation of instruments with ultimate sensitivity in both the white and flicker regions of the Fourier spectrum.

Tutorial Session 3B - Microelectromechanical Systems (MEMS) for Frequency and Timing References

Clark T.-C. Nguyen, DARPA/MTO, USA

Microelectromechanical systems (MEMS) technology harnesses micro-scale miniaturization to affect the same scaling advantages of faster speed, lower power consumption, lower cost, and smaller size, enjoyed for decades by transistor

electronics, but for devices with mechanical operating principles. Devices based on microelectromechanical systems (MEMS) technology have now found their way into numerous commercial applications, from pressure sensors for blood pressure monitors, to accelerometers for automobile air bag deployment, to mirror arrays for high resolution laptop projectors. Recent advances in micromechanical vibrating resonator technology that have yielded tiny on-chip devices that resonate at GHz frequencies with Q's 10,000 now create new opportunities for precise, low-noise frequency shaping and generation where massive numbers of high-Q resonators can be used to attain unprecedented robustness, sensitivity, and power economy for portable wireless devices. And as these devices make their way into products, research efforts aimed at applying to MEMS technology towards even better portable timing stability are presently underway. In particular, work towards chip-scale atomic clocks has now achieved physics packages in volumes less than 10 mm3, yet still with stabilities on the order of 3x10-10 at 1s, and all this still very early in the DARPA program fueling this research.

This course presents an overview of the mechanical devices and associated technologies expected to play key roles in making available tiny, truly portable frequency and timing references for future communications, GPS, and sensing applications. It begins with reviews on the fabrication technologies that make MEMS possible, then proceeds to cover in succession: (1) vibrating micromechanical resonator development over the years; (2) micromechanical resonator oscillators; (3) micromechanical filters; and (4) the latest in progress on chip-scale atomic clocks.

Dr. Clark T.-C. Nguyen is the Program Manager of the Microelectromechanical Systems (MEMS), Micro Power Generation (MPG), Chip-Scale Atomic Clock (CSAC), MEMS Exchange (MX), Harsh Environment Robust Micromechanical Technology (HERMIT), Micro Gas Analyzers (MGA), and Radio Isotope Micropower Sources (RIMS) Programs in the Microsystems Technology Office of DARPA. Dr. Nguyen received the B.S., M.S., and Ph.D. degrees from the University of California at Berkeley in 1989, 1991, and 1994, respectively, all in Electrical Engineering and Computer Sciences. In 1995, he joined the faculty of the University of Michigan, Ann Arbor, where he is presently on Leave from an Associate Professor position in the Department of Electrical Engineering and Computer Science. From 1995 to 1997, he was a member of the National Aeronautics and Space Administration (NASA)'s New Millennium Integrated Product Development Team on Communications, which road mapped future communications technologies for NASA use into the turn of the century. During his period with the University of Michigan, his technical interests focused upon micro electromechanical systems and included integrated vibrating micromechanical signal processors and sensors, merged circuit/micromechanical technologies, RF communication architectures, and integrated circuit design and technology. He has more than 92 publications and holds 16 patents on this subject matter. In his faculty position, Dr. Nguyen received the 1938E Award for Research and Teaching Excellence from the University of Michigan in 1998, an EECS Departmental Achievement Award in 1999, the Ruth and Joel Spira Award for Outstanding Teaching in 2000, and the University of Michigan's Henry Russell Award in 2001. Together with his students, he received the Roger A. Haken Best Student Paper Award at the 1998 and 2003 IEEE International Electron Devices Meeting's for work on the first micromechanical mixler: a device capable of both low-loss mixing and filtering for communications in a single passive micromechanical structure; and for work on the extensional wineglass micromechanical ring resonator, capable of vibrating at GHz frequencies with Q's in the 1,000's. In 2001, Dr. Nguyen founded Discera, Inc., a company aimed at commercializing communication products based upon MEMS technology, with an initial focus on the very vibrating micromechanical resonators pioneered by his research in past years.

He served as Vice President and Acting Chief Technology Officer (CTO) of Discera from 2001 to mid-2002.

Tutorial Session 3C - SAW Identification Marks and Sensors

Clemens Ruppel, EPCOS AG, Germany

In the recent years wireless SAW sensors and identification tags have come under notice with a growing number of publications and applications. In this tutorial the operating principles of wireless passive SAW based identification marks and sensors are reviewed. The whole radio sensor system consists of a read-out unit, comparable to an RADAR device, and a passive transponder, consisting of a surface acoustic wave (SAW) device wired to an antenna. The surface acoustic wave stores the read-out signal for a predefined period of time to suppress all environmental echo interferences. Physical or chemical effects may influence the propagation characteristics of the surface acoustic wave. Two fundamental devices allow storing and modulating of surface acoustic waves: the resonator, and the uniform or chirped delay line.

In this tutorial, the transponder setup using a reflective delay line, resonator, or impedance sensor is discussed in detail, as well as the setup of the read out unit using a pulse or FMCW radar. Special emphasis is set on the achievable accuracy and on the sensitivity range. Several applications of such sensor systems and their state-of-the-art performance is presented by way of examples which include identification marks and wireless measurements of temperature, pressure, torque, acceleration, tire-road friction, magnetic field, and water content of soil. A discussion of other resonant structures which also could be used in a passive transponder system will close the tutorial.

Clemens C.W. Ruppel was born in Munich, Germany, in 1952. In 1978 he received the Diploma in mathematics

from the Ludwig-Maximilians University of Munich, Germany. Afterwards he has participated in research projects, solving mathematical problems related to bio chemistry and power plant safety. In 1981 he joined the micro-acoustics research group at Siemens AG as a doctorate student. In 1986 he received his Ph.D. degree for works on the design of surface acoustic waves (SAW) filters from the Technical University of Vienna, Austria. In 1984, he became member of the micro-acoustics group at the Corporate Research and Development of Siemens AG in Munich. In 1990, he became Group Manager. He was responsible for the development of software for the simulation and synthesis of SAW filters. In 2001, he joined the surface acoustic wave R&D group of EPCOS AG. Since 1991, he has been a member of the Technical Program Committee of the IEEE Ultrasonics Symposium, and since 1997 of the IEEE Frequency Control Symposium. In 2000 he has become an elected committee member of the IEEE UFFC AdCom, in 2003 he became VP Ultrasonics. In 2002 he became chair of the Technical Committee MTT-2 (Microwave Acoustics). He has been a voting member of IEEE 802.11a/b. He has been a member of Sociéte Chronométrique de France. His research interests include all SAW related subjects, especially the design of bandpass filters, dispersive transducers, low-loss filters, and mathematical procedures and algorithms needed for the design and simulation of SAW devices. He is author/co-author of approximately 70 papers (including 9 invited papers) on the design and simulation of SAW filters, and sensors based on SAW devices. He has been editor of two books "Advances in Surface Acoustic Wave Technology, Systems and Applications, Volume 1&2".

Tutorial Session 4A - Optical Measurement & Synthesis

Thomas Udem, Max Planck Institute, Germany

Tutorial Session 4B - Time Scales and Algorithms

Patrizia Tavella, Istituto Elettrotecnico Nazionale, Italy

Time Scales: keeping time and the new most demanding applications. The tutorial will deal with the definition and realization of a time scale as a system for timekeeping, but also it will consider the new demanding applications such as satellite systems and telecommunication networks where the mathematical model of the clock errors and their statistics are fundamental information.

Patrizia Tavella, degree in Physics and Ph.D. in Metrology, is now with the Istituto Elettrotecnico Nazionale, Torino, Italy in the Time Metrology Dept. Her main interests are mathematical and statistical models mostly applied to atomic time scale algorithms and to the uncertainty evaluation of atomic clock measurements. She is involved in the European project Galileo for the development of a satellite navigation system and she chairs the CCTF WGs on TAI and on Algorithms.

Tutorial Session 4C - Digital Measurement of Precision Oscillators

Samuel R. Stein, Timing Solutions Corp., USA

This tutorial reviews the subject of digital measurements of clocks and oscillators. It focuses primarily on the precision measurement of phase and the use of these measurements in estimating phase and frequency and common statistics such as the Allan deviation and the spectral density of phase. The subject matter includes direct counting, interpolating counters, dividers, heterodyne conversion, and dual-mixer systems. Biases in the measurements caused by aliasing and measurement quantization are evaluated. Analog techniques, which are used primarily to evaluate phase noise, are covered in a related tutorial.

Samuel R. Stein is founder and President of Timing Solutions Corporation, a company that specializes in real-time applications and that provides timing systems to National Laboratories, DoD programs such as GPS, and Government Prime Contractors. He has developed ultra high precision time measurement, generation and distribution systems and is an internationally recognized leader in time and frequency measurement methods and the ensembling of clocks. He was previously Technical Director at Ball Corporation (Efratom Division) and Time and Frequency Division Chief at the National Bureau of Standards (NIST). Dr. Stein has more than 48 publications and eight patents.

Posters

There will be two Poster Sessions at this year's symposium from 3:30 – 5:30 pm on Monday 29 August and Tuesday 30 August, respectively.

Organizing Committee

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Tutorial Chair

Debra Coler
Technical Program Committee Administrator.

Technical Program Committee

Sustenance before decisions

Steve Jefferts

Debra Coler and Tom Wehner

Sam Stein, Steve Jefferts and Robert Lutwak

Paul Koppang

Hard at work

(foreground) Chris Ekstrom, (l – r) Gary Johnson, Ray Filler, John Prestage and Joe White. If this were baseball, what would these signals mean?

Mike Driscoll, John Vig, Don Malocha, Gary Johnson, Ray Filler, John Prestage, Sheila Faulkner, Joe White, Chris Ekstrom, Kurt Gibble, Paul Koppang

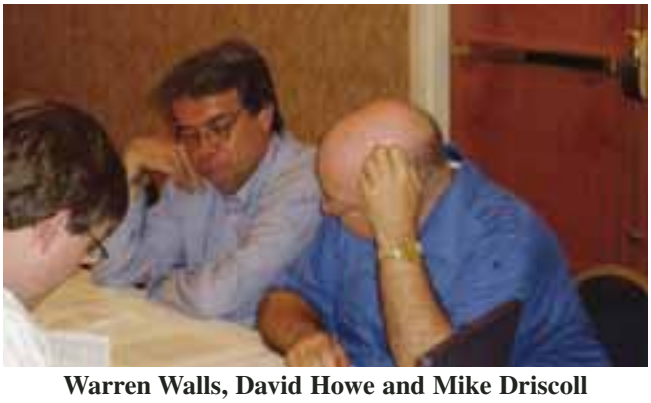
Chris Ekstrom, Kurt Gibble, Paul Koppang, and Debra Coler. Another baseball signal or something odious?

(clockwise) Marvin Frerking, David Howe, Mike Driscol, Warren Walls' back

Bill Hanson, Jackie Hines, Ryzard Lec, George Maronich

Shih Chuang and Alvin Kong

Jackie Hines and Bill Hanson



Warren Walls, David Howe and Mike Driscoll

(foreground) Gary Johnson and Ray Filler (background) Don Malocha and Jackie Hines

Bernardo Jaduszliwer, Eric Burt, Bob Tjoelker, Chris Ekstrom, Robert Lutwak, Clark Wardrip

TPC Co-Chair	Chris Ekstrom	
TPC Co-Chair	BobTjoelker	
Group 1 Vice-Chair	Gary Johnson	
Group 2 Vice-Chair	Warren Walls	
Group 3 Vice-Chair	Bernardo Jaduszliwer	
Group 4 Vice-Chair	Ryszard Lec	
Group 5 Vice-Chair	Butch Tysinger	
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Arthur Ballato	U.S. Army CECOM RDEC	Group: 1
Martin Bloch	Frequency Electronics Inc.	Group: 2 or 3
Jean-Simon Boulanger	Inst. of National Meas. Standards National Research Council of Canada	Group: 3
Canon Bradley	Retired	Group: 5
Remi Brendel	Directeur des Etudes ENSMM FRANCE	Group: 1&2
Eric Burt	Jet Propulsion Laboratory	Group: 3
Shih S. Chuang	Statek Corp.	Group: 1
Leonard Cutler	Agilent Laboratories	Group: 3
Andrea DeMarchi	Politecnico di Torino ITALY	Group: 3
Michael Driscoll	Northrop Grumman Corp.	Co-General Chair
Bernard Dulmet	Ecole Nationale Superieure de Mécanique et des Microtechniques FRANCE	Group: 1
Errol Eernisse	Quartzdyne, Inc.	Group: 1, 5
Christopher Ekstrom	U.S. Naval Observatory	TPC Co-Chair
Jeremy K.A. Everard	University of York	Group 2
Eva S. Ferre-Pikal	University of Wyoming	Group: 2
Raymond Filler	US Army CERDEC	Group: 1
Hugo Fruehauf	FEI-Zyfer Inc.	Group: 2
Peter Fisk	National Measurement Laboratory CSIRO Division Of Telecommunications and Industrial Physics, AUSTRALIA	Group: 3
Marvin Frerking	Innovative Technology Products	Group: 2
Michael Garvey	Symmetricom, TRC	Group: 3
Kurt Gibble	Department of Physics Penn State University	Group: 3
G. Eric Hague	Mtron PTI, Inc.	Group: 1
William P. Hanson	Hanson Technologies, Inc.	Group: 4
Ken-ya Hashimoto	Dept. Elec. & Mech. Eng. Faculty of Eng., Chiba University	Group: 2
Jackie Hines	J.H. Hines Consulting	Group: 4
Dave Howe	NIST	Group: 2
Bernardo Jaduszliwer	The Aerospace Corporation, M/S M2-238	Group: 3 Chair
Steven Jefferts	NIST	Group: 3
Gary Johnson		Group: 1 Chair
Fabien J. Josse	Marquette University	Group: 4
Vladimir A. Klipov	Sawyer Research Products, Inc.	Group: 1
Alvin Kong	Northrop Grumman Corp.	Group: 1
Paul Koppang	USNO	Group: 3
Shigeru Kurosawa	National Institute of Advanced Industrial Science and Technology (AIST)	Group: 1
Jack Kusters	Retired	Group: 1, 5
Stephen Lea	National Physical Laboratory	Group: 3
Ryszard Lec	Drexel University	Group: 4 Chair
Ralf Lucklum	Otto-von-Guericke-Univ. Magdeburg	Group: 4
Robert Lutwak	Symmetricom	Group: 3
Lute Maleki	Jet Propulsion Laboratory	Group: 3
Donald Malocha	University of Central Florida	Group: 1

George Mansfeld	Institute of Radioengineering and Electronics RAS RUSSIA	Group: 1
George Maronich	QTech Corp.	Group: 3
Eishi Momosaki	Technocreatives Corporation JAPAN	Group: 1
Gary Montress	Raytheon Research Division	Group: 2
David Morgan	Impulse Consulting	Group: 2
Bernd Neubig	Germany	Group: 2 (and 1B)
Thomas O'Brian	NIST	Group: 3
Shin-ichi Ohshima	National Metrology Institute of Japan (NMIJ)	Group: 3
Thomas Parker	NIST	Group: 3
Guy Portnoff	Quartz Pro AB	Group: 1
John Prestage	Jet Propulsion Lab	Group: 3
Leo Reindl	Lab. Electrical Measurement Technique GERMANY	Group: 4
Victor Reinhardt	Raytheon Space and Airborne Systems	Group: 2
Enrico Rubiola	ESSTIN - LPMI - Universite Henri Poincare	Group: 2
Clemens Ruppel	EPCOS AG GERMANY	Group: 4 & 1
Lara Schmidt	Rand Corporation	Group: 3
Jesse Searls	Poseidon Scientific Instruments Pty. Ltd WESTERN AUSTRALIA	Group: 2
Ken Senior	NRL	Group: 3
George Shaton	Computer Sciences Corporation	Group: 3
Marco Siccardi	SKK Electronics	Group: 3
Samuel Stein	Timing Solutions Corp.	Group: 3
Dan Stevens	Vectron International	Group: 1
Pierre Thomann	Observatoire Cantonal	Group: 3
Robert Tjoelker	Jet Propulsion Laboratory	TPC Co-Chair
Michael Tobar	The University of Western Australia	Group: 2
Dmitry Tsarapkin	MPEI RUSSIA	Group: 2
Butch Tysinger	Agilent Technologies	Group: 5 Chair
John Vig	U.S. Army Communications	Group: 1 & 2
Yakov L. Vorokhovsky	RUSSIA	Group: 1 & 2
Warren Walls	Lockheed Martin Space Systems	Group: 2 Chair
Clark Wardrip	NRL/SFA, Inc.	Group: 3
Yasuaki Watanabe	Tokyo Metropolitan University	Group: 1 or 2
Joseph White	U.S. Naval Research Laboratory	Co-General Chair
Andy Wu	The Aerospace Corporation	Group: 3

2005 IEEE International Ultrasonics Symposium

2005 IEEE International Ultrasonics Symposium
18 – 21 September 2005
Rotterdam, The Netherlands

Special Notes

Location: De Doelen Conference Centre
Date: 19 August 2005

Tutorials and Short Courses: 18 August 2005
- Deadline for hotel registration: 17 August 2005
- Deadline for Early Conference Registration: 1 August 2005
- http://www.ieee-uffc.org/2005/

A Welcome from the General Chair

Welcome to Rotterdam

It is indeed a pleasure to welcome you to the 2005 IEEE International Ultrasonics Symposium. It will be held in Rotterdam, The Netherlands from September 18 through September 21, 2005.

The conference will be held in "De Doelen", a conference centre at Rotterdam Central Railway Station, which is at a 40-minute train ride from Schiphol, Amsterdam International Airport. It is a modern, very well equipped conference centre that is perfectly suited for conferences around 1000 delegates.

Rotterdam is a multicultural city that has an interesting mixture of traditional and modern architecture. It has many museums, covering art, natural history, cultural anthropology, maritime life and many other topics with art collections ranging from Dutch masters through African sculptures to contemporary art. All museums are within easy walking distance from the conference centre. Rotterdam hosts the largest port in the world and both the river and the harbor create a special atmosphere in the city. The Pilgrim fathers started their journey from the Pilgrims' church in the harbor of Rotterdam and Hotel New York, the cruise terminal of the Holland America Line. The main historic cruise line between the USA and Europe can also be found here.

Other than the museums and historic sites Rotterdam has an extensive cultural and sports program. At the Doelen the grand finale of the Gergiev festival of the Rotterdam Philharmonic Orchestra will be given the night before the IEEE conference. The final of the World Championship Baseball will be on the same evening in the Neptunus stadium, the home of the European champion and if Feyenoord, one of the top 3 soccer teams of the Netherlands plays a home match we will try to arrange tickets for delegates. Please check the conference website for details.

It will be the third visit to Europe for the IEEE International Ultrasonics Symposium, and we trust that the Rotterdam conference in 2005 will be as successful as the Cannes conference in 1994 and the Munich conference in 2002.

Hope to meet you all in Rotterdam.

Best Regards,
Ton van der Steen
General Chair

An Invitation from the Technical Chair

On behalf of the Technical Program Committee (TPC), I would like to invite you to join us at the 2005 IEEE International Ultrasonics Symposium to be held 18th-21st September in Rotterdam, The Netherlands.

This year we had 876 abstract submissions. This is approximately 100 submissions more than submitted in both of the previous two years. In order to accommodate this growth, we have added an additional parallel oral session that is shared among the different subgroups that make up the overall symposium. At the time of writing, accepted abstracts have been determined and the schedule has been planned. This required an intensive period of Technical Program Committee review activity leading up to the TPC meeting held on 18th and 19th June 2005 in Chicago, IL. The acceptance rate was approximately 75% and is in line with historical levels. In particular, we have observed significant growth in Sensors and Physical Acoustics this year. This is likely a function of the physical location of the conference (i.e. Europe) where the balance of medical related versus non medical related funding is more even than is found in North America, for example. A similar trend can also be observed in the distribution of abstracts at the successful 2002 Munich conference.

In line with previous years, we have held the total length of the conference to one day of short courses and a full three days of six oral sessions in parallel and three large poster sessions, without a single gap anywhere in the program. In view of the increased number of parallel sessions, I ask that all concerned (speakers and session chairs) keep the conference strictly on time.

We have 19 eminent invited speakers providing a range of talks spanning a historical review of a famous scientist (Lord Rayleigh) to overviews of exciting and new technical growth areas. We will also continue our tradition of holding a student poster competition. These posters will remain on display for the entire conference. The winners of the competition will each receive a certificate, a $100 cash prize, and a commemorative laser-etched UFFC “crystal”.

Regards,
John A. Hossack
2005 IEEE Ultrasonics Symposium Technical Chair

Hotel Information

A local conference organizing agency, het Congresbureau, will take care of the bookings for hotel accommodation.

Special price arrangements have been made with several hotels in Rotterdam. In order to avoid disappointment, early booking is advised. Rooms are on request and availability basis only. Prices are in Euro (¤), breakfast and V.A.T. are included, but city-tax (5.5%) is not included.

How to book a room

You can book a room in one of the hotels mentioned below by faxing the registration form you can download from the Conference website (http://www.ieee-uffc.org/2005/). Hotels can be booked with this form until the 17th of August 2005. After this date you can book your hotel room directly at the hotel.

After receipt of your registration, het Congresbureau will send you a letter of confirmation. Please note that you fill in your credit card details. Hotel booking without credit card is not possible.

The reservation form will be used as a guarantee for booking. You will pay the hotel costs directly to the hotel. In case you want to make alterations in this definite hotel booking, het Congresbureau will charge your credit card for ¤ 15, an administration cost per change.

Cancellation rules

For cancellations of hotel reservations before 7 of August, 2005 a cancellation fee of ¤ 30 will be charged. For cancellations received after that date, the fee for the first night has to be paid. For every received cancellation of the hotel reservation or even single nights received after the 28 of August 2005 the hotel is entitled to charge 100% cancellation fee. Cancellations have to be sent in writing to Erasmus MC, het Congresbureau, mrs. S. Dijkstra (cb 236), P.O. Box 1738, 3000 DR, ROTTERDAM, fax +31 10 40 89 462, e-mail: s.dijkstra@erasmusmc.nl.

Prices

Hotels	Stars	Single room	Double room
The Westin	*****	€ 195,00	€ 235,00
Hilton*	*****	€ 165,00	€ 185,00
Golden Tulip Inntel	****	€ 169,00	€ 169,00
Bilderberg Parkhotel	****	€ 165,00	€ 190,00
Best Western Pax	****	€ 105,00	€ 125,00
NH Atlanta	****	€ 95,00	€ 110,00
Euro Hotel	***	€ 88,00	€ 99,00
Hotel Emma*	***	€ 80,00	€ 100,00
StayOkay (budget)	**	Dormitory:	€ 24,25

VAT and breakfast are included in the hotel prices. City-tax (5.5%) is not included in the hotel prices. Booking period from the 17th until the 21th of September (check out date 21th of September)
* Only available from the 18th of September

The Westin Rotterdam (*****)
The Westin Rotterdam is the city's newest luxury address, located in the heart of the financial district, adjacent to Holland Casino and the upscale Plaza shopping centre. The Westin Rotterdam's accommodations reflect a commitment to luxury and modern conveniences. Congress Centre 'de Doelen' is connected by a skywalk to the hotel.
www.westin.com

Hilton Hotel Rotterdam (*****)
The Hilton Rotterdam is located in the heart of the main business, entertainment and shopping area and is the ideal location when travelling to Rotterdam. The hotel is located at 10 minutes walking distance to the Rotterdam Railway Station and Congress Centre 'De Doelen'.
www.hilton.com

Golden Tulip Hotel Inntel (****)
This is the only hotel in Rotterdam where almost all rooms have a view of what Rotterdam really is all about: the largest and most spectacular harbour in the world. The underground is at 10 meters distance for direct connections to the Rotterdam Railway Station and 'De Doelen'.
www.hotelinntel.com

Bilderberg Parkhotel (****)
The Bilderberg Parkhotel Rotterdam is centrally located next to the Museum Park, within 15 minutes walking distance of the railway station. This makes it an ideal location for anyone on a business trip to the city as Rotterdam's business area is also within walking distance.
www.bilderbergparkhotel.nl

Best Western Pax Hotel (****)
A completely renovated hotel which is known for its friendly atmosphere and personalised service. Centrally located, and 15 minutes' walk to the shopping centre, theatres, cinemas, congress and concert centre 'De Doelen' and numerous excellent restaurants. Easy access by public transportation.
www.bestwestern.nl

NH Atlanta Rotterdam (****)
The NH Atlanta Rotterdam dates from the 1930's and is located midtown Rotterdam, in the business district (the hotel is just in front of the World Trade Centre) as well as the shopping areas and the city's famous drinking spots are very close to the hotel. The Rotterdam Railway Station is within 15 minutes walking distance from the hotel.
www.nh-hotels.com

Eurohotel (***)
Eurohotel Centrum Rotterdam is an international 3*** hotel directly located in the commercial and cultural centre of the most dynamic harbour city in the world. The hotel is conveniently located in the vicinity of the World Trade Centre, Congress Centre 'De Doelen' (10 minutes walk), Holland Casino and adjacent to the inner city shopping and cultural district.
www.eurohotelcentrum.nl

Hotel Emma (***)
Hotel Emma is perfectly situated in the city centre of Rotterdam (10 minutes walk from the Central Train Station). Because of the central location of the Emma Hotel, all the cultural, culinary, business and tourist facilities in Rotterdam are within walking distance.
www.hotelemma.nl

StayOkay (**)
Stayokay Rotterdam is located at the heart of the city. You'll find everything you need there. A friendly Brasserie and a non-smoking lounge where you can take a breather from the bustling city centre. Meet visitors from all over the world in the bar or over a game of pool. The hostel has a private back yard, a great place to relax when the weather's nice. This hostel you have to book directly at the accommodation.
www.stayokay.com (for bookings)

Conference Registration Information

To take advantage of the reduced advance registration fees, the registration form found at http://www.ieee-uffc.org/2005/pdf/regform/.pdf must be returned before 1 August 2005.

Registration Fees

The registration fee includes a CD Proceedings. Early Registration prices are shown; the prices for IEEE Member

and Non-IEEE Member registration will both increase by $100 after 1 August 2005

Advance registration closes on August 18. Please register onsite after this date.

IEEE member:	(Before 23 July)	$425
Non-IEEE member:	(Before 23 July)	$525
Student:		$ 60
Retiree:		$ 60
Life Member:		$ 0
One Day Registration:	(no Proceedings)	$300

Proceedings

Additional CD-ROM Proceedings	$ 75

UFFC CD Archive

The UFFC CD Archive is available to UFFC Members only for $60.

Short Course Registration

Participants may select from nine short courses. The registration fee per course is:

Member/non-Member	$150
Student/Retiree	$ 50

Guest Registration

Guest Registration (Adults Only)	$ 35
Guest Tour 1: Historic Delft	$ 60
Guest Tour 2: Typical Dutch	$ 60
Guest Tour 3: Architecture Tour	$ 60

Conference Dinner Party

Attendees and Guests	$ 50
Students	$ 10

Destination Rotterdam

Rotterdam

Rotterdam has the largest port of Europe, the second city and the industrial heart of the Netherlands and the economic, social and cultural center of the Rijnmond ('Rhine Estuary') region. In addition, Rotterdam is a city of modern architecture, events, leisure and recreation. More than one million people from 162 countries live in the Rotterdam region. Rotterdam was founded in the mid 13th century and received municipal rights in 1340. Over the centuries Rotterdam grew from a fishing village into an international center of trade, transport, industry and distribution. At the beginning of the Second World War, on 14 May 1940, virtually the entire city center was devastated by a bombardment. This explains why there are scarcely any pre-war buildings in this part of Rotterdam. After the war, reconstruction of what had been destroyed was given the highest priority. Now, sixty years later, a new, modern city center has risen from the ashes. The avant-garde architecture is famous at home and abroad.

For more information on the city of Rotterdam you can visit the tourist information website.

More information on The Netherlands can be found at the web site www.holland.com

Symposium site

The symposium will be held at the Congress Center "De Doelen", Rotterdam, The Netherlands. "De Doelen" is located in the center of Rotterdam surrounded by many architectural interesting buildings, museums, hotels and restaurants and is on walking distance from Rotterdam Central Railway Station.

De Doelen Concert and Congress Center
Kruisstraat 2, Rotterdam
The Netherlands
Tel: + 31 10 217 18 21
Fax: + 31 10 433 22 37
Website: www.dedoelen.nl.

Transportation

By air

From Schiphol Airport (main airport) in Amsterdam there is a direct train connection to Rotterdam Central Railway Station (every half hour). The traveling time is approximately one hour. See www.ns.nl for the time table. It is advised to travel through Schiphol, however it is also possible to travel to Rotterdam Airport. The center of Rotterdam can be reached in about 15 minutes by car (A13) and by public transport (bus 33).

By train
From Rotterdam Central Railway Station it is a 3 minute walk to the Congress Center.

By taxi
Transport by taxi is quite expensive in the Netherlands. A ten-minute ride in the city, will cost between € 10 and € 15 and a transfer from Schiphol Airport to Rotterdam Center costs about € 125.

Parking
De Doelen has its own underground parking (Parking Schouwburgplein). In close distance another thousand covered parking spaces are available: Parking Plaza (underneath shopping center Plaza, entrance Kruisstraat) and Parking Weena (opposite De Doelen, entrance Karel Doormanstraat)

Language
The official language is English. Simultaneous translation will not be provided.

Currency
The currency used in The Netherlands is the Euro (€), for which the exchange rate is approximately 1 Euro = $ 1.30 (March 2005).

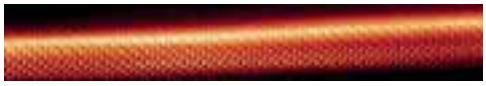
Climate
The Netherlands has a maritime climate and the weather in September is usually sunny, although it could rain as well. The average temperature is around 10 - 19 degrees Celsius. See for the current weather forecast www.qwikcast.com

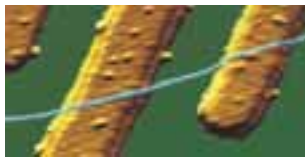
Plenary Session

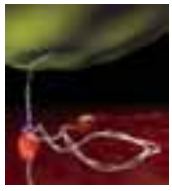
Nanoscience, From Single-Molecule Science to Applications

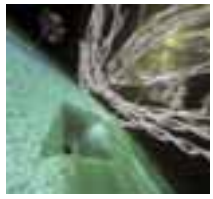
Cees Dekker
Delft University of Technology
Kavli Institute of NanoScience
Lorentzweg 1, 2628 CJ Delft,
The Netherlands
http://www.mb.tn.tudelft.nl/

This talk will give a broad introduction and overview of nanoscience and nanotechnology. I will illustrate the excitement and potential of this emerging field by focusing on a number of examples, in particular carbon nanotubes for nanoelectronics and single-molecule techniques for biophysics of DNA-enzyme interactions.









Prof.dr. Cees Dekker (1959) is a professor in Molecular Biophysics at the Technical University Delft. His research takes place at the boundaries of nanotechnology, biology and physics. His work in carbon nanotubes is most famous, but his current interests have diverted to nanotechnology of living cells. He published more than 130 peer reviewed papers, of which more than 20 in Nature en Science. In 2003 he was appointed as a member of the Royal Dutch Academy of Arts and Sciences. Dekker received several honours and awards, including the 2001 Agilent Europhysics Prize, the 2003 Spinoza Award of the Netherlands Organization for Scientific Reasearch and an honorate doctorate in Diepenbeek, Belgium. Further information can be found on: www.mb.tn.tudelft.nl/user/dekker/index.html.

Student Paper Competition

The 2005 IEEE International Ultrasonics Symposium will include a Student Poster Competition. All students who submitted abstracts were invited to also submit their papers for this competition. The awards consist of a certificate, $100 USD, and a commemorative laser etched UFFC “crystal”.

During the June Technical Program Committee (TPC) meeting a total of 18 students were selected as finalists for the Student Poster Award. Three finalists were selected in each of the TPC Groups except Group1 where six finalists were selected.

These finalists will join the final competition at the 2005 Symposium and receive special accommodation during the Symposium. The six winners (1 from each of Groups 2 to 5, and 2 from Group 1 (Medical Imaging) will be selected by an independent judging committee. The Student finalist posters will be on display for the duration of the conference and may also be presented as an oral presentation during the symposium.

Selection criteria
- Student is first author.
- Work is of high quality and done by the student.
- Abstract clearly describes the work and includes results.
- Student has not won the student prize previously.

Final Judging Criteria
- Clarity of student's presentation.
- Depth of student's knowledge.
- Degree of the student's contribution to the project.
- Relevancy of the work to the field.

Student Paper Finalists

Congratulations to the following the student paper finalists. All finalists will present a poster for display beginning Monday 19 September 2005, which is also the day for judging. The number following the "PS-xx" indicates that the student will also be responsible for an oral presentation later in the conference.

Medical Ultrasonics

PS-1 R. Libgot , F. Ossant, Y. Gruel, F. Patat High Frequency Ultrasound Characterization of the Blood Clotting Process: Intra- and Inter-Individual Variations.

PS-2/2H-1 S. Baldwin, M. Yang, K. Marutyan, K. Wallace, M. Holland, J. Miller. Ultrasonic Detection of the Anisotropy of Protein Cross Linking in Myocardium

PS-3/6G-5 J. Hansegard, S. Urheim, E. Steen, H. Torp, B. Olstad, S. Malm, S. Rabben. Detection of the Myocardial Boundary in the Left Ventricle from Simultaneously Acquired Triplane Ultrasound Images Using Multi View Active Appearance Motion Models.

PS-4/1D-2 Y. Li, Z. Yang, B. A. French, J. A. Hossack. 3D Perfusion Mapping in the Intact Mouse Heart after Myocardial Infarction using Myocardial Contrast Echocardiography.

PS-5/1G-1 R. Booi, P. Caron, R. Erkamp, H. Xie, A. Kapur, G. Lecarpentier, M. Roubidoux, J. Fowlkes, M. O'Donnell. Applying In Vitro Elasticity Imaging Results to Optimize In vivo Breast Lesion Characterization Using a Combined 3D US/Digital X-Ray System.

PS-6/1F-4 M. Urban, G. Silva, R. Kinnick, M. Fatemi, J. Greenleaf. Stress Field Formation for Multifrequency Vibro-Acoustography.

Sensors, NDE & Industrial Applications

PS-7/3F-3 W. Pinkham, L. French, D. Frankel, and J. Vetelino. A Lateral Field Excited Acoustic Wave Pesticide Sensor.

PS-8/3H-5 L. Denisova, R. Maev, F. Rusanov, A. Denisov, E. Bakulin, D. Gavrilov, F. Severin, G. Grayson. Morpho-Mehcanical Analysis of the Dentin-Cement Interface Strength Using a Scanning Acoustic Microscope.

PS-9/3E-5 J. Martinsson, J. E. Carlson. Parametric Modeling of Wave Propagation in Gas Mixtures-A System Identification Approach.

Physical Acoustics

PS-10/4H-3 A. Volatier, G. Caruyer, E. Defay, D. Pellissier Tanon, P. Ancey, B. Dubus. Intermediate Frequency Resonators Using Lamb Waves Co-Integrated with Bulk Acoustic Wave Resonators.

PS-11/4J-4 M. Araz, A. Lal. Calibration of Acoustic Radiation Pressure Field Inside Microchannels Using Microparticle Zeta Potential Measurement.

PS-12/4I-6 D. Olivier, T. Nicolas, D. Yves, P. Philippe, P. Vladimir, M. Alain. Cantilever Resonance Induced in Situ by Magnetostriction for Active Flow Control.

Surface Acoustic Waves

PS-13/5E-4 J. Meltaus, V. P. Plessky, and S. S. Hong. Double-Resonance SAW Filters.

PS-14/5F-1 T. Kenny, M. P. da Cunha. Identification of New LTO VPSAW Orientations Considering Finite Thickness Electrodes.

PS-15/5D-4 S. Cular, V. Bhethanabotla, D. Branch. Hexagonal SAW Devices for Enhanced Sensing.

Transducers & Transducer Materials

PS-16 M. Nakazawa, T. Kosugi, K. Nakamura, S. Ueha, A. Maezawa, Y. Hirao. A High Frequency Variable Focus Ultrasonic Transducer Using Polyurea Thin Film.

PS-17/4G-2 D. Yeh, O. Oralkan, I, Wygant, M. O'Donnell, B. Khuri-Yakub. 3-D Ultrasound Imaging Using Forward-Viewing CMUT Ring Arrays for Intravascular and Intracardiac Applications.

PS-18/6E-1 R. O. Guldiken, F. L. Degertekin. Analysis and Design of Dual-Electrode Capacitative Micromachined Ultrasonic Transducers.

Short Courses

Short Courses will again be featured at this year's symposium. They will be presented on Sunday 18 September 2005.

1 - Medical Ultrasound Transducers

8 -12 am

Douglas G. Wildes & L. Scott Smith

GE Global Research Center - Niskayuna, NY, USA

This course will provide an introduction to the design, fabrication, and testing of medical ultrasound transducers. Starting from an overview of the basic types of phased-array transducers (linear, convex, sector), we will discuss how the design for a probe is derived from its target application and how equivalent-circuit, finite-element, and acoustic field

models can be used to optimize the design and accurately predict performance. A discussion of the structure of an ultrasound probe will lead to a survey of the different types of materials used in probes and their critical properties. Typical fabrication processes will be introduced and common problems in probe manufacturing will be summarized. Methods for evaluating completed transducers will be discussed. The course will highlight recent developments in probe technology, including. single crystal piezoelectrics, cMUT transducers, multi-row and 2D arrays, and electronics in probes, and will discuss performance advantages and fabrication difficulties which may be associated with each.

Douglas G. Wildes is a physicist with GE Global Research. He earned an A.B. in physics and mathematics from Dartmouth College and a Ph.D. in low-temperature physics from Cornell University, then joined GE in 1985. Since 1991, Dr. Wildes' research has focused on aperture design, fabrication processes, and high-density interconnect technology for multi-row and 2D transducers for medical ultrasound. Dr. Wildes has 19 issued patents and 18 external publications. He is a member of the American Physical Society and a Senior Member of the IEEE.

L. Scott Smith is a physicist with GE Global Research. He earned B.S. and Ph.D. degrees in physics from the University of Rochester and the University of Pennsylvania respectively. Joining GE in 1976, he developed phased array probes for medical ultrasound. More recently, he examined novel probe materials and led projects on pediatric endoscopes and adaptive acoustics. Dr. Smith has 37 issued patents and over 35 refereed publications. He is a member of the American Physical Society and a Senior Member of the IEEE where he serves as Vice Chair for Transducers on the Ultrasonics Symposium's Technical Program Committee.

2 - Elasticity Imaging: Principles, Systems, Approaches and Applications

8 -12 am

Stanislav Emelianov
University of Texas - Austin, Texas, USA

Elasticity imaging is rapidly evolving into a new diagnostic and treatment-aid tool. The primary purpose of this course is to provide both a broad overview and comprehensive understanding of elasticity imaging, and, as such, it is well suited for both newcomers and active researchers in the field. Starting with a historical introduction to elasticity imaging, we begin to lay a foundation for static and dynamic approaches in elasticity imaging with a brief discussion of theory of elasticity including both the equation of equilibrium and the wave equation. We will also review the mechanical properties of soft tissues. Then, experimental aspects of elasticity imaging will be discussed with emphasis on data capture, signal and image processing algorithms to measure internal tissue motion induced by either internally or externally applied forces. Motion tracking methods will be introduced, and techniques to increase and optimize signal-to-noise ratio in strain imaging will be overviewed. Finally, techniques to map elasticity and other mechanical properties of tissue will be presented and discussed. Following an overview of elasticity imaging, the ultrasound elasticity imaging techniques and their biomedical and clinical applications will be presented. Advantages and limitations of each approach will be discussed and contrasted with other elasticity imaging techniques such as MRI or optical elastography. The course will conclude with overview of several experimental and commercial systems capable of ultrasound elasticity imaging, and discussion of current and potential clinical applications of elasticity imaging.

Stanislav Emelianov received the B.S. and M.S. degrees in physics and acoustics in 1986 and 1989, respectively, from the Moscow State University, and the Ph.D. degree in physics in 1993 from Moscow State University, and the Institute of Mathematical Problems of Biology of the Russian Academy of Sciences, Russia. In 1989, he joined the Institute of Mathematical Problems of Biology, where he was engaged in both mathematical modeling of soft tissue biomechanics and experimental studies of noninvasive visualization of tissue mechanical properties. Following his graduate work, he moved to the University of Michigan, Ann Arbor, as a post-Doctoral Fellow in the Bioengineering Program, and Electrical Engineering and Computer Science Department. From 1996 to 2002, Dr. Emelianov was a Research Scientist at the Biomedical Ultrasonics Laboratory at the University of Michigan. During his tenure at Michigan, Dr. Emelianov was involved primarily in the theoretical and practical aspects of elasticity imaging. Dr. Emelianov is currently an Assistant Professor of Biomedical Engineering at the University of Texas, Austin. His research interests are in the areas of medical imaging for therapeutics and diagnostic applications, ultrasound microscopy, elasticity imaging, photoacoustical imaging, cellular/molecular imaging, and functional imaging.

3 - Ultrasound Contrast Agents: Theory and Experimental Results

8 -12 am

Nico de Jong & Michel Versluis
Erasmus MC - Rotterdam, the Neth. & University of Twente - Enschede, the Neth.

The course consists of 6 mean topics:

a) First an overview will be presented of the (clinical and pre-clinical available) contrast agents, including the properties and characteristics of the gas inside the bubble and the shell surrounding it.
b) Models of the behavior of small bubbles in a ultrasound field will be discussed. Simple models based on a one dimensional mass-spring system and more complicated models including gas and shell properties.
c) Experimental ultrasound methods for UCA will be presented for characterizing the bubbles in a UCA, like harmonic and subharmonic scattering, absorption and attenuation. Also the influence of ambient pressure, temperature and gas concentration will be discussed.
d) Experimental optical methods for characterizing individual bubbles.

e) Imaging methods for contrast agents, like fundamental, harmonic, subharmonic and superharmonic and multi-pulse methods like pulse inversion, power modulation etc. and new methods like chirp excitation.
f) Ultrasound mediated drug delivery: Interaction between mammalian cells and ultrasound in the vicinity of bubbles will be discussed.

Nico de Jong graduated from Delft University of Technology, The Netherlands, in 1978. He got his M.Sc. in the field of pattern recognition. Since 1980, he has been a staff member of the Thoraxcenter of the Erasmus University Medical Center, Rotterdam, The Netherlands. At the Dept. of Biomedical Engineering, he developed linear and phased array ultrasonic probes for medical diagnosis, especially compound and transesophageal transducers. In 1986 his interest in ultrasound applications shifted toward the theoretical and practical background of ultrasound contrast agents. In 1993 he received his Ph.D. for "Acoustic properties of ultrasound contrast agents." Currently he is interested in the development of 3-D transducers and fast framing camera systems. De Jong is the project leader of STW and FOM projects on ultrasound contrast imaging and drug delivery systems. Together with Folkert ten Cate, MD, he is organizer of the annual European Symposium on Ultrasound Contrast Imaging, held in Rotterdam and attended by approximately 175 scientists from all over the world. Since 2003 Nico de Jong is part-time professor at the University of Twente.

Michel Versluis graduated in Physics in 1988 at the University of Nijmegen, the Netherlands, with a special interest in Molecular Physics and Astrophysics. Later, he specialized in the application of intense tunable UV lasers for flame diagnostics resulting in a successful defense of his PhD thesis in 1992. Michel Versluis is now a lecturer at the University of Twente, the Netherlands, in the Physics of Fluids group working on the experimental study of bubbles and jets in multiphase flows and granular flows. He also works on the use of microbubbles as a tool for medical diagnosis and therapy. Dr. Versluis teaches various courses in Fluid Mechanics, one of them focusing on the physics of bubbles.

4 - Recent Trends in Beamformation in Medical Ultrasound

1 - 5 pm

Kai Thomenius
General Electric's Corporate R&D - Niskayuna, NY, USA

The goal of this introductory course is to review the design of ultrasound front ends and beamformers from a linear systems point of view including transduction, beamformation, and image formation functions. We will discuss analytical methods used in developing the design of a typical beamformer in use in diagnostic ultrasound today. The key points to be covered deal with methods of analysis of arrays and beamformers, the interaction of transmit and receive beams with clinically relevant targets, and how this interaction is used in image formation. The means by which these analytical methods contribute to a beamformer design and the trade-offs involved are reviewed. The techniques developed for such analysis will be applied to topics of current interest involving beamformation such as system miniaturization, 2D arrays, synthetic aperture techniques, and aberration correction.

Kai E. Thomenius is a Chief Technologist in the Imaging Technologies Organization at General Electric's Global Research facility in Niskayuna, NY. His focus is on Ultrasound and Biomedical Engineering. Previously, he has held senior R&D roles at ATL Ultrasound, Inc., Interspec Inc., Elscint, Inc., Inc as well as several other ultrasound companies, and is currently an Adjunct Professor in the Electrical, Computer, and Systems Engineering Department at Rensselaer Polytechnic Institute where he teaches a course in general imaging. Dr. Thomenius' academic background is in electrical engineering with a minor in physiology; all of his degrees are from Rutgers University. His long-term interests have been in ultrasound beamformation and miniaturization of ultrasound scanners, propagation of acoustic waves in inhomogeneous media such as tissue, the potential of bioeffects due to those acoustic beams, and determination of additional diagnostic information from the echoes that arise from such beams. Recently he has contributed to work on coherent beamformers in millimeter wave radar applications. He is a Fellow of the American Institute of Ultrasound in Medicine.

5 - Micromachined Ultrasonic Sensors and Actuators

1 - 5 pm

Ville Kaajakari, Amit Lal, and Richard White
Cornell University - Ithaca, NY & University of California - Berkeley, CA

Part A: The goal of this part is to introduce the fundamentals of micromachining, and the way they affect the design and performance of ultrasonic sensors and actuators. We will cover established micromachining techniques, such as bulk micromachining and surface micromachining on silicon. Material on thin film deposition and foundries will be presented. The relevant acoustic and ultrasonic properties of materials used in MEMS will be discussed for predictable device design. Nonlinearities, material property gradients, and internal stresses will be covered to describe their effect on design.

Part B: Case studies of sonic MEMS will be presented. These include (1) electrostatic actuation of micromachined membranes, nonlinearities and effective electromechanical coupling, (2) comparison of PZT and thin-film piezoelectric actuation of silicon bulk and surface micromachined structures (silicon horn design, microphones, speakers, flexural plate waves, FBARS), and (4) nonlinear ultrasound in microfluidic devices, and (5) Micro resonators for RF communications.

Amit Lal is an associate professor of electrical and computer engineering at Cornell University. He received his Ph. D. in electrical engineering from the University of California, Berkeley in 1996, and the B.S. degree from the California Institute of Technology in 1990. Amit Lal is the leader of the

SonicMEMS group at Cornell University, which focuses on ultrasonics, micromachining, modeling of piezoelectric systems, use of radioactive energy sources in microsystems, and design and analysis of integrated circuits. He has published papers on ultrasonic sensors and actuators at conferences in ultrasonics and micromachining. He serves on the Technical Committee on Physical Acoustics in the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society. He holds patents on micromachined acoustic sources/receivers, and silicon-based high-intensity ultrasonic actuators. He is also the recipient of the NSF CAREER award for research on applications of ultrasonic pulses to MEMS.

Richard M. White is a professor of EECS and a founding co-director of the Berkeley Sensor & Actuator Center at the University of California at Berkeley, Dick White has concentrated on ultrasonics and microsensors. He has published on thermoelastic wave generation, SAW transduction, and flexural plate-wave sensors. He has co-authored three books - a text for freshmen, a book on solar cells, and the reference book "Acoustic Wave Sensors". White is a member of the National Academy of Engineering, and has received awards for his contributions to ultrasonics from the IEEE and the Ultrasonics and Frequency Control societies of the UFFC. His present research interests include ultrasonic airborne particulate monitoring and wireless passive proximity metering of AC power use in dwellings.

Ville Kaajakari received his M.S. and Ph.D. degrees in electrical and computer engineering from the University of Wisconsin-Madison in 2001 and 2002, respectively. He is currently Senior Research Scientist at VTT Information Technology, Finland, where his research interest is RF-MEMS.

6 - Clinical Applications of Diagnostic Ultrasound

1 - 5 pm

Folkert ten Cate and Juiry W. Wladimiroff
Erasmus MC - Rotterdam, the Netherlands

The goal of this introductory course is to review the clinical applications of ultrasound imaging in cardiology. The presentation will be illustrated with realtime 2D and 3D Echoimages.

Folkert J ten Cate MD is director of the clinical echolaboratory of the Thoraxcenter , Erasmus MC in Rotterdam.His main interest is in cardiomyopathies and ultrasound contrast both for diagnosis and treatment. He is a Fellow of the American College of Cardiology and the European Society of Cardiology.

Professor **Juiry W. Wladimiroff** was born in The Hague. He graduated from the school of medicine in Leiden in 1965 and was Board certified in Obstetrics and Gynecology in 1972. After some initial endeavours, Wladimiroff soon went down to London to study with Professor Stuart Campbell at the Postgraduate Institute at the Queen Charlotte's Hospital. In the late 1970s he field tested Organon Teknika's original real-time equipments from the Netherlands (in collaboration with Nicolaas Bom, the original inventor) and demonstrated the usefulness of the MiniVisor in the rapid measurement of the biparietal diameter at the bedside. His research at Queen Charlotte's started with the measurement of fetal urinary production rate, which he continued to expand after returning to the Netherlands, looking at fetal urinary production under a variety of physiological and pathological situations. From then on Professor Wladimiroff became particularly interested in the physiology and patho-physiology of pregnancy and the fetus and his group was very productive in researches pertaining to fetal cardiology, fetal vascular and cerebral function and fetal blood flow as assessed by doppler velocimetry. In 1974, he received his PhD at the University of Nijmegen with a thesis on fetal monitoring. In 1973, he started work as a consultant at the department of obstetrics and gynecology of Erasmus University Rotterman at Dijkzigt Hospital; in 1977, he was appointed reader at this department, and in 1980 full professor. Since 1984, he was head of the division of prenatal diagnosis and since 1996, when the two divisions were merged, head of the division of obstetrics and prenatal diagnosis at Rotterdam University Hospital. In 1981, his group reported fetal left ventricular volume determination from a study of two-dimensional measurement of real-time ultrasonic images of the left ventricle. Their group was the first to describe doppler studies of the middle cerebral arteries and the carotid carteries, and popularizing the carotid artery/ umbilical artery PI ratio for the assessment of fetal compromise. Professor Wladimiroff was the President of the Dutch Society of Obstetrics and Gynecology from 1993 to 1995 and was the Chairman of the National Liason Committee for Medical Research Committees in the Netherlands. He has organized numerous National and International Scientific meeetings and Symposia and was the Chairman of the Education Committee of the International Society for Ultrasound in Obstetrics and Gynecology (ISUOG). He is also a board member of the Society of the "Fetus as a Patient" and executive board member of the European Board and College of Obstetrics and Gynecology and has carried out visitations in departments from Slovenia to Portugal. Professor Wladimiroff has produced over 300 important scientific papers and contributed to over 20 books and monographs. He is well regarded by his colleagues as a great teacher and investigator. Since 1977, he has supervised 25 PhDs on many different aspects of prenatal diagnosis, of obstetrical, gynecological and Doppler ultrasound, and of fetal monitoring. His PhD students came from Holland, Switzerland, Britain, Indonesia and Austria. In recognition of his contributions to the advancement of ultrasound in Obstetrics and Gynecology, he was presented the Ian Donald Gold Medal by the ISUOG in 1997. In 1999 he received the Gold Medal from the Drs. Haackert Foundation for "Lifetime Achievements in the field of Prenatal Diagnosis and Therapy".

7 - Non-linear Acoustics and Harmonic Imaging

6 - 10 pm

Victor Humphrey
Southampton University - Southampton, UK

This course will provide an introduction to the origins of non-linear propagation, and its consequences and applications in medical ultrasound.

The first section will review the basic physics of non-linear propagation, and discuss the propagation of plane waves as a means of introducing non-linear acoustics terminology. This will be followed by a discussion of the techniques used to numerically model non-linear propagation and the specific problems of performing measurements in high amplitude fields with their associated distortion and harmonic content.

The effects of diffraction and attenuation on non-linear propagation will then be introduced by considering the fields of transducers and arrays, and the fields they generate in tissue; this will be illustrated by a combination of experimental results and model predictions. This will lead on to a discussion of the consequences for medical ultrasound of non-linear propagation. Finally the application to harmonic imaging will be described.

Victor Humphrey is a Professor of Acoustics at the Institute of Sound and Vibration Research (ISVR) in Southampton, U.K. He received his BSc and PhD degrees from the University of Bristol in 1975 and 1981 respectively. He then moved to the School of Physics at the University of Bath where was promoted to Senior Lecturer. In 2004 he took up his current position at ISVR. His initial research was in the area of laboratory applications of non-linear parametric arrays in underwater acoustics. For this work he was awarded the Institute of Acoustics A.B. Wood Medal 1988. Subsequently he helped to develop a research programme on the non-linear propagation of ultrasound in medical fields that investigated these fields both numerically and experimentally. He was awarded the University of Bath Mary Tasker Award for excellence in teaching in 1995.

8 - Finite Element Modelling of Ultrasound Applications

6 - 10 pm

Paul Reynolds
Weidlinger Associates Inc - Los Altos, USA

Finite Element Modelling (FEM) of ultrasound devices has been growing since its early use in the late 1980s and early 1990s. It is now common, and likely soon to be universal, to find industrial and academic groups with a significant ultrasound research component to utilize computer simulations of one form or another in their work. While the researchers are experts in their own field of ultrasound, they rarely have such extensive knowledge of the field of finite element modelling and consequently often have difficulty in making appropriate choices and decisions regarding their modelling needs and approach. It is the aim of this course to educate the ultrasound expert in the important considerations with regards to the finite element modelling of ultrasound applications, with particular emphasis on phenomena occurring in front of the transducer. By the end of the course, it is our intention that the attendees will have the basic information on finite element simulations, and several common but varied applications, with which to make informed decisions in regards to simulating their own particular problems, and therefore make best use of the resources available to them. The course will be divided in four parts.

Part 1: Finite Element Basics
The first section will involve an introduction to the field of finite element modelling, in order to ensure that all participants are aware of the basic assumptions inherent in the various modelling approaches. Common terminology, types of analysis (harmonic, transient etc), types of solution methods (implicit, explicit), types of numerical solver (direct, iterative), and typical boundary conditions, such as symmetry and infinite element (e.g. absorbers and PML), validation and verification methods will be detailed.

Part 2: Wave Propagation
The second section will concentrate on the modelling of wave propagation through various media. Initial consideration will be given to the simple, linear, elastic cases and then moving to include the effects of long distance propagation, material discontinuities, frequency dependant attenuation, and non-linearity (such as is prominent in higher-harmonic imaging).

Part 3: Ultrasound Applications
The third section will consider a variety of ultrasound applications. This includes accidental or intentional tissue heating (such as with HIFU). Appropriate and accurate calculation of thermal generation (sometimes called the Bioheat Equation) and its application as a load to a thermal model will be detailed. Aspects of ultrasound/thermal coupling will be compared to acoustic radation force calculation, which bear significant resemblance in approach.

Part 4: Efficient Application of Modelling Software on Available Hardware
The ability to economically answer the questions posed often marks the difference between a successful and a failed project. We cover simple and effective approaches for ensuring maximum return on time invested in FEM, and important considerations for ensuring sufficiently accurate answers. This will then extend to discussion of numerical optimization techniques, and the relative costs compared to the potential benefits considered. We will discuss common computer architectures, the 32 to 64 bit transition, and multi-processing, in order to leave the potential user somewhat more comfortable in this rapidly changing and bewildering field.

Paul Reynolds received B.Eng in Electrical and Mechanical Engineering from the University of Strathclyde, Scotland, in 1994, and Ph.D in 1998 for his work on finite element modelling of piezoelectric transducers. Since 1999 he has worked at WAI using the PZFlex finite element package to model a wide range of ultrasound and piezoelectric applications, including medical imaging, therapeutics, SONAR, and sensors.

John Mould received B.Sc. and M.Sc. in Civil Engineering from Virginia Tech in 1978 and 1979 respectively. He received a Ph.D. in Civil Engineering from the University of Colorado in 1983. Since joining WAI in 1983 he has been an analyst and a major contributor to the

development of the entire FLEX family of codes for Nonlinear Solids, Acoustics, Thermal, Piezoelectric and Electromagnetic analyses.

9 - Flow Measurements and Doppler

6 - 10 pm

Hans Torp

Norwegian University of Science and Technology - Trondheim, Norway

This course provides basic understanding of physical principles and signal processing methods for flow measurements and visualization; with emphasis on Doppler methods and blood flow applications. The course starts with an overview of currently used techniques for velocity estimation in pulsed and continuous wave Doppler and color flow imaging. Statistical models for the received signal, as well as commonly used velocity and flow estimators are developed. Several different simulation methods for ultrasound signals from moving blood and clutter signals will be discussed. This includes fast simulation methods, as well as full 3D point scatter models using spatial impulse response techniques or k-space analysis. Efficient simulation tools to explore estimator properties are derived, and examples on implementation in Matlab will be shown. Methods to suppress clutter signals from slowly moving targets, including regression filter will be discussed. Elements from classical estimation theory will be applied to develop minimum variance velocity estimators in the presence of clutter noise. The performance will be compared with commonly used approaches for clutter rejection and velocity estimation, and practical implementations will be discussed. Velocity components transversal to the ultrasound beam can not be measured by Doppler techniques. However, several approaches to overcome this limitation has been proposed, including speckle tracking, transit time measurements, and lateral beam modulation. Principples and practical limitations will be discussed. Methods for visualisation of 2D vector flow information will be shown.

Hans Torp received the MS degree in mathematics in 1978, and the Dr. Techn. degree in electrical engineering in 1992; both from the University of Trondheim, Norway. Since 1980 he has been working with ultrasound technology applied to blood flow measurements and imaging at the university of Trondheim, in cooperation with GE-Vingmed Ultrasound. He is currently professor of medical technology at the Norwegian University of Science and Technology, and has since 1987 given courses on ultrasound imaging and blood flow measurements for students in electrical engineering and biophysics. His research interests includes statistical signal- and image processing with applications in medical ultrasound imaging.

Conference Dinner Party

On Tuesday Evening 20 September this years Conference dinner party will be at a very special location:

Welcome on board the OCEANDIVA; Europe's biggest event ship.

On board you will have dinner, drinks and entertainment!

All ingredients for this grand cruising event are in place. We sail off and you will be talking, eating and dancing while the city passes by.

All delegates and guests are cordially invited to join this cruise. This event is highly subsidized for all delegates and for students there is only a token registration fee.

Terms and conditions for the Conference Dinner Party:

- Tickets should be booked in advance for the Conference Dinner Party (see registration form)
- Tickets are not reimbursable after being purchased.
- The venue has a maximum number of allowed participants.
- Please note that registration will be in order of received registration forms and payment.

Date: Tuesday, September 20
Time: 19.00 - 00.00 hrs
Price: $ 50,00. $ 10,00 for students

Guest Program

We are pleased to offer a Guest Program again this year. Please keep in mind the following terms and conditions for the Guest Program:

- Tours should be booked in advance when registering for the congress (see registration form).
- Tickets are not reimbursable after being purchased.
- Tours depart from and return to Rotterdam.
- English speaking guides accompany tours.
- Please note that tours are based on a minimum of participants per tour. Changes may occur for reasons beyond our control.
- Please note that registration will be in order of received registration forms and payment.

Tour 1: Historic Delft

Date: Monday, September 19
Time: 09.30 - 17.00 hrs
Price: $ 60 - Lunch is included

Delft is one of the oldest cities in The Netherlands; it received its

municipal rights in the year 1246. In the year 1389 Delft opened her first sea port "Delftshaven", which is now a part of Rotterdam. You will begin this visit to Delft with coffee and original Dutch pastry. Then you will have a city walk under the guidance of an English-speaking guide. You will visit "The new Church". The lunch will take place in "t Boterhuis", a building where they used to trade butter. In the afternoon you will make a trip by canal boat through the canals of Delft with many interesting sightings. Finally you will visit a small factory where you can see how delftware is made. Here you will find an extensive selection of Dutch ceramics and souvenirs.

Tour 2: 'Typical Dutch': visit the windmills

Date: Tuesday, September 20
Time: 09.30 - 14.00 hrs
Price: $ 60 - Lunch not included. At the boat are drinks and snacks available

You will start the day with a walk through the city center. The guide will tell historical facts about Rotterdam and show important architectural works in the center. The walk ends at the dock where a boat is ready to set off for Kinderdijk. In Kinderdijk you will find 19 famous Dutch windmills, which were built in 1740 and are very well preserved. In 1997 the mills of Kinderdijk were put on the world heritage list of UNESCO. You will be able to visit one of the many windmills. You will be back in Rotterdam in the afternoon and have time to shop around or visit one of the museums.

Tour 3: Architecture tour

Date: Wednesday, September 21
Time: 10.00 - 17.00 hrs
Price: $ 60 - Lunch is included.

You will start the day with coffee with famous home made apple pie in a well know brasserie designed by architect W.M. Dudok. From there a touring car will pick you up and makes a tour past architectural highlights and the sky line of the city. Lunch is served in the "Euromast" (at 110 high) from which you have a great view over the city. After lunch have a stroll through the Museum Park and visit the Museum Boijmans van Beuningen.

Additional information

You're booking for the Guest Program and the Conference dinner will be confirmed by FASS. You will receive your voucher for your booked tour(s) and/or Conference dinner at the registration desk.

Registration Desk

You can get more information about possible excursions at the registration desk located at the Congress Center 'De Doelen'. We advise you to collect your documents as soon as possible after your arrival. The staff at the registration desk will be pleased to assist you with all your inquiries.

The registration desk will be open during the following hours:
Sunday, 18th of September: 07.00 - 19.00 hrs
Monday, 19th of September: 07.00 - 18.00 hrs
Tuesday, 20th of September: 07.00 - 18.00 hrs
Wednesday, 21th of September 08.00 - 18.00 hrs

Symposium Organizing Committee

General Chair
Ton van der Steen
Erasmus University Medical Centre,
Rotterdam, The Netherlands
a.vandersteen@erasmusmc.nl

Technical Program Chair
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Short Course/Tutorial Chair
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Awards Chair
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Friedrich-Alexander-Universitat,
Erlangen, Germany
reinhard.lerch@lse.eei.uni-erlangen.de

Technical Program Commitee

Getting ready to start the day

John Hassock setting the stage

GROUP 1: Medical Ultrasonics

Vice Chair: Stanislav Emelianov: Univeristy of Texas of Austin, USA

Ton van der Steen

Stuart Foster

Stanislav Emelianov, Hiroshi Kanai

Gayle Gleichman of FASS

Jian-yu Lu, Christopher Hall, Georg Schmitz

Larry Crum

Olivier Basset: INSA, France
Geneviève Berger: Laboratorie Imagerie Parametrique, France
Richard Chiao: Ultrasound Group, Siemens Medical Solutions, USA
Lawrence A. Crum: University of Washington, USA
Emad Ebbini: University of Minnesota, USA
Helmut Emert: Electrical Engineering Department, Ruhr University, Germany
David Evans: Department of Medical Physics, Leicester Royal Infirmary, UK

Kathy Ferrara: Biomedical Engineering, University of California, USA
Stuart Foster: Department of Medical Physics, Sunnybrook Health Sciences Centre, Canada
James Greenleaf: Ultrasound Research, Mayo Clinic, USA
John Hossack, Department of Biomedical Engineering, School of Engineering & Applied Sciences, University of Virginia, USA
Kullervo Hynynen: Brigham and Women's Hospital, USA
Peter Hoskins: Senior Research Fellow, Medical Physics, The University of Edinburgh, Scotland
Michael F. Insana: Biomedical Engineering, University of California, USA
Jorgen Jensen: Department of Information Technology, Technical University of Denmark
Nico de Jong: Biomedical Engineering, Erasmus University Rotterdam, The Netherlands
Hiroshi Kanai: Tohoku University, Japan
Jian-yu Lu: The University of Toledo, USA
Leonardo Masotti: Dipartimento di Ingegneria Elettronica, University di Firenze, Italy
James G. Miller: Physics Department, Washington University, USA
Kathy Nightingale: Biomedical Engineering Department, Duke University, USA
William O'Brien: Director of Bioacoustics Research Lab, Department of Electrical & Computer Engineering, University of Illinois, USA
Helen Routh: Philips Research, USA
Ton van der Steen: Head of Biomedical Engineering, Erasmus University Rotterdam, The Netherlands
Tom Thomas: Siemens
Kai Thomenius: GE CRD, USA
Peirro Tortoli: Electronic Engineering Department, University of Florence, Italy
Keith Wear: FDA Center for Devices and Radiological Health, USA

GROUP 2: Sensors, NDE, and Industrial Application

Vice Chair: Jafar Saniie: Department of Electrical & Computer Engineering, Illinois Institute of Technology, USA

(front) Bernie Tittmann, Jiromaru Tsujino, (back), JohnVetelino, Massimo Pappalardo, Jun-Ichi Kushibiki, Robert Addison, Eric Furgason, Jafar Sanii

Roman Maev

Robert C. Addison: Rockwell Science Center, USA
Walter Arnold: Fraunhofer Institute for Nondestructive Testing, Germany
Narendra K. Batra
Eric S. Furgason: School of Electrical & Computer Engineering, Purdue University, USA
Donna C. Hurley: National Institute of Standards & Technology, USA
David A. Hutchins: School of Engineering, University of Warwick, England
Bernhard Jakoby: Institute of Industrial Electronics and Material Science, Vienna University of Technology, Austria
Lawrence W. Kessler: Sonoscan Inc., USA
Pierre T. Khuri-Yakub: Stanford University, USA
Jun-ishi Kushibike: Department of Electrical Engineering, Graduate School of Engineering, Tohoku University, Japan
Lawrence C. Lynnworth: Chief Technologist, GE Panametrics, USA
Roman Gr. Maev: Professor & Director, Center for Imaging Research & Advanced Material Characterization, Department of Physics, University of Windsor, Canada
Massimo Pappalardo: Lab of Acustoelectronics, Dipartimento di Ingegneria Elettronica, University di Roma TRE, Italy
Tony Sinclair: Professor of Mechanical & Industrial Engineering, Department of Mechanical Engineering, University of Toronto, Canada
Bernhard R. Tittman: Department of Engineering & Mechanics, Pennsylvania State University, USA
Jiromaru Tsujino: Faculty of Engineering, Kanagawa University, Japan
Donald E. Yuhas: Industrial Measurement Systems, Inc., USA
John F. Vetelino: Lab for Surface Science & Technology, University of Maine, USA

GROUP 3: Physical Acoustics

Vice Chair: Kenneth Lakin: TFR Technologies, Inc., USA

Ken Lakin(r) with the FASS Staff (l – r) Sharon Frick, Jennifer Gavel, Louise Audrieth


Susan Schnieder


Ken Lakin


Ron Keller of FASS

Art Ballato: Chief Scientist, US Army CECOM RDEC AMSEL-RD-CS, USA
Mack Brezaeale: Department of Physics, University of Mississippi, USA
Jan Brown: JB Consulting, USA
David Hecht
Fred Hickernell
Amit Lal: Assistant Professor, School of Electrical & Computer Engineering, Cornell University, USA
John Larson
Moises Levy: Department of Physics, Naples, Florida, USA
George Mansfield: Institute of Radio Engineering and Electronics, Russian Academy of Sciences, Russia
Kiyoshi Nakamura: Department of Electrical & Communication Engineering, Graduate School of Engineering, Tohuku University, Japan
Valeri Proklov: Institute of Radio Engineering & Electricity, Russia
Edgar Schmidhammer
Susan Schnieder: Department of Electrical & Computer Engineering, Marquette University, USA
Bikash Sinha: Schlumberger-Doll Research, USA
Yook-Kong Yong: Department of Civil & Environmental Engineering, Rutgers University, USA
John Vig: US Army CECOM, AMSEL-RD-C2-PT, USA
Smaine Zeroug: Program Manager, Schlumberger-Doll Research, USA

GROUP 4: Surface Acoustic Waves

Vice Chair: Don Malocha, School of Electrical Engineering & Computer Science, University of Central Florida, USA


Mauricio Pereira da Cunha, Don Malocha, Robert Weigel, Peter Smith, John Kosinski, Clemens Ruppel, Daniel Hauden

Benjamin Abbott: Sawteck Inc., USA
Ali Bagi-Wadji: Vienna University of Technology, Austria
Kushal Bhattacharjee: Clarisay, USA
Serguey Biryukov: Surfaces and Interfaces Department, Leibniz Institute for Solid State and Materials Research Dresden (IFW), Germany
Yasuo Cho: Research Institute of Electrical Communications, Tohoku University, Japan
Yasuo Ebata: Director of SAW Core Technology, Fujitsu Media Device Ltd., Japan
Ken-ya Hashimoto: Department of Electronic & Mechanical Engineering, Chiba University, Japan
Daniel Hauden: CNRS_LPMO, France
Mitsutaka Hikita: Communications Systems Research Department, Central Research Laboratory, Hitachi, Ltd., Japan
William D. Hunt: School of Electrical & Computer Engineering, Georgia Institute of Technology, USA
Shen Jen: RF Monolithics Inc., USA
John A. Kosinski: US Army RDE Command, USA
David Morgan: Impulse Consulting, UK
Mauricio Pereira da Cunha: Assistant Professor, Department of Electrical & Computer Engineering, University of Maine, USA
Viktor Plesski: SAW Design Bureau, Thomson Microsonics, Switzerland
Bob R. Potter: Vectron International, USA
Arne Ronnekleiv: Division of Physical Electronics, Norwegian Institute of Technology, Norway
Clemens C. W. Ruppel: EPCOS AG - SAW RD SAM, Germany
Peter Smith: McMaster University, Canada
Robert Weigel: University of Erlangen-Nuremberg, Germany

GROUP 5: Transducers and Transducer Materials

Vice Chair: Scott Smith, GE Corporate Research & Development, USA


Vasandara Varadan, Kirk Shung, Wally Smith


Qiming Zhang, Yasuhito Takeuchi


Wally Smith, Levent Degertekin, Chris Daft, Geoff Lockwood, Scott Smith

Scott Smith

Levent Degertekin: Woodruff School of Mechanical Engineering, Georgia Institute of Technology, USA
Jean-Francois Gelly: Thomson Microsonics, France
Hal Kunkel: Philips Ultrasound, USA
Reinhard Lerch: Friedrich-Alexander-Universitat Erlangen-Nurnberg Lehrstuhl fur Sensorik, Germany
Geoff Lockwood: Stirling Hall, Department of Physics, Queen's University, Canada
Clyde Oakley: Vice-president of Probe Development, Tetrad Corporation, USA
Mark E. Schafer: Sonic Tech Inc., USA
K. Kirk Shung: Bioengineering Department, Pennsylvania State University, USA
Stephen W. Smith: Department of Biomedical Engineering, Duke University, USA
Wallace A. Smith: Materials Division, Office of Naval Research, USA
Yasuhito Takeuchi: Professor, Department of Information & Computer Science, Faculty of Engineering, Kagoshima University, Japan
Roger H. Tancrell: Aimar Technology Corporation, USA
Vasandara Varadan: University of Arkansas, USA
Qiming Zhang: Materials Research Lab, Pennsylvania State University, USA
Yongrae Roh: Kyungpook National University, Korea
Thomas Shrout: Materials Research Lab, Pennsylvania State University, USA
Christopher Daft: Sensant Corporation, USA

In Memoriam

It is with great sadness that we report the loss of a pioneer in the Frequency Control Community. We wish to extend our condolences to the family, friends and colleagues of Wallace H.E. Samuelson.

Wallace H. E. Samuelson

Wallace "Wally" Samuelson
1919 - 2005
Wallace H.E. Samuelson, 86,
died Jan. 24, 2005,
in Birmingham, Ala.

Mr. Samuelson grew up in New York City. He was a graduate of Antioch College and Harvard University with a master's degree in communication engineering. He married Lois Samuelson in 1939.

He briefly taught physics at Antioch College, but his main occupation was in the quartz crystal electronics business initially in Rochester, N.Y., and Weehawken, N.J., and then later in Carlisle, where he moved to in about 1946. After their children left for college he and Lois moved to Harrisburg where they remained until 1997.

Wally owned and operated Piezo Crystal Co. for many years with friend and partner Herman Shall, designing and manufacturing components for radio communication devices for the Armed Forces, private industry, and space exploration. After selling the plant, he continued as an engineering management consultant until the early 1990s.

After Herman's untimely death in 1970, he ably acted as surrogate father and grandfather for the Shall family: Tillie (widow) and children Maxine, David, Donald and Michael.

He and Lois moved to Birmingham, Ala., in 1997 to be near their son. Lois died in 1997. He again fell in love and married Peggy Benjamin in 1999.

Wally was a very kind, friendly, loving, generous person. He was analytical, inquisitive, academic, scholarly and a patient teacher for his children Paul and Basja during their school years and to employees and friends. He was known for his love of travel, good food and wine. He loved, and was loved in return, by all who knew him.

Personal Remembrance

Bill Hanson (Hanson Technologies, Inc.) has provided the following personal remembrances of Wally:

Wally and my family became very close. Wally was the best man at my wedding and we had lunch almost every week for 17 years. His generosity and grace was ever-present. I was very fortunate to have Wally as a mentor for about 17 years at Piezo Crystal Company from 1980 to 1997. Wally's expertise in production and engineering of quartz resonators was superb with experience spanning over 50 years. One fascinating story about Wally, which isn't well known, is that Wally made blast sensors for the Manhattan project during WWII. I believe he did this in graduate school at Harvard working for Professor Prof. Charles Palache. He was assigned the task of cutting tourmaline crystals taken from German museums and making stacked blasting sensors. Wally said he cut many beautiful crystals, with many shattering even though they looked flawless. He was told the blast sensors worked perfectly measuring the explosive force of the atomic bomb.

Wally was an incredible teacher and mentor. Patiently going thru all that was necessary. Wally knew everyone's name and was always a gentleman. Wally helped advance the SC cut x-raying and cutting operation from a single blank cutting operation to slurry saw in the early 80's. This process was used at Piezo to produce over one million SC's sold by Piezo Crystal from 1984 to 2001. This same process was used in 1997 to help develop the cutting of SC's on the wire saw successfully eliminating angle correction. Wally had an incredible energy and intellect which will be missed greatly by myself and the crystal industry.

Frequency Control

Minutes of the UFFC-S Frequency Control Committee Meeting April 28, 2005 Washington D.C.

[Subject to the Frequency Control Standing Committee Approval]

Call to Order

Lute Maleki

General role was taken as follows:

Lute Maleki, Standing Committee Chair
Sam Stein, Standing Committee Vice-Chair
Tom Parker, IEEE Awards Chair
Gary Johnson, Publicity Chair
John Prestage, Tutorial Chair
John Vig, Publications Chair
Ray Filler, Finance Chair
Kurt Gibble, Academic/Education Chair
Mike Garvey, General Chair, 2003/2004 FCS
Chris Ekstrom, 2003 Liaison to EFTF, 2004/2005 TPC Chair
Mike Driscoll, General Chair, 2005/2006 FCS
Don Malocha, TPC Chair, 2006/2007
Joe White, Co-General Chair, 2005 Joint PTTI/FCS
Bob Tjoelker, Co-TPC Chair, 2005 Joint PTTI/FCS
Sheila Faulkner, Manager, 2005 Joint PTTI/FCS
Debra Coler, TPC Administrator

The meeting was called to order by the Chair, Lute Maleki.

AdCom Report

Lute reported that the AdCom met on January 28, 2005. Long term goal planning is underway for IEEE and our soci-

ety. AdCom was reviewed by the IEEE Technical Advisory Board. Leo Reindl was appointed as the new web editor for Frequency Control. Jan Brown was replaced by Don Yuhas as Publications Vice President. Don issued a request to help him find more editors for the UFFC Transactions so if you know of someone please forward their name to Don. It was announced that Frequency Control represented about 20% of Proceedings publications.

There was discussion about making sure the minutes are approved by the Standing Committee before they are published in the newsletter. So, to facilitate this in the future the minutes will be sent out by email for approval. The minutes from the August 25, 2004 were approved at this time even though they have been published in the newsletter.

There was discussion about increasing the dollar amounts of monetary awards. Lute asked Tom Parker to take this under advisement and make recommendations to this committee.

Andreas Bauch was elected as Distinguished Lecturer. Society information packets will be handed out at our symposium registration. Jack Kusters is a new IEEE Fellow and we congratulate him. IEEE is now suggesting a 20% surplus be considered in the new budgets. Mike Garvey reported that Herman van de Vaart, the UFFC treasurer has said that the finances are in very good shape and he is looking for some good ideas of how to spend some of the money we have.

2004 UFFC Anniversary Joint Conference

Mike Garvey

Mike Garvey reported that we made about a 10% surplus which was considered a success. Montréal was a good venue and it was a good learning experience for us to be together with the other conferences in our Society. We picked up some good ideas such as Student Paper competition and others.

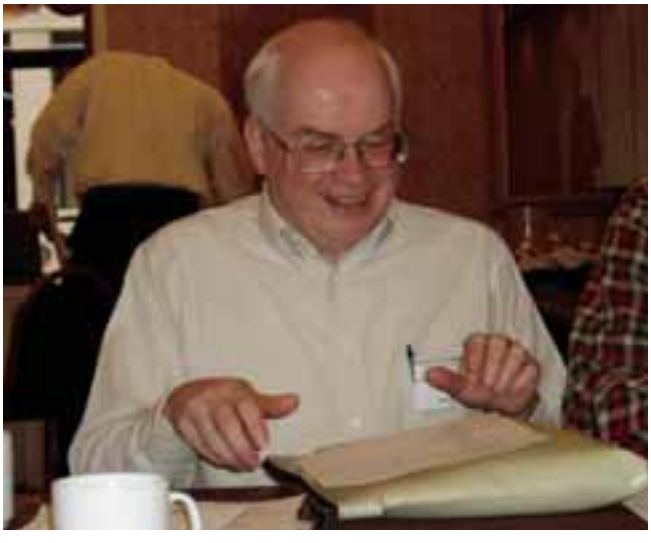
2005 Conference

Mike Driscoll and Eric Hague

Mike Driscoll reported that this conference is in Vancouver B.C., in August. He said things are going along smoothly and he thanked everyone on the organizing committee. The first TPC meeting for the 2006 conference will be held at the 2005 conference. Joe also echoed that things are going well. Chris and Bob reported that we have 210 papers submitted for review tomorrow, about 108 of those are group 3. There are not as many group 4 papers as usual due to many sensor conferences this year. Mike said the abstract website process has gone well and we will probably use the same company next year. There was discussion about having a conference in China.

Jack Kusters and Sheila Faulkner

Exhibits – Sheila reported that the exhibitor registration is going well. We are going to have a full page ad in GPS World in June and hope to pick up a few more attendees. There was some discussion about the visa issues that we will have to deal with again this year. Debra reported on registration with Canadian Immigration that should help us with the visa process.



Tom Parker

Awards – Tom reported that all three awards will be voted on tomorrow, there is a good slate of nominees. There is a field of 32 student paper competition entries that we will be choosing finalists from tomorrow. We plan to give an award for each of the groups.

John Prestage

Tutorials – John Prestage reported that he has about six committed tutorials at this time. He is looking for more ideas of speakers. Mike Driscoll said we need to get the Tutorial link on the website up as soon as possible. The topics are already roughed out and we could put those up on the website. Lute urged everyone to continue to look for new fields of interest. Gary reported that this year we have several MEMS papers and he feels it is a result of a very good panel discussion last year in Montreal. Andreas Bauch was suggested as a tutorial speaker given his appointment as Distinguished Lecturer. Ovenized ocillator technology was also suggested as a topic of interest.

Kurt Gibble

Academic – Kurt Gibble contacted all previous students and all education related email addresses trying to promote the student paper competition. He felt there has been a good response, more than last year. Lute said we must continue to get student participation in the conference

Gary Johnson (c) with Dan Stevens (l) and Don Malocha

Publicity – Lute suggested Gary contact Sorah Rhee who is the Publicity Chair on AdCom for some marketing ideas. Sheila asked Gary to take a look at the full page ad that will be appearing in GPS World.

John Vig

Leonhard Reindl

Web Editor – John Vig reported that his name is still on the web. Leonhard Reindl has been appointed the new Frequency Control Web Editor. John is willing to help him in any way he can.

Debra Coler and Ray Filler

Publications – Debra was appointed as the Frequency Control Publication Chair. She reported that the program book will be published by the company who is handling the abstract submittal process. They will also be handling the Proceedings CD process including tracking down all authors for Proceedings submittals. There will not be paper proceedings this year.

Kurt brought up the point that for academics, the proceedings process is not refereed and therefore these papers are normally not included on academic CV's. There is then not much incentive to submit to the Proceedings. There are also some recent and very explicit copyright and plagiarism guidelines that are making things more difficult. The Transactions are refereed so that might be a better option however, that limits the author to IEEE and that is not as good as other publications for some academic fields. These are topics for future discussions.

For now, FCS will continue to put forth strong language to have authors submit their manuscripts to the Proceedings and it will be included in the abstract acceptance message. Lute said associate editors as they attend sessions should encourage authors to submit to the Transactions.

2006 Conference

Mike Driscoll

Don Malocha

Mike Driscoll reported the location is The Hyatt Regency Hotel in Miami, Florida, June 4-7, 2006. The budget has been prepared and indicates a potential 20% surplus. Synergistic Management will be handling the logistics of this conference. Don Malocha repeated that the first TPC meeting will be at 2005 in Vancouver.

2007/2008 Conferences

2007 will be the joint conference with EFTF and is to be held in Europe. EFTF had sent a list of proposals. Lute reported that he had asked for recommendations for General Co-Chair for this conference and also for the 2007 General Chair. The determination has been made to appoint Bernardo Jaduszliwer to these positions and it was ratified by the Committee. Lute asked the Committee to be thinking

Bernardo Jaduszliwer

about recommendations for 2009 and 2010. The 2007 Conference will be held in Geneva, Switzerland and the dates will be either the last week of April 24-27 or May 1-4, 2007. The ENC will be holding a conference at the same place they hope to have good cross fertilization of the two groups. Three TPC meetings will be held, the first one in March of 2006 in The Netherlands, the second in October, 2006 in the US (Don needs to determine this location), final program meeting in January, 2007 in Switzerland.

TPC Membership

Lute asked for discussion regarding an important issue of membership on the Technical Program Committee. He went on to say that at the end of tomorrow's paper selection meeting the TPC will receive a message that thanks them for their participation and dissolves the membership. The new TPC chair will invite those participants he selects for the next year. It will be made clear that it is a one year appointment. Debra will send to Don the participation records for the current TPC and he will put together his list for 2006. The Standing Committee can make suggestions. Don said he would like to first appoint the group vice chairs and then have them help constitute their groups. Lute will also send a message to thank the outgoing TPC from the Standing Committee.

The meeting was adjourned.

Debra Coler
TPC Administrator

Ultrasonics

Minutes of the UFFC-S Ultrasonics Committee Meeting 17 June 2005 Chicago, Illinois, USA

Call to Order

Clemens Ruppel and Massimo Pappalardo

The Ultrasonics Committee met on 15 June 2005 in Chicago, Illinois, USA. The relatively short committee meeting preceded the second Technical Program Committee meeting for the 2005 IEEE International Ultrasonics Symposium. Participating were:

Clemens Ruppel - Chair	Ton van der Steen
Stuart Foster	Michael Kolios
John Kosinski	Mauricio Pereira da Cunha
Jian-yu Lu	Massimo Pappalardo
Jan Brown	

The meeting was called to order. Michael Kolios was introduced as Finance Chair for the 2006 IEEE International Ultrasonics Symposium.

Ultrasonics Symposia

The committee received progress reports from the Chairs of the upcoming Symposia for 2005, 2006, 2007, and 2008 with respect to detailed planning, proposed budgets, finalization of contracts, and selection of venues.

2005 Symposium

General Chair: Ton van der Steen
avandersteen@erasmusmc.nl
Rotterdam, The Netherlands
18 –21 September 2005

Ton van der Steen gave an update on the 2005 International Ultrasonics Symposium to be held in Rotterdam, the Netherlands. The symposium committee consists of:

Ton in contemplation!

General Chair:	Ton van der Steen
Technical Program Chair:	John Hossack
Short Course/Tutorial Chair:	Nico de Jong
Finance Chair:	Herman van de Vaart
Publicity Chair:	Sorah Rhee
Exhibit/Sponsor Chair:	Chris de Korte
Editorial Chair:	Marj Yuhas
Awards Chair:	Reinhard Lerch

The number of abstracts is 10% higher than ever before at 870. Due to this large number, an additional room has been identified and the conference may be organized for six parallel sessions instead of five.

There will be a significant difference for 2005 with respect to A/V and speaker presentations: there will be a central server on which all presentations will be loaded, and the presentations will be distributed to the conference rooms by a LAN put in place for the conference. There will be no provision for speakers to use their own laptops and all speakers must load their presentations in advance. This will be done either via upload to a website or on-site the day before the presentation. There will be no speakers' breakfast.

Financial aspects of the Symposium were also discussed with a focus on sponsorships and the impact of exchange rate fluctuations on whether the Symposium ends in surplus or loss. Ton van der Steen noted the accomplishments of Chris de Korte in obtaining sponsorships. Philips is providing significant sponsorship to the banquet activity. They are recognized as a sponsor on the conference materials.

2006 Symposium

General Chair: Stuart Foster
s.foster@ieee.org
Vancouver, Canada
3 – 6 October 2006

Stuart Foster

Stuart Foster gave an update on the 2006 International Ultrasonics Symposium to be held in Vancouver, British Columbia, Canada. Planning is largely complete with the choice of banquet activity as the major program item yet to be decided. The Symposium Committee is largely complete and now consists of:

General Chair:	Stuart Foster
Technical Program Chair:	Geoff Lockwood
Short Courses Chair:	John Hassock
Finance Chair:	Michael Kolios
Local Arrangements:	Michael Watkins
Exhibits Chair:	Sorah Rhee
Editorial Chair:	Marj Yuhas
Awards Chair:	Reinhard Lerch

Michael Kolios

The main discussion for the 2006 Symposium dealt with the proposed budget. The proposed budget meets the new IEEE guidance for a targeted 20% surplus. Finance Chair Michael Kolios identified several items in previous budgets that are substantially reduced or eliminated for 2006, primarily relating to publication of the Proceedings. One outstanding decision regards the choice of provider for on-line abstract submission. The 2006 Symposium committee is considering proposals from FASS (the current provider), IEEE Conference Services, and Coe-Truman Technologies (CTT). Copies of the CTT proposal were distributed for consideration by the Ultrasonics Committee members. Other discussions touched on adjustments to the fees for students and retirees and taking into account the relative affordability for these groups.

2007 Symposium

General Chair: John Kosinski
j.a.kosinski@ieee.org
New York City, New York, USA
28 – 31 October 2007

John Kosinski

John Kosinski reported on planning for the 2007 Ultrasonics Symposium in New York City. The contract with the New York Hilton and Towers has been finalized by IEEE Conference Services. Final negotiations for the conference venue included two additional site visits to the hotel and a meeting at the IEEE Service Center in Piscataway, NJ. The negotiated room rate of $219.00 per night single/double is a few dollars higher than had been hoped but still represents an exceptional value for that location (New business for the same time frame is being quoted at $329.00 per night). The meeting space has a great layout with five adjacent meeting rooms that will greatly facilitate moving between sessions, and locations for posters to be displayed throughout the day. The meeting rooms will be renovated prior to the 2007 Ultrasonics Symposium including raised ceilings for better viewing of presentations. The Symposium Committee thus far consists of:

General Chair:	John Kosinski
Technical Program Chair:	Mauricio Pereira da Cunha
Short Courses Chair:	Stanislav Emelianov
Finance Chair:	Jackie Hines
Local Arrangements:	Koray Akdogan

Mauricio Pereira da Cunha

UFFC Society members interested in volunteering to help with the 2007 Ultrasonics Symposium should contact the General Chair. In particular, a pool of candidates is sought for renewal within the Technical Program Committee at the discretion of the TPC Chair.

2008 Symposium

General Chair: Jian-yu Lu
Jilu@eng.utoledo.edu
Bejing, China
27 – 29 October 2008 (Tentative)

Jian-yu Lu

Jian-yu Lu reported on planning for the 2008 Ultrasonics Symposium to be held in Beijing, China. At this point, the symposium committee consists of:

General Co Chairs:	Jian-yu Lu and Hailan Zhang
Technical Program Chair:	Tom Shrout
Finance Chair:	Jan Brown
Publicity Chair:	Sorah Rhee
Exhibit Chair:	Mark Schafer

Negotiations are in progress for the venue of choice.

2009 and Beyond

The Committee discussed four candidate venues for the 2009 Ultrasonics Symposium. The desired location is somewhere in Europe. The first sites considered were Lisbon, Portugal, and Warsaw, Poland. Based on examination by Mauricio Pereira da Cunha, Lisbon was removed from consideration for 2009. Information from Victor Plessky regarding Warsaw was not received in time for consideration at the Ultrasonics Committee [Authors' Note: The information arrived by e-mail shortly thereafter and is being considered at this time].

Massimo Pappalardo

Massimo Pappalardo presented Rome, Italy, as a candidate venue. Suitable hotels and conference facilities exist a short distance from the center of Rome. One particular site was discussed in some detail. The Ergife Palace hotel and conference center, located near the subway and a short distance from the Vatican City, appears to have suitable conference space and quite reasonable room rates. This proposal was viewed favorably by the Committee, and the Committee requested additional details to be provided such as the floor plan layouts of the hotel and conference center.

Clemens Ruppel introduced Stockholm, Sweden as another possible venue. Unfortunately, the Committee did not have time to view the presentation materials during the meeting. The Stockholm proposal materials will be distributed to the Committee members by e-mail.

Clemens Ruppel noted that the decision for the 2009 venue should be taken at the next Ultrasonics Committee meeting in order to place it before the ADCOM at their next meeting. Therefore, both the Rome and Stockholm proposals will need some discussion by e-mail over the summer and complete proposals in place for the next meeting.

Next Meeting

The next meeting of the Ultrasonics Committee will be held in Rotterdam, The Netherlands on Saturday, September 17, 2005, just prior to the 2005 Ultrasonics Symposium.

John A. Kosinski
Clemens C.W. Ruppel

Ferroelectrics

Minutes of the IEEE UFFC-S Ferroelectrics Committee Meeting January 26, 2005 Cocoa Beach, Florida

Call to Order and Past Minutes

Ten members of the Ferroelectrics Committee and four invited guests were present for the IEEE UFFC Ferroelectrics Committee Meeting held in Cocoa Beach Florida. This meeting was held in conjunction with the 29th International Cocoa Beach Conference on Advanced Ceramics and Composites. Committee members present at

Susan Trolier-McKinstry

the meeting were: Susan Trolier-McKinstry, Paul Clem, Jon-Paul Maria, Relva Buchanan, Andy Bell, Dragan Damjanovic, Robert Newnham, Dwight Viehland, Steve Pilgrim and Bruce Tuttle. In addition, Doru Lupascu, Robert Schwartz, Fatih Dogan and Steven Tidrow were invited guests to the meeting. Bruce Tuttle noted that the previous minutes from the August Montreal Meeting had been distributed and were approved electronically by the Ferroelectrics Committee members.

ISAF 2006 Meeting Summary

David Cann and Jon-Paul Maria

Jon-Paul Maria, General Chair of the ISAF 2006 Meeting, provided an excellent overview of his plans for the ISAF 2006 Meeting to be held in Sunset Beach, NC from July 30th to August 2nd 2006. The meeting will be held at the Sea Trail Resort which has excellent internet access, world class golf at very low rates, and all meals included in the registration package. Jon-Paul has expanded the program committee which now includes: Glen Fox, David Cann, Hiroshi Funakubo, and Alex Gruverman. Additional program committee possible members are Xiaoli Tan, Chris Lynch and Xiaoqing Pan Michigan. Susan commented that a dielectrics / capacitor person, preferably from industry should also be added to the committee. Other positions for the conference included the following: Proceedings Chair: Alex Guverman, Finance chair: Angus Kingon, and Publicity Chair: Susan Trolier-McKinstry.

A very thorough presentation of various aspects of the meeting followed. While we are allowed to cancel within 1 year of the meeting; deposit estimates for food and extent of liability are being addressed. A detailed budget with included expenses for the social program, administration, and travel support was presented. Registration fees of $550 per member (225 expected); $650 for non-IEEE members (100 attendees projected; Students at $150 (80 projected), and 50 spouses ($50 each). A total of $202,500 is expected in registration fees. Jon-Paul compared his budget/attendance numbers with those of past ISAF and ISIF meetings including hotel comparisons. Concepts for improved attendance were presented. Advertising is critical – a high caliber website to attract younger attendees will be emphasized. A detailed schedule for tasks for all volunteers was presented. Highlights included: February 2005 finalize technical program, April 2005 First Call for Papers, and first large scale mailing in June 2005. Advertising with timelines was presented and this included Poster format calls for Universities, National Labs and companies.

Responding to the request from the Montreal Meeting, Jon-Paul has investigated other lodging that is near the meeting site. Six different hotels and the costs for staying there were presented. These rates were essentially the same as the Sea Trail but do not include meals. Jon-Paul also noted that the Sea Trail Resort will have the same conference room rates for attendees 3 days before and 3 days after the meeting for those wishing to extend their stay. Dwight suggested that an increase in funds for student support be considered. A number of Plenary and Invited speaker candidates were proposed.

In the near term Jon-Paul will work further on developing a contract with the Sea Trail Resort. An initial seven page contract has been developed with the Sea Trail Resort due to Jon-Paul's efforts. Issues such as room blocks, cancellation agreements, deposits, billing, space agenda and food attrition have been addressed. In the near future, IEEE will conduct a formal review and hopefully give the meeting its blessing. Jon-Paul showed information on Corporate sponsorships: several companies are being considered to sponsor coffee breaks. Other topics reviewed were the budget, Social Activities, Student Mixer on beach, Carolina Shrimp feast, Farewell barbecue, coffee breaks, conference lunches, Monday night dinner, Publication Expenses, and student poster contests.

Travel to the meeting was discussed with most attendees expected to fly into Myrtle Beach, SC or Wilmington, NC via Atlanta, Chicago or Charlotte, NC.

ISAF 2004

Steve Pilgrim

Steve Pilgrim presented a hardcopy of the ISAF 2004 "almost final" budget figures. Because of the combined meeting with the Frequency Control and Ultrasonics Societies it was tougher to delineate what the Ferroelectric contribution / profit was for this combined three society meeting compared to past stand alone ISAF meetings. Partly because there was a large number of retirees and students at the meeting, overall income was slightly lower than expected.

The present estimated total income for the three society meeting was $865,302 with $761,562 in expenses providing a net surplus of $103,740. Steve cautioned that while we have a $103,740 surplus on the books now, the Proceedings costs have not been entered into the actual expense column yet. It is hoped that the projected $120,000 expense cost for the proceedings is considerably less and hopefully will

result in a net (proceeds – expenses) surplus from the proceedings. The treasurer for the meeting expects costs of the proceedings to be offset by receipts from the Bookbroker program. Thus, it is likely that there will be an approximately $100,000 surplus. For future Ferroelectrics Society meetings working with FASS was not recommended due to lack of control of various activities including publications, location and time of student posters, and exhibitors. Steve noted that for Students there was a $25,000, budget, with $12,000 for student travel. Other expenses included a $2000 honorarium for Hannah Park. Finally, Steve noted that interest in social functions was larger than expected: however, there was a lower short course attendance (260 people) than expected.

There were 87 proceedings papers out of the 119 presentations that were given for the Ferroelectrics Section of the meeting. Interestingly, the 119 presentations were essentially evenly distributed among contributors from Europe, Asia and America. Normally we have 350 papers published, part of the decrease was due to some of our members papers getting published in other Societies sections. For example, papers by Ahmad Safari and Tom Shrout were published in the Ultrasonics section of the Proceedings. Another reason postulated for the lower number of papers was a much lower representation of attendees from the Far East. It was believed that an exclusively electronic mailing hurt the Japanese response. Further, Dragan noted that many of the Japanese went to Europe rather than ISAF in Montreal due to the more theoretical nature of the talks at the European Meeting. Further, Steve cited a technical meeting being held in Japan at a similar time. Susan noted that for future meetings communication with key Asian groups will be critical and as publicity chair for ISAF 2006 she will get meeting information out to Asia in appropriate and timely fashion.

Steve suggested that there be awards for both undergraduate and graduate posters, rather than combining them into one group. Bob Schwartz suggested that 3 student poster awards rather than just one award be given. Steve will not recommend future three technical group meetings with UFFC. Two things that Steve stated would help future meetings will be to have strong contact with exhibitors and make sure that communications to the Japanese include conventional paper as well as email communications.

ISAF 2008

Paul Clem

Paul Clem presented an overview of the plans for the ISAF 2008 meeting to be held in Santa Fe, NM. The Eldorado Hotel was presented as the conference hotel and the rooms for technical presentations were described in detail. Susan noted that we may need a larger room than the 600 seat venue of the Eldorado's largest room for the Plenary talks since that room will be occupied by posters. Paul noted that the Sweeney Center, located a couple blocks away, has larger facilities. Paul noted the possible airfares and connections to the Albuquerque Sun Port Airport near Santa Fe. The preferred method of transportation from Albuquerque to Santa Fe is via Shuttle service which costs $25 per person, takes about 1 hour and will drop attendees off directly at the Eldorado Hotel. Room costs and government rates for hotels for a variety of different dates were discussed.

Bruce led a discussion of meeting dates. It appeared that the third week in September and late August were more attractive than the initial February or mid-June for the meeting. Further discussions indicated that a March meeting was attractive for many organizations. The possibility of a Joint Meeting with ISIF and/or the Electronics Division of the American Ceramic Society in the February/March time frame was voiced by Dwight Viehland. Tadashi Takenaka, Dragan Damjanovic, Andy Bell and Nava Setter provided excellent information for when optimum meeting times would be from their respective regions of the world.

There was further discussion considering the logistics of a joint meeting with ISIF. Susan noted that there has been some communication with the International Symposium on integrated Ferroelectrics (ISIF) advisory board members and they would like to consider a joint meeting with us. Our approach to enhance a joint meeting possibility is to communicate to ISIF as a community and make sure that their members are invited to the ISAF 2006 meeting. It was felt that Paul Clem would be the best choice to lead the effort in future ISIF negotiations and communications. The possibility of including the Electronics Division of the American Ceramic Society for a three organization meeting was again proposed. Paul, Dwight and Bruce will be exploring this possibility. It was noted that the organization of a dual society or three society meeting is considerably different than that for a single society meeting, especially in Santa Fe. The Sweeney Center in Santa Fe, with it's larger but not as culturally pleasing environment, would likely become the focal point of such a combined meeting.

Future Meetings 2010 and Beyond

Andy Bell indicated that he may be interested in organizing an ISAF meeting in England and is considering writing a proposal. York is a possible location. His plans received a very favorable response from the Committee. It was also proposed that it was very important to have a future meeting in China. Susan will be communicating with colleagues at UFFC to see if there are people interested in organizing such a meeting. Qiming Zhang has also expressed interest in organizing an ISAF meeting in China. He expressed this interest at both the Montreal Meeting and by personal communication this month. Gerry Blessing of IEEE has proposed another Joint meeting of the three societies. As a note, it was agreed at the UFFC AdCom meeting that 2010 would not be pursued as a joint meeting among Ultrasonics, Ferroelectrics, and Frequency Control.

AdCom status report

Susan reported on the reports from the Montreal Meeting presented at AdCom. Break even meetings are not acceptable as there is a $150k infrastructure fee to IEEE from the UFFC Society each year. She concluded that the overall UFFC budget may be hurting due to the slightly lower than expected returns from the Joint Meeting.

Ferroelectric Awards

Ahmad sent a report noting that 4 Senior Members were nominated. Bob Newnham and Ahmad Safari were made Fellows of the IEEE-UFFC Society this year. The deadline for nominating for fellow nominations is March 1, 2005. Three candidates for IEEE Fellow were proposed. These included Wally Smith ONR, Robert Pohanka, ONR, and George Samara, Sandia National Laboratories. These candidates need to be Senior members of IEEE to be eligible to be considered for the IEEE Fellow award.

Ahmad suggests that we nominate 2 people for the Ferroelectrics Achievement Award that will be awarded every 2 years. The committee felt that only living members should be considered. The posthumous award to Eagle Park was a very special situation for a person whose career was cut short.

Seven different candidates for the Ferroelectrics Achievement Award were proposed: Jan Fousek, Kikuo Wakino, Kenji Uchino, Tom Shrout, Walter Schulze, Art Ballato and Jon Yamashita. All members of the Ferroelectrics Society are encouraged to send names to Ahmad for the Ferroelectrics Achievement Award and for Senior Members.

The committee felt that Gen Shirane, who has made tremendous contributions to the Ferroelectrics Committee and has recently passed away, will be considered for a special symposium or to have a plenary talk named for him.

Standards

There were a number of topics addressed with respect to Standards issues. First, a Standard has been requested on Piezomagnetics. This future committee needs a chair and Arthur Clarke was mentioned as a possibility. Several members of the Ferroelectrics community have suggested that our committee consider a standard on scanning probe microscopy (SPM) due to concerns of erroneous data being spread through out the literature. Concerns were expressed about the appropriateness of a Standard for this difficult to quantify technique. There also was discussion about both a thin films standard (Roger Whatmore) and a Ferroelectric memory standard. Susan noted that IEEE does not like the leader of a standard committee to be from industry due to possible conflicts of interest.

Website

Ruyan Guo has done a terrific job in building up our website. Her recent activities have included recent awards updates, minutes of the most recent Ferroelectrics Committee Meetings, a listing of upcoming conferences of interest over the next few years, an updating and repair of 15 links to different organizations. Further, Ruyan has plans for history articles, review articles and important technical milestone reviews to be included into the website. Her report is included in the Appendix to these minutes.

Next Meeting

The next Ferroelectrics Committee Meeting is tentatively scheduled for April, 2005 in Baltimore, MD in conjunction with the American Ceramic Society Meeting. In a bold move, Bruce has tentatively scheduled (not confirmed by ACERS yet) the next FE committee meeting to be 7PM to 10 PM on Monday April 11, 2005 in the Marriott Hotel in Baltimore rather than the usual Sunday before the meeting that is typically held from noon until 2 PM time frame. This action is being taken at the request of various members of the Committee and to make things more convenient for those traveling from overseas.

Bruce Tuttle,
Secretary of the Ferroelectrics Committee
February 11, 2005

UFFC Ferroelectrics Web Editor Report

Ruyan Guo
Jan 25, 2005

Ferroelectrics Webpage is hosted at the UFFC-IEEE homesite:
http://ieee-uffc.org/femain.asp

Ruyan Guo

(I) Recent Updates Accomplished:

(A) Awards:
(A1). Ferroelectric recognition award:
Added: Nava Setter for 2004 award (photo and quotation)
Added: David Payne for 2004 award (photo and quotation)
Added: S-E.(Eagle) Park for 2003 award (photo and quotation)
(A2). IEEE Achievement Award
Updated by making it life-linked to UFFC "Awards and Fellows" page.

(B) Publications: committee protocols – Ferroelectrics Committee Meeting Minutes updated:
(B1) Added: FE Committee meeting minutes Nov. 30, 2003 Boston
(B2) Added: FE Committee meeting minutes April 4, 2004 Indianapolis
(B3) Added:FE Committee meeting minutes Aug.4, 2004 Montreal

(C) Symposia:
(C1) Moved the "2004 International UFFC 50th Anniversary

Joint Conference" to past symposia;
(C2) Added: "Fundamental Physics of Ferroelectrics - FERRO'05 (February 6-9, 2005, Williamsburg, Virginia, USA)" http://www.mri.psu.edu/conferences/ferro2005
(C3) Added: "The 17th International Symposium on Integrated Ferroelectrics (April 17-20, 2005, Shanghai, China)" http://www.isif.net
(C4) Added: 11th International Meeting on Ferroelectricity (Sept. 5-9, 2005, Argentina/Brazil)" http://imf11.nit.ufscar.br
(C5) Added: 12th International Symposium on Electrets (Sept. 11-14, 2005, Salvador, Bahia, Brazil) http://www.usp.br/ise12
(C6) Added: "IEEE 2005 International Ultrasonics Symposium (Sept. 18-21, 2005, Rotterdam, The Netherlands)" http://www.ieee-uffc.org/2005
(C7) Symposia Data base search link repaired for IEEE conference data base search at http://www.ieee.org/conference-search/

(D) Links Repaired and Updated
Link repaired for Air Force
Link repaired for Army research
Link repaired for Ecole Poly
Link repaired for PSU MRL updated www.mri.psu.edu
Link repaired for Airmar Technology Corp
Link repaired for APC International, Ltd.
Link repaired for EDO Ceramics
Link repaired for ENDEVCO CORPORATION
Link repaired for Piezo-kinetics, Inc.
Link repaired for PZ-Flex Support
Link repaired for TOKIN AMERICA, INC.
Link repaired for U.S.Electronics Inc
Link repaired for Wilcoxon Research
Link added for National Science Foundation (www.nsf.gov);
Link added for National Institute of Health (www.nih.gov)

(II) Planned Web Modifications:

History:
Current history articles:
- The History of Ceramic Filters (Fujishima)
- History of Ferroelectricity (Cross, Newnham)
- PMN-PT Discovery (Bokoff)
- Personal recollections of the early days of the UFFC-S (Meitzler)
- From PGUE to G-SU to UFFC-S (Hickernell)

Planned additions:
- History paper on PZT (by Shirane?)
- History paper on BaTiO3 (by Murata?)

Review Articles:
Current review articles include:
- Ferroelectric Ceramics: Tailoring properties for specific applications (Cross)
- Ferroic Materials and Composites: past, present, and future (Cross)
- History of Ferroelectrics (Cross and Newnham)

More milestone reviews to add, some under considerations:
- Ferroelectric Thin Films
- Ferroelectric Relaxors
- Ferroelectric Sensors
- Ferroelectric Ultrasonic Devices
- Ferroelectrics in Optical and Nonlinear Optic Applications

The web editor is seeking input and suggestions from FE Committee on papers of historical account and milestone reviews.

Minutes of the IEEE UFFC-S Ferroelectrics Committee Meeting April 11, 2005 Baltimore, MD

Call to Order and Past Minutes

Susan Trolier-McKinstry and Ahmad Safari

Thirteen members of the Ferroelectrics Committee were present for the IEEE UFFC Ferroelectrics Committee Meeting held in Baltimore, MD USA on April 11, 2005. This Ferroelectrics Committee meeting was held in conjunction with the 107th Annual Meeting of the American Ceramic Society. Committee members present at the meeting were: Susan Trolier-McKinstry, Ahmad Safari, Paul Clem, Dwight Viehland, Andy Bell, Glen Fox, Eric Cross, David Payne, Tadashi Takenaka, Ahmar Bhalla, Ruyan Guo, Marija Kosec and Bruce Tuttle. Bruce Tuttle noted that the previous minutes from the January Cocoa Beach Meeting had been distributed and were approved electronically by the Ferroelectrics Committee members.

ISAF 2006 Meeting Summary

Unfortunately, David Cann was not able to make the present meeting to give the 2006 ISAF meeting report. David has been responsible for the website and an expanded call for papers which will include a strong push for multiferroics, advanced characterization techniques, capacitor and piezoelectric contributions.

Susan reported that Jon-Paul Maria, General Chair of the ISAF 2006 Meeting, provided an excellent overview of his

plans for the ISAF 2006 Meeting at the Cocoa Beach Ferroelectrics Committee Meeting in January 2005. A real highlight was the detailed budget plan which was very recently submitted and approved by Herman Van de Waart, Treasurer of UFFC. Jon-Paul made a strong effort to comply with the IEEE budgetary regulations. It was greatly appreciated that he shared a lot of the budget and planning information with ISAF 2008 Chairs Paul Clem and Bruce Tuttle to aid them in the planning for their meeting.

The ISAF 2006 meeting will be held in Sunset Beach, NC from July 30th to August 2nd 2006 at the Sea Trail Resort. This site has excellent internet access, world class golf at very low rates, and all meals are included in the registration package. Jon-Paul has expanded the program committee which now includes: Glen Fox, David Cann, Hiroshi Funakubo, and Alexei Gruverman. Possible additional program committee members are Xiaoli Tan, Chris Lynch and Xiaoqing Pan. Susan commented that a dielectrics / capacitor person, preferably from industry, should also be added to the committee. Other positions for the conference include the following: Proceedings Chair: Alexei Guverman, Finance chair: Angus Kingon, and Publicity Chair: Susan Trolier-McKinstry. It was noted that we need to push harder as a committee to make ISAF 2006 a resounding success.

ISAF 2008

Paul Clem presented an overview of the plans for the ISAF 2008 meeting to be held in Santa Fe, NM. The dates for the meeting will be February 24-27, 2008. Ahmad and Tadashi noted the late February date was bad for Japanese academics. Bruce Tuttle reported that several different dates were considered (February, June, August and September) and feedback from FE committee members through out the world on this topic was obtained over the last year. After considerable deliberation, the tough decision was made to hold the ISAF 2008 Meeting in late February. The February meeting date offered the following advantages: (1) the opportunity of limited conflict with other conferences, (2) low hotel rates and (3) was considered acceptable by all other groups. Bruce and Paul express their gratitude to Tadashi Takenaka for his efforts on several occasions in providing information for acceptable meeting dates.

Paul described the facilities of the ISAF 2008 Conference Hotel, the Eldorado Hotel, emphasizing the number and size of rooms for technical presentations. This information is critical to the organization of the meeting. Questions arose concerning the fact that ISAF 2008 will need two large rooms: one for plenary presentations and another for posters. While the 600 seat venue of the Eldorado's largest room will work for the plenary talks, it has not been determined yet where poster sessions will be held. Susan commented that there is about 1.5 hours for poster set up and this must be considered when changing the venue of a given room. Susan suggested that the banquet and poster sessions could possibly be held in a hotel other than the Eldorado Hotel, for which space may be an issue. Paul noted that the Hilton Hotel was just across the street and may be able to host poster sessions and the like, and that he would continue investigating banquet and poster facilities. Paul noted that in addition to possibilities for a Poster room in the Eldorado and the adjacent Hilton Hotel, the Sweeney Center that is located a couple blocks away from the Eldorado hotel, has larger facilities and could be available if necessary. Paul reported on the possible airfares and connections to the Albuquerque Sun Port Airport near Santa Fe. The preferred method of transportation from Albuquerque to Santa Fe is via Shuttle service which costs $25 per person, takes about 1 hour and will drop attendees off directly at the Eldorado Hotel. Room costs and government rates for hotels for a variety of different dates were discussed.

Paul has worked diligently to provide the ground work for a contract between IEEE and the Eldorado Hotel for ISAF 2008. Adjacent weeks to the proposed meeting dates in February 2008 in Santa Fe were already taken up by other conferences so it was necessary to move fast to obtain the proposed meeting dates. Presently we need to cover 150 rooms during the conference in the Eldorado Hotel to obtain free meeting space and incur no penalty for too few rooms. The actual number of room days that need to be covered is 688 room-days over a two week period in February that includes the meeting dates. Several iterations of the contract have passed between IEEE and Eldorado Hotel representatives. Final details of the contract are being negotiated.

There was further discussion considering the logistics of joint meetings with other technical groups and societies. Paul reported that the Electronics Division of the American Ceramic Society has agreed to have their 2008 meeting in Santa Fe in conjunction with ISAF 2008. There have been no decisions made on whether the International Symposium on Integrated Ferroelectrics (ISIF) will also meet in conjunction with the ISAF 2008 Meeting in Santa Fe.

Future Meetings

Andy Bell provided a scintillating presentation outlining positive attributes of having the ISAF 2010 meeting in the United Kingdom, specifically in the historic town of Harrogate. One reason that Harrogate is an outstanding site for the meeting is that there are a number of active technical groups with strong ferroelectrics interest in the vicinity. These groups include Leeds, Sheffield, Cranfield, Oxford, Cambridge and Birmingham. There are also several industrial concerns nearby including AVX, Morgan, and Qinetiq. Andy noted that it is relatively easy travel to Harrogate and many tourist destinations are nearby. It may be possible to join with the European Ceramics and/or the Polar Dielectrics groups to have on the order of 600 delegates in attendance. Leeds-Bradford International Airport is convenient; while London and Manchester, with larger airports are 2.5 hours and 1.5 hours by train from Harrogate, respectively.

Andy presented the exceptional conference centre, which can hold 2000 people. He described the wide variety of rooms available for meetings and demonstrated how quickly one can switch from one venue to another. His plans received a very favorable response from the Committee. The date has not been settled yet, but August or September

would be ideal times. Susan asked for a vote from the committee that Andy organize the ISAF Meeting in either 2009 or 2010 and be the General Chair. This motion was unanimously passed by the committee.

Discussions then took place concerning other future meetings, including the precedent setting action of having ISAF meetings on a yearly, rather than the normal meeting every two years, schedule. Glen Fox strongly suggested yearly ISAF meetings to keep interest up among industry participants. He was confident that he could get other companies to help organize some future meetings. The possibility of having a memory based meeting or a meeting with strong memory components was discussed. Susan reported that Andrei Kholkin had suggested Portugal as a potential meeting site. Possibilities that were discussed for an ISAF 2007 meeting included Averio, Portugal, a joint FMA - ISAF joint meeting in Japan, an ISAF meeting at Penn State, and the possibility of a joint ISAF / European Meeting. Tadashi Takenaka expressed concerns for the Far East Meeting in Japan since it would likely conflict with the Asian Meeting of Electroceramics. Susan asked Tadashi to check with colleagues in Japan if any group would like to hold a joint meeting in 2007 with ISAF. Susan stated the 2007 meeting will be a trial for meetings on a yearly basis and not a commitment to have annual ISAF meetings.

Also in regard to future meetings, Susan said that we have invited ISIF representatives to meet with our ISAF executive committee at the 2006 ISAF meeting. Gerry Blessing of IEEE has proposed another Joint meeting of the three UFFC societies. It was agreed at the recent UFFC AdCom meeting that a joint meeting in approximately 10 years would not be pursued among the Ultrasonics, Ferroelectrics, and Frequency Control societies.

AdCom Status Report

Ahmad noted that infrastructure fees have dropped for IEEE and now a rigid formula is used to calculate the infrastructure fees. Further, the AdCom Committee passed a motion that each society should have a 20% surplus margin for their planning for all future technical meetings. Several members of the Ferroelectrics Committee commented that in their opinion a 15% surplus margin is quite adequate. It was also discussed that IEEE would be very supportive of a Journal of Ferroelectrics. Susan then provided information concerning the reports from the Montreal Meeting that were presented at AdCom. She stated that break even meetings are not acceptable as there is a $150k infrastructure fee to IEEE from the UFFC Society each year.

Ferroelectric Awards

Ahmad announced that three new IEEE senior members from the Ferroelectrics community. These members are Paul Muralt, Glen Fox, and Dragan Damjanovic. Also, he added that we have too few active IEEE Fellows in Ferroelectrics. It was stressed that the FE Committee needs to work to nominate other Fellows. Potential IEEE Fellow candidates include Wally Smith, Robert Pohanka, George Samara, Nava Setter, David Payne and Susan Trolier-McKinstry. A nomination for the Fellow position requires six to eight strong recommendations and three reference letters. Ahmad requested that we should plan to nominate three to five candidates from the Ferroelectrics community this year for Fellow. Please email Ahmad with potential suggestions. Viable candidates need to be a Senior Member of the IEEE. Ahmad reported that he has five recommendations for the 2005 Ferroelectric Recognition Award. Glen Fox was asked to suggest someone from Korea for this prestigious award. All members of the Ferroelectrics Committee are encouraged to send names of qualified people to Ahmad for both the Ferroelectrics Recognition Award and for Senior Membership. Ahmad has requested that in the future ISAF meeting chairs put $2000 in the budget for the Ferroelectrics Recognition Award. Susan will need to ask AdCom for approval of this proposed action.

Standards

Since the last FE committee meeting only 3 months ago, a few Standards issues have been addressed. IEEE Standards being considered include the following: (1) a ferroelectric memories standard (potential lead Glenn Fox), (2) a scanning probe microscopy (SPM) standard, and (3) a ferroelectric thin films standard (Roger Whatmore, a potential candidate to head this standard committee. With regard to the scanning probe microscopy standard, Susan contacted renowned expert Serge Kalinin. He stated that his opinion was that it was not possible at present to calibrate this technique for thin films, but it is possible to calibrate SPM for bulk materials. Further he wants to add nanoindentation measurements to the standard since nanoindentation and SPM are intimately related. While nanoindentation on bulk materials can be quantitative, it is currently qualitative for films. One needs accurate qualitative nanoindentation measurements for accurate SPM measurements. Susan will ask for an abstract from Serge Kalinin on this standard for the next meeting. While Glen Fox of Ramtron is an excellent choice to head the Memory Standards Committee, Susan noted that IEEE does not like the leader of a standard committee to be from industry due to possible conflicts of interest.

Website

Ruyan informed committee members that a professional from IEEE will provide updates to the Ferroelectrics website from FE committee members, but please inform Ruyan of any such additions. Ruyan stated that she would like history and review articles, an article of the history of PZT, papers of the late Gen Shirane, and a barium titanate review article. Other website additions of interest would be information on FE thin films, relaxors, computer simulation and FE sensors.

Other Business:

There has been a request for information for the UFFC newsletter. Recent additions to the UFFC newsletter from

Ahmad included a brief article on the awards that Eric Cross and Bob Newnham received. He requested that those in the Ferroelectrics field contact Jan Brown with information that they would like to submit to the UFFC Newsletter. Glen Fox stated that he would send a report on Ramtron's recent 1 MB memory to Jan for publication in the newsletter.

Ahmad Safari nominated Susan Trolier-McKinstry as President Elect of IEEE-UFFC. This vote will be held at the upcoming AdCom meeting in the Netherlands. He noted that if Susan is voted in for this position she must resign as Chair of the Ferroelectrics committee.

Ahmad noted that for upcoming ISAF Conference General Chairs that they need to include $5000 in their budgets to attend the AdCom meetings.

Next Meeting

The next Ferroelectrics Committee Meeting is tentatively scheduled to be held in conjunction with the US-Japan Dielectrics and Piezoelectrics Meeting to be held November 6-9, 2005 in Annapolis, MD.

Bruce Tuttle,
Secretary of the Ferroelectrics Committee
April 30, 2005

Honors

Japanese Government Honors Dr. Michio Kadota

On 27th May, 2005, Dr. Michio Kadota of Murata Manufacturing Co., LTD, Japan, received a Medal with Purple Ribbon from the Japanese Government for his honorable achievements on the development and the practical use of surface acoustic wave (SAW) filters for the intermediate frequency (IF) stage of TV/VCR sets using zinc oxide (ZnO) piezoelectric films on glass substrates. The award recognizes extraordinary contributions to scientific and cultural areas, and he is one of the youngest recipients in the history of this order.

Dr. Michio Kadota

About Dr. Kadota

Dr. Kadota received his B.S., M.S. and Dr. Eng. degrees in Electronics Engineering from Tohoku University in 1971, 1974, and 1994, respectively. In 1974, he joined the Murata Manufacturing Co., LTD, where he was involved in the research and development of various bulk acoustic wave and SAW devices. For 5 years from 1985 to 1990, he moved to Kanazawa branch factory and worked there to make a success of mass production of SAW filters for IF of TV/VCR using ZnO films on glass and ceramic substrates.

In addition to their SAW filters for IF of TV/VCR, he engaged in research and production on bulk acoustic wave ceramic filters, high density ZnO films, piezoelectric 1st mode transformers using ceramics, small resonators and resonator filters using edge-reflection of BGS/SH waves on ceramic and 36∞YXLiTaO3 substrates, small resonator filters using SH wave on high density metal electrodes on quartz, and SAW duplexers with excellent temperature characteristic using a SiO2/high density metal electrode/LiTaO3 structure. His research has also made contributions to the success of the mass production of almost all of them. The devices are used as trap resonators of TV/VCRs and filters for car radios, electric toll collection (ETC), mobile phones, and so on.

Other Honors

Due to his excellent research activities and their impact on industry, Dr. Kadota has also received various awards: The 41st and 50th Okochi Memorial Technology Awards (1995 and 2004), The Minister Award of Science and Technology from the Science and Technology Agency of Japan (1997), The 10th Technical Development Award from Acoustic Society of Japan (2002), and The 51st Ohm Technical Award (2003).

On 1 July 2005, he was appointed as a fellow of Murata Manufacturing Co., LTD, the highest engineering rank equivalent to a director in the company.

Ken-ya Hashimoto

MIND - A new European Network on Multifunctional & Integrated Piezoelectric Devices

The European Community, within the 6th research framework, created recently a net-work of excellence on Multifunctional & Integrated Piezoelectric Devices [MIND].

The objectives of MIND are to increase the level of understanding of all phenomena in piezoelectric materials and structures, and to apply this knowledge to the design of new and improved devices such as sensors, transducers, actuators & motors for applications ranging from medical diagnostics and therapy to industrial measurements, as well as transportation and products for the citizens. The aim is to create a European Institute on piezoelectric materials, struc-

tures and devices through durable integration of research teams covering expertise ranging from material synthesis to integrated device development. The scientific objectives will concentrate on miniaturization and integration of piezoelectric structures and multifunctional devices such as multiple sensors or intelligent structures, in which the piezoelectric properties are combined to other properties to obtain new or improved devices.

The general coordinator of the net-work activities is Ms. Wanda Wolny, the managing director Ferroperm Piezoceramics A/S (Denmark). The scientific and technical coordinator of the activities is Prof. Marc Lethiecq of Laboratoire d'Ultrasons, Signaux et Instrumentation of the University of Tours (France). Nine more institutions are part of the network, among them two industrial partners, Siemens and Fiat, the National Physics Laboratory of UK, and six academic groups: The Ceramics Laboratory of EPFL (Switzerland), Electronic Ceramics Department of Jozef Stefan Institute (Slovenia), Ecole Centrale – Paris, University of Cranfield (UK), Instituto de Ciencia de Materiales de Madrid and the Solid State Physics Institute of the University of Latvia.

The program started on 1st March 2005 and its first phase will continue until early 2009.

Wanda Wolny, the general coordinator and Marc Lethiecq, the technical & scientific coordinator of the European Net-Work of Excellence on Piezoelectricity - MIND.

Dr. Leonard J. Bond appointed Director Center for Advanced Energy Studies

Dr. Leonard J. Bond was appointed director of the new Center for Advanced Energy Studies (CAES) recently established in Idaho Falls. CAES is a collaborative venture among the U.S. Department of Energy; the state of Idaho; a consortium of three Idaho research universities (Idaho University Consortium); the National University Consortium (NUC); Battelle Energy Alliance(BEA); and Idaho National Laboratory (INL). CAES will play a key role in United States and global energy research programs.

Leonard is also being appointed as an affiliate faculty member for physics for the University of Idaho and Idaho State University.

Center for Advanced Energy Studies

The Center for Advanced Energy Studies (CAES) got off to a tremendous start Wednesday, June 1, as Energy Secretary Samuel Bodman, Gov. Dirk Kempthorne, and a host of other dignitaries attended the inaugural event of CAES's programmatic activities. CAES is a new center for advanced energy research, technology and engineering education seeking to develop innovative ways to meet America's future energy needs. CAES will place primary focus on nuclear energy technology development.

At the event, held at the Bennion Student Union Building in Idaho Falls, Secretary Bodman said, "Technology is the answer to meeting our growing energy needs. By developing programs like CAES, we are investing in the next generation of scientists and engineers who could hold the key to unlocking our energy future."

Consistent with INL, the CAES facility will concentrate on

Energy Secretary Sameuel Bodman and Idaho Governor Dirk Kempthorne welcome the beginning of the CAES program activities

preparing future researchers, designers, builders and operators of a revitalized nuclear power sector. The facility will be built around four main areas: the Center for Nuclear Fuels and Materials Research; the Center for Space Nuclear Research; the Center for Nuclear Systems Design and Analysis; and the Center for Advanced Modeling and Simulation.

CAES and the Idaho University Consortium (UI, ISU and BSU), will create a 4-year bachelor of science nuclear engineering program that will include the last two years at the University Place campus in Idaho Falls and the students with be INL interns.. This program will link to INL activities through internships, fellowships, and leverage INL's expertise and research programs. The BS program will start this fall with 6 students.

CAES Director Leonard Bond, right, welcomed the group and introduced Gov. Kempthorne. Kempthorne's support was instrumental in the founding of CAES and its collocation with INL.

This summer (July-August) the World Nuclear University Summer Institute will come to INL and this is now under CAES. Some 75 students from 33 countries will be here doing research, attending lectures and drawing a focus on INL DOE and BEA's 10-year-goal is for CAES to become a premier international user facility for promoting, performing and revitalizing research, education and training in nuclear energy science, engineering, technology and related disciplines. Additionally, CAES's vision is to be a national and international leader in energy-related research to support national energy policy development.

The CAES startup ceremony was also attended by representatives of leading universities, including Idaho State University President Dr. Richard Bowen, Boise State University Vice President of Research Dr. John Owens, University of Idaho Vice President of Research Dr. Charles Hatch, Massachusetts Institute of Technology's Dr. Andy Kadak, who also chairs the National University Consortium that will work closely with CAES, and Dr. Man-Sung Yim of North Carolina State University's Department of Nuclear Engineering.

About Dr. Bond

Dr. Bond is an applied physicist who has held posts in academia, industry and national laboratories. He has more than 25 years' experience working on energy/measurement topics in both the United Kingdom and United States.

His early work supported the development of ultrasonic "pigs" for pipeline inspection for British Gas. While a faculty member at University College London (UCL), University of London, he contributed to the activities of the London Centre for Marine Technology, supporting North Sea oil and gas activities and the UCL Non Destructive Evaluation (NDE) Centre. His research has included applications for nuclear submarine reactors, a liquid metal fast breeder reactor for UK Atomic Energy Authority (UKAEA).

He moved to the United States in 1990 and worked initially with the National Institute of Standards and Technology (NIST) and the University of Colorado at Boulder. He was a consultant to the Electric Power Research Institute (EPRI) – Performance Demonstration initiative for modeling to support revalidation of primary nuclear pressure vessels for the Massachusetts Institute of Technology and the U.S. Office of Fusion Research for NDE applied to the International Thermonuclear Experimental Reactor (ITER). He joined Pacific Northwest National Laboratory (PNNL) in 1998 and was appointed as a Laboratory Fellow. He led the laboratory's Advanced Nuclear Science and Technology Initiative and was a principal investigator (PI) and co-PI for two U.S. Department of Energy projects under the Nuclear Energy Research Initiative (NERI) program. He was a major contributor to the development of PNNL's Integrated

From left, Beth Sellers, Gov. Kempthorne, Secretary Bodman, INL President Grossenbacher and CAES Director Bond. These five were key in achieving the partnership between DOE, Idaho, INL, eight major universities and private industry that forms the Foundation for CAES.

Nuclear Strategy. In a project for Sandia National Laboratories, he developed novel methods for Inertial Confinement Fusion Target characterization.

Dr. Bond holds a bachelor's degree in applied physics and a doctorate in physics from The City University, London. He is a Fellow of the Institute of Physics (UK) and a senior member of the Institute of Electrical & Electronics Engineers (IEEE). He is a member of the DOE-NE/EPRI I&C Working Group. He was a track chair for the American Nuclear Society 4th Topical Meeting on Nuclear Plant Instrumentation, Control and Human-Machine Interface Technologies (NPIC&HMIT) Meeting, September 2004, in Columbus, Ohio. He has been author or co-author of more than 200 publications, including six book chapters, three monographs and more than 55 peer-reviewed scientific journals. He is author of more than 60 major reports and holds six patents.

2005 UFFC Senior Members

Newly Elevated Senior Members

On behalf of the UFFC Society, we would like to congratulate those members who have been elevated to the grade of Senior Member thus far in 2005.

Enver K. Akdogan - USA
Leonard J. Bond - USA
Dragan Damjanovic - Switzerland
Glen R. Fox - USA
Michael D. Howard - USA
George A. Kyriacou - Greece
Timothy R. McJunkin - USA
Paul Muralt - Switzerland
Larry Akio Nagahara - USA
Thomas O'Brian - USA
Yves Perriard - Switzerland
Richard Ruby – USA
Georg Schmitz - Germany
Matthew L. Smith – USA
Boris D. Zaitsev - Russia
Manell E. Zakharia - France
Weiguang Zhu - Singapore

IEEE Membership

Membership in the IEEE is open to professionals and Students with varying levels of academic accomplishment and work experience in an IEEE designated field of interest. The designated fields are, in broad terms:

- Engineering
- Computer Science and Information Technology
- Physical Sciences
- Biological and Medical Sciences
- Mathematics
- Technical Communications, Education, Management, Law, and Policy

The IEEE has a clear interest in providing a welcoming environment for professionals involved in all aspects of technology and technology related professions reflective of the interests of the more than forty IEEE technical societies and councils.

Senior Member Grade

The grade of Senior Member recognizes those who have achieved professional proficiency, as demonstrated by degrees received and/or work experience. It is a professional recognition of your peers for technical and professional excellence.

The grade of Senior Member is the highest for which application may be made and shall require experience reflecting professional maturity. For admission or transfer to the grade of Senior Member, a candidate shall be an engineer, scientist, educator, technical executive, or originator in IEEE-designated fields.

Qualifications

The candidate shall have been in professional practice for at least ten years and shall have shown significant performance over a period of at least five of those years, such performance including one or more of the following:

- Substantial responsibility or achievement in one or more of IEEE-designated fields
- Publication of papers, books, or inventions in one or more of IEEE-designated fields
- Technical direction or management of important work with evidence of accomplishment in one or more of IEEE-designated fields
- Recognized contributions to the welfare of the professions encompassed by one or more of the IEEE-designated fields
- Development or furtherance of important courses in one or more of the IEEE-designated fields
- Contributions equivalent to those above in areas related to IEEE-designated fields, provided these contributions serve to advance progress substantially in IEEE-designated fields.

A&A Evaluation

The Admissions and Advancement (A&A) Committee evaluating Senior Member applications will count the years you have been in professional practice. Your educational experience is credited toward the ten years of professional experience as follows:

- 3 years for a baccalaureate degree in an IEEE-designated field
- 4 years if you hold a baccalaureate and masters degree
- 5 years if you hold a doctorate

Many prospective applicants make the mistake of assuming that "significant performance" requires special

awards, patents or other extremely sophisticated technical accomplishments; such is not the case. Substantial job responsibilities such as team leader, task supervisor, engineer in charge of a program or project, engineer or scientist performing research with some measure of success (papers), or faculty developing and teaching courses with research and publications, all are indications of significant performance.

How to Apply

Individuals may apply for Senior Member grade online at http://www.ieee.org/organizations/rab/md/smforms.htm

The Senior Member application form is available in 3 formats.

- Online version
- Downloadable version
- Electronic version

The application may be submitted online, by snail mail or as an email attachment. Reference letters may also be completed online or sent electronically. To expedite the processing of your application, it is suggested that you submit your application online or send the electronic version to senior-member@ieee.org.

We encourage you to apply for Senior Membership, as soon as you meet the requirements. One cannot become an IEEE Fellow without first becoming a Senior Member.

UFFC Awards

UFFC Distinguished Lecturer Award

The Distinguished Lecturer represents the UFFC Society by giving lectures worldwide to the larger technical community. The subject of the lecture must be of current interest and the lecturer must be a prominent contributor in the field of the lecture. The speaker is selected for speaking style, prominence in the topic, and willingness to commit significant time and energy to preparation, travel and lectures. The Lecturer is selected by the AdCom from a list of nominees presented by the Distinguished Lecturer Subcommittee of the UFFC-S Awards Committee from nominations received from the general membership. Presentation of the award is usually at one of the Society's major symposia.

The award consists of a certificate, and reimbursement for an international lecture tour, which consists of roughly 30 or more lectures during an 18-month period.

You are encouraged to invite the Distinguished Lecturer to your Chapter or institution.

2004 – 2005 Distinguished Lecturer

Dr. Nava Setter
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Materials Institute
EPFL Swiss Federal Institute of Technology
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nava.setter@epfl.ch

Down Scaling in Piezoelectrics and Pyroelectrics: Microdevices, Nanofabrication, Nanoscale Features and Size Effects

Piezo- and pyroelectrics materials in the form of thin and thick films are finding new applications in various fast growing fields such as mobile communications and MEMS. The number of applications that could benefit from availability and implementation of these films is likely to grow.

Size reduction of ferroelectric-based micro-components, both in thickness and lateral dimensions, is required for future applications. This can be achieved by a reductive approach of etching of the sintered continuous layers, or by an additive approach in which a treatment of the substrate results in the creation of patterned structures prior to the annealing step. Novel local techniques, e.g., piezoelectric force microscopy, allow the analysis of properties in such small components.

Various microdevices will be described, issues in fabrication technology will be discussed, and data and interpretation of local measurements will be reviewed. In light of these results, size effects in ferroelectrics and their significance in emerging applications will be discussed.

Dr. Nava Setter

Nava Setter received B.Sc. and M.Sc. degrees in Civil Engineering from the Techion – Israel Institute of Technology and Ph.D. degree in Solid State Science from the Pennsylvania State University in 1980. She has worked in the area of ferroelectric ceramics and single crystals, microwave dielectric and ferrites at the Pennsylvania State University, USA, at the University of Geneva, Switzerland, and R&D laboratories, Israel. Since 1989 she is heading the Ceramics Laboratory of the Swiss Federal Institute of Technology at Lausanne (EPFL), a professor in Materials Science and Engineering, and an affiliated professor in Microtechnology Engineering at the EPFL. She was nominated a member of the Swiss Academy of Technical Sciences in 1995. Her scientific interests are in piezoelectric and related bulk ceramics/crystals and ceramic thin and thick films for sensors, actuators, and capacitors. She has authored and co-authored over 200 scientific papers in this area. She was the General Chair for the 1998 ISAF meeting in Montreux.

Please contact Nava Setter to schedule a visit to your area during the period from July 2004 – December 2005.

Dr. Nava Setter Reports

Visits to conference and Universities in Oceania and South-East Asia

During February 2005 I attended a conference and visited 3 universities in South-East Asia and Oceania. The conference was The International Conference on Advanced Materials and Nanotechnology (AMN-2) held in Queenstown New Zealand 6 - 12 February. At the conference I gave an extended talk in the context of the IEEE UFFC Distinguished Lecture. Then I have visited the University of Victoria at Wellington (17-19 February) where I met a number of colleagues in the areas of electro-ceramics (Prof. Kenneth MacKenzie and Prof. Richard Tilley) , ultrasonics (Prof. Gideon Gouws) and semiconductor oxides (Prof. Joe Trodahl) and gave a seminar to the physics and the materials department.

From there I traveled to Sydney Australia, where I visited the University of New South Wales on 22 February. I met with a number of faculty in the Electrical Engineering and Materials Departments (Dr. Rodica Ramer, Dr. Nagarajan Valanoor, Prof. Chris Sorell). I gave a seminar attended by members of the electrical engineering department and the materials department and had the occasion to learn about their scientific activities.

Finally, on the 24th of February I visited the School of Electrical & Electronic Engineering of Nanyang Technological University in Singapore. There I met with Prof. Weiguang Zhu as well as Prof. Yao Xi from Shanghai who was staying in Singapore on sabbatical leave at that time. I delivered a seminar in front of members of the department.

The photo taken after my seminar shows Prof. W. Zhu (standing, on the right), Prof. Yao Xi (sitting, on the right) and a number of faculty and graduate students of the Electrical and Electronic Engineering department.

Visits to East and Mid-East of USA

During April 2005, I visited a few academic and research institutes in the USA. From March 31st to April 2nd I visited Dr. Ahmed Amin and colleagues at the Naval Undersea Warfare Center in Newport, Rhode Island, where I met researchers and colleagues working in the field of piezoelectrics, was shown the facilities, and gave a seminar.

A few days later I have visited the Rutgers University in New Brunswick, New Jersey (3rd-4th April). Professor Ahmed Safari was my host. With pleasure I met with a number of faculty (Prof. Lisa Klein, Prof Yicheng Lu, and others) and gave a seminar which was attended by graduate students and faculty of the Materials, Physics, and Electrical engineering Departments.

The next and last stop was at the Department of Electrical and Computer Engineering of Marquette University in Milwaukee, Wisconsin (April 4th to April 6th. Professor Shrinivas Joshi was my host and in addition to interesting discussions and a short visit of the department I gave a seminar to the graduate students.

Visit and lecture at the University of Warwick (GB) – 4 - 5 May 2005

The University of Warwick is among the best universities of UK, perhaps the best in Engineering. I was therefore glad to be invited to visit the Engineering Department as the IEEE UFFC Distinguished Lecturer.

My host was Dr. Richard Staunton who is doing marvels not only with image processing (his bread and butter) but also with polymer based 3D micro devices. I had the pleasure to meet, visit, and discuss with a number of scientists in the area of ultrasonic microsensors and transducers (Prof. David Hutchins, Dr. Marina Cole, and colleagues) and in the area of chemical sensors and MEMS (Prof. Juliam Gardner and colleagues). I learned about a number of new devices in the area of sensing of liquids and gases and medical transducers and met also with Prof. Roger Green who heads the large group of researchers in Communications and Signal Processing. I had the opportunity to discuss also with faculty of the Manufacturing Department, Materials Engineering (Prof. Tjahjadi) and the environmental program.

It was the General Election Day in Great Britain. So I was pleased that the seminar was attended by a number of students and lecturers with diverse interests (ultrasonics, MW electronics, materials, MEMS) who seemed to be attentive in spite that it was given right after lunch and before coffee and that the speaker was not a native English speaker. The reputation of the British as being tolerant people was proven once more.

Nava Setter
Lausanne

2005 – 2006 Distinguished Lecturer

Dr. Ken-ya Hashimoto
Department of Electronic and Mechanical Engineering
Faculty of Engineering
Chiba University
1-33 Yayoi-cho, Inage-ku
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k.hashimoto@ieee.org

Simulation of Surface Acoustic Wave Devices

Presently, surface acoustic wave (SAW) filters are mass produced and widely used in various consumer products and communication equipment. For their research and development, use of fast and precise simulation and design tools is essential, and much effort has been paid for their enhancement for many years.

Fortunately, recent rapid progress of computer technologies has made it possible to deal with large-scale problems using small personal computers. So as for computers, anyone can set up the latest research environment with small investment. The remaining task is to establish simulation and design software tools.

This lecture reviews simulation technologies used in the research and development of modern SAW devices. Firstly, a simple discussion is presented on the role of the numerical simulation to clarify its applicability and necessity. Although a number of simulation techniques have been developed, none of them are perfect. So we must select appropriate ones for each purpose with the trade-off between computation speed and precision.

The simulation techniques are categorized into two types. The first type is based on the full-wave analysis, and is used for parameter extraction, design verification, theoretical examination, etc. where precision is more important than the calculation speed. In this category, the finite element method (FEM), boundary element method (BEM), spectral domain analysis (SDA) and their combinations are representative. In the second part of the lecture, these techniques are practically applied in the SAW device design.

The second type is based upon phenomenological models, and is used in the optimization process. In this case, the calculation speed is also very crucial because the simulation will be executed for a huge number of iterations to search for the optimal solution. Presently, the coupling-of-modes, p-matrix and equivalent circuit models are widely used. In the third part of the lecture, they are compared and their use in practical device design is detailed. It is demonstrated how precise and speedy this type of simulation can be performed provided that all necessary parameters were determined correctly in advance.

Once simulation tools are ready, it is a starting point of a trial road. This is because minor effects in former days become obvious after evolution, ad further improvement is always necessary. In the final part of the lecture, various hot topics in this direction are presented and hidden problems in current simulation tools are revealed.

Please contact Ken-ya Hshimoto to schedule a visit to your area during the period from July 2005 – December 2006.

Dr. Ken-ya Hashimoto

Ken-ya Hashimoto was born in Fukushima, Japan, on March 2, 1956. He received his B.S. and M.S. degrees in electrical engineering in 1978 and 1980, respectively, from Chiba University, Japan, and Dr. Eng. degree from Tokyo Institute of Technology, Japan, in 1989.

In 1980, he joined Chiba University as a Research Associate, and is now Associate Professor of the University. In 1998, he was a Visiting Professor at Helsinki University of Technology, Finland. In the winter of 1998/1999, he was a Visiting Scientist of the Laboratoire de Physique et Metrologie des Oscillateurs (LPMO), CNRS, France. In 1999 and 2001, he was a Visiting Professor at the Johannes Keppler University of Linz, Austria.

Dr. Hashimoto has authored or co-authored more than 130 papers in refereed journals and conference proceedings. He has contributed to 6 books including a textbook "Surface Acoustic Wave Devices in Telecommunications" published by Springer Verlag in 2000. His current research interests include various types of surface and bulk acoustic wave devices, acoustic wave sensors, piezoelectric thin films, and application of thin-film micro-machining technologies to the acoustic wave devices.

2006 – 2007 Distinguished Lecturer

Dr. Andreas Bauch
Physikalisch-Technische Bundesanstalt
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Time and Frequency Department, AG 4.42
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The Galileo Timing System

The future European satellite navigation system Galileo will use an independent timescale - Galileo system time (GST) - as a reference for the determination of satellite orbit and clock parameters. In Europe, several smaller and larger research institutes are dealing with time and frequency measurement. The equipment as well as the human expertise are spread. The European Community has thus supported studies organized by the Galileo Joint Undertaking (GJU), Bruxelles, to define the Galileo Time Service Provider (GTSP), an entity that will act as the interface between Galileo core operations and the European timing institutes. A so-called Precise Time Facility (PTF) will be developed as part of the Galileo Ground Mission Segment and GST shall be physically realized there. This development is directed by the European Space Agency and performed by European industries.

Inevitably, the PTF will have to be accurately and reliably

linked to the participating timing institutes, and one major task of the GTSP is the organization and management of such time links. I will explain the techniques foreseen in the Galileo operations and demonstrate which performance level of such systems has been achieved. The number-one technique is two-way satellite time transfer over commercial telecommunication satellites. Time transfer using signals of the Global Positioning System as well as of Galileo itself – once a sufficient number of satellites will have been launched – will be used as well.

I will probably address also the timing aspect of interoperability of Galileo and GPS as far as it is still a matter of concern at the time the talk shall be given.

Whenever time actually matters (not only frequency) the calibration of the time transfer equipment is a major issue. PTB has been and will be actively involved in several calibration campaigns. I will present the techniques employed and the results obtained. This issue, of course, has wider importance than GNSS operations since the realization of International Atomic Time bears on accurate time comparisons among the contributing institutes world-wide.

Explicitly talking about Galileo is rather timely chosen since at the end of 2007 the so-called In-Orbit Validation of Galileo is scheduled. So the ground infrastructure has to be established by then. Also the GTSP has to be operational at that time, and the three-year contract covering this activity is to be signed by GJU in these days. PTB is very probably included in the team made up by industrial and scientific partners which will be entrusted with the activity.

Please contact Andreas Bauch to schedule a visit to your area during the period from July 2006 – December 2007.

Dr. Andreas Bauch

Andreas Bauch was born in Wiesbaden, Germany, on January 17, 1957. He received his Diploma degree in Physics and his Dr. rer. nat. degree in 1982 and 1986, respectively, both from Johannes-Gutenberg Universität, Mainz, Germany.

He joined the Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany, as a PhD student in 1983, studying frequency shifting effects in caesium atomic clocks. Since then he has been always involved in time and frequency metrology, focussed at first on the development and operation of atomic clocks, later more and more on time comparison techniques (GPS CV, TWSTFT). He became Head of PTB' s Time Unit Laboratory in 1991.Today he is Head of PTB's Time Dissemination Services responsible for the management and operation. He serves as delegate to the Comité Consultatif du Temps et Fréquences (CCTF), to Study Group 7 of the International Telecommunication Union and to EUROMET.

Dr. Bauch has authored and co-authored more than 90 papers in refereed journals and conference proceedings. He is currently strongly involved in the development of the timing system of the future European satellite navigation system Galileo.

Nominations for Distinguished Lecturer Award

Nominations for the UFFC Distinguished Lecturer may be submitted at any time. Any member may submit a nomination by sending the nominee's name and a description of that person's main contributions, along with the submitter's own name and address. Members are also encouraged to suggest topics, which they feel, would be of interest. Send nominations and topics to:

Bernhard R. Tittmann – Awards Vice-Chair
Chair, UFFC-S Distinguished Lecturer Subcommittee
Schell Professor
Engineering Science & Engineering
212 Earth & Engineering Science Bldg.
The Pennsylvania State University
University Park PA 16802 USA
brt4@psu.edu
Bernhard.tittmann@ieee.org

Nominations

AdCom Member Election

There are twelve elected members of AdCom each serving for a term of three years. Each year four new members are elected by the UFFC membership. The ballot for the election of the new UFFC AdCom members should be in your mailboxes shortly. We encourage you to vote in the election. It is your participation that makes the Society stronger.

The 2005 Slate of Candidates

The Nominations Committee has provided an excellent slate of new candidates for this Summers ADCOM election. This is the 6th year of the new election format in which one new member is elected from each of the Ultrasonics, Ferroelectrics, and Frequency Control communities and one member is elected from Regions 8-10.

The biographies of the proposed candidates for this year's election may be found in your mail ballot. The candidates you will find on the ballot are:

Ultrasonics

Takashi Shiba

Quing Zhu

Manfred Weihnacht

Ferroelectrics

Glen Fox

Sorah Rhee

Frequency Control

Koray Akdogan

Gregory Weaver

Amit Lal

Regions 8 - 10

Wilko Wilkening

Tadashi Takenaka

We encourage you to vote in this election. The ballots were mailed 24 June 2005. The results should be available sometime before the meeting in Rotterdam.

The AdCom Nominations Procedure

The UFFC Nominations Committee is charged with preparing a slate of candidates for new AdCom members for approval by AdCom and to be voted on by the entire UFFC membership.

According to the Bylaws, "It shall prepare biographies of candidates for inclusion with the ballots, and interact with IEEE Headquarters in the conduct of the election."

Nominees may also be presented by Society members. A Nominating Petition, carrying at least 25 names of Society members, places that nominee automatically on the slate. Nominees may also be presented from the floor by members of AdCom. A simple majority vote of AdCom will place the nominee on the ballot. All nominees must be voting members of the Society in good standing at the time of nomination.

Criteria for Choosing Nominees to Run for AdCom

The criteria by which the Nominations Committee selects appropriate and qualified nominees to run for elected seats on the Administrative Committee (AdCom) is:

1. Interest & Experience: Since the Society exists primarily to provide a forum for technology in the areas of Ultrasonics (U), Ferroelectrics (F), and Frequency Control (FC), nominees with strong technical interest and ability in at least one of these areas are sought.

   Further, it is desired to keep AdCom balanced so that each specialty (U, F, and FC) is represented. Because each specialty field has a broad range of subspecialties, an attempt is made to further balance the AdCom with respect to these. Nominees, regardless of specific technical area, must possess a solid record of service to IEEE & UFFC-S to be considered.

2. Willingness & Ability to Serve UFFC-S: An additional criterion is to seek nominees with an interest, ability, and willingness to serve UFFC-S and the IEEE in professional and administrative activities. Examples of prior experience sought include service on a technical program committee, or holding office in a local chapter, or participating as a member of an AdCom subcommittee. Ability to attend at least one of the two AdCom meetings per year is a requirement.

3. Representation: A third criterion is to consider nominees who fairly reflect the membership of UFFC-S. This includes female candidates and candidates fairly representing our world-wide geographic diversity.

4. Geographic Balance: Consideration is given to fairly representing members from all parts of the world. The minimum number of nominees from regions 8-10 (outside the USA and Canada) shall be at least two as prescribed in the Bylaws.

5. Elect ability: Elect ability is considered only to the extent that the Nominations Committee must feet that a potential nominee is well enough known to the Society membership to stand a fair chance of being elected. The goal is to balance the AdCom by technical areas, so it makes sense to choose qualified people who also have a fair chance of election.

6. Input Mechanisms: The Nominations Committee gathers the names of potential nominees in some or all of the following ways:
   a. consideration of outstanding people working in a technical specialty which will become, or is, under-represented on the AdCom
   b. review of various listing of UFFC members including the Newsletter's reports on people actively serving the Society
   c. recommendations from AdCom members

d. self-nominations as received verbally or in writing from individual members

The Nominations Committee strives to consider the interest of a broad range of UFFC-S members, and to match people to opportunity. This is done by

1. balancing the committee membership itself with respect to technical specialties,
2. keeping the committee informed as to the openings on the AdCom which will become available as a given class departs, and
3. setting the number of people on the Nomination Committee to as large a number (11) as is practical, in order to develop a broad acquaintance with the Society membership as a whole.

By these means, the committee feels that it fairly considers the qualified members and candidates who would make good AdCom representatives for the Society at large.

Accepting Nominations

The Nominations Committee is now accepting nominations for the AdCom class whose term ends in 2009 which will be elected in 2006. If you or someone you know would like to be a nominee for AdCom, please send a short biography to the Nominating Committee Chair, Bob Potter at bpotter@vectron.com.

UFFC President-Elect Election

The UFFC Nominations Committee is also charged with preparing for AdCom a slate of candidates for President-Elect. According to the UFFC Constitution, "the AdCom shall elect every two years a President-Elect whose term of office will be for two years." Each odd-numbered year is an election year.

Nomination and Election Procedures

As this is an odd-numbered year the Nominations Committee is preparing the slate of candidates for President-Elect to be presented at the AdCom meeting on 18 September 2005 in Rotterdam, The Netherlands, immediately preceding the 2005 IEEE International Ultrasonics Symposium.

Nominations may also be accepted from the floor of the AdCom. The election for President-Elect is conducted by the incumbent President and is by secret ballot. From the Bylaws, "A majority of the ballots shall determine the election. In case there are more than two nominees, and no nominee receives a majority, the nominee with the lowest number of votes shall be dropped from the slate, and the voting repeated until a majority is obtained.

Duties

The President-Elect shall assume the Presidency for a two-year term at the conclusion of his/her two-year term as President-Elect.

The President, newly elected President-Elect, members of the AdCom, and the newly appointed Secretary-Treasurer shall assume office on the first of January following their election.

The President shall supervise the affairs of the Society and shall speak for the Society on all matters not specifically delegated to others, as directed by the AdCom and in accordance with his or her power. The President is the presiding chair of AdCom.

From the Bylaws, "The President is automatically a member of certain IEEE committees and in these positions is expected to promote the interest of the Society, and to influence for the better the conduct of IEEE affairs." When the President is notified of meetings of IEEE Boards of which he/she is a member, the President shall insure representation of the Society at such meeting by himself/herself, or by an alternate.

The IEEE Technical Activities Board (TAB) consists of the Presidents of each of the 39 IEEE Technical Societies and 5 Councils. They meet three times a year. The UFFC President is our representative to this Board. The UFFC AdCom encourages the President–Elect to attend these meetings also.

All of the UFFC Standing Committee Chairs including the four Vice-Presidents shall be appointed by the President and ratified biennially by a majority of the elected members of AdCom. The Secretary/Treasurer shall be appointed by the President. The President shall also appoint representatives of UFFC to various IEEE committees, Councils, and other positions as requested.

The President-Elect shall fulfill the Presidential duties in the President's absence or incapacity, and shall fulfill such other functions as directed by the President or AdCom. In the event that neither the President nor the President-Elect is available, these duties shall be performed by an AdCom member appointed by the President.

Accepting Nominations

The Nominations Committee is now accepting nominations for President-Elect. Please send a biography and a letter of qualification of the nominee to the Nominating Committee Chair, Bob Potter at bpotter@vectron.com.

Bob Potter
Chair, AdCom Nominations Committee

Students

Dear fellow students,

Manny Gottlieb

Oliver Keitmann-Curdes

We would like to update you on our progress to further serve the student needs of our society. We have been working with Dr. Sorah Rhee, web editor and chief, on the launching of our student section webpage on the UFFC website (http://www.ieee-uffc.org/stmain.asp). We have also launched the UFFC student member list serve, thanks to the help of Dr. Jan Brown (UFFC newsletter editor) and Dr. Rajesh Panda (UFFC membership services) at:

UFFC-STUDENT@LISTSERV.IEEE.ORG

Please send an email to uffc@usc.edu to be added to this list or to be removed. The current list comprises all students who are currently UFFC student members and students who attended the UFFC 50th Anniversary Celebration in Montreal, Canada in August 2004. There are 418 student members on this list including UFFC full members from the UFFC Administrative Committee (AdCom). A total of 32 countries are represented in our student membership from: Australia, Austria, Belgium, Brazil, Bulgaria, Canada, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, India, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Romania, Russian Federation, Singapore, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey and USA.

Oliver is in his second and last term of office as a UFFC student representative. If you are interested in serving your fellow students, please contact us and we will forward your contact information to Gerry Blessing, the President of UFFC Society, for consideration to be appointed to the UFFC AdCom in 2006.

If you wish to start a student chapter at your university please contact us for more information. The purpose of student chapters of UFFC at universities around the world is to locally explore and promote academic and career issues related to the field of Ultrasonics, Ferroelectrics, and Frequency Control, and to help those interested in the field to get to know one another better outside the classroom and laboratory.

We look forward to seeing you at Rotterdam for those of you who will be attending this year's 2005 IEEE International Ultrasonics Symposium.

Best regards,

Oliver Keitmann-Curdes - Sr. Student Representative,
o.keitmann@ieee.org
Emanuel Gottlieb - Jr. Student Representative,
egottlie@usc.edu

Education Committee Report June 2005

The UFFC Education Committee Activities Summary

Koray Akdogan

1) A comprehensive tutorial on piezoresistivity is now finished and submitted for upload on the EdCom page of the UFFC web page. The authors are Drs. A Amin of the DoD NAVSEA and E. K. Akdogan of Rutgers University. The tutorial is expected to be useful for graduate students and practicing engineers in industry, specializing in sensor technology.
2) Two more tutorials are nearly finished and will be uploaded to the EdCom Page in July 2005. The tutorials will be in the areas of "size effects in ferroelectrics," and "Solid Freeform Fabrication of Piezoelectric Sensors and Actuators."
3) As of the writing of this report, a list of links that might be useful for graduate students is being compiled, and will be posted in July 2005 on the EdCom page of the UFFC web page
4) Members of the IEEE UFFC AdCom were informed about the recent advanced made in the IEEE Explore Now initiative (formerly know as XELL), upon receiving a communication from the 2005 Chair of the IEEE EAB Society Outreach Committee –Dr. T. Basar. The IEEE Expert Now initiative is comprised of over 800 tutorials, short courses, and workshops presented each year at IEEE conferences delivered in one hour online modules. It is a distant learning and/or continuous training system that is intended for the engineering community at large and all allied disciplines.
5) The UFFC EdCom web page is now linked to the IEEE EAB Web page upon an inquiry made by the EAB regarding updates of the URL of EdCom web pages. The UFFC EdCom will be accessible directly from the IEEE EAB web page, and we anticipate that this will increase the internet traffic through the EdCom web page.

Koray Akdogan
Chair UFFC Education Committee

Publications

UFFC Transactions

Jian-yu Lu, Editor-in-Chief

Beginning 1 August 2003, we initiated the submission of multimedia files which included sound, video or both. The format and rules for submission were designed by Jian-yu Lu, the UFFC Transactions Editor-in-Chief. In early June, the IEEE Publications Services and Products Board (PSPB) AdHoc Committee on Multimedia Attachments endorsed Jian-yu's design for recommendation to the PSPB to adopt this design for all IEEE publications.

At the June PSPB meeting, the Board received the report with the multimedia committee's recommendations. Over the next several months the multimedia committee will develop an implementation plan and assess the associated costs. At the November meeting of PSPB, a full recommendation and motion will be presented.

Page Budget Status

Page Budgets Were on Target:

- Year 2002: proposed 1874+/-5%pages, actual 1858pages
- Year 2003: proposed 1874+/-5%pages, actual 1866pages
- Year 2004: proposed 1874+/-5%pages, actual 1812pages

Special Issues

When we established TUFFC Manuscript Central in 2002, Special Issues were integrated into the process. This allows us to handle and successfully publish Special Issues as stand alone issues or within a regular issue depending on the number of papers accepted.

In 2004 and 2005 we have initiated eight Special Issues:

Special 50th Anniversary Issue

- Guest editor(s): Jack Kusters, Clemens C. W. Ruppel, Lute Maleki, and Susan TROLIER-MCKINSTRY
- Submission deadline: January 31, 2004
- Number of manuscripts submitted: 14
- Published with 12manuscripts in: May, 2005

Special Issue on Acoustic Wave Sensors and Applications

- Guest editor(s): Robert Weigel and Robert Hauser
- Submission deadline: January 31, 2004
- Number of manuscripts submitted: 23
- Published with 14manuscripts in: November, 2004

Special Issue on Ultrasonic Transducers for High Temperature Applications

- Guest editor(s): Gordon Hayward and Alistair McNab
- Submission deadline: January 15, 2004
- Number of manuscripts submitted: 10
- Published with 7manuscripts in: April 2005

Special Issue on Coded Waveforms in Ultrasonic Imaging

- Guest Editor(s): John Hossack
- Submission deadline: February 29, 2004
- Number of manuscripts submitted: 14
- Published with 11manuscripts in: February 2005

Special Issue on Micromachined Ultrasound Transducers

- Guest editor(s): B. (Pierre) T. Khuri-Yakub
- Submission deadline: July 31, 2004
- Estimated publication date: Mid 2005
- Number of manuscripts submitted: 17
- Number of manuscripts accepted: 13
- Number of manuscripts rejected: 2

Special Issue on Novel Equipment for Ultrasound Research

- Guest editor(s): PieroTortoli and Jørgen Arendt Jensen
- Submission deadline: June 30, 2005
- Estimated publication date: Early 2006
- Number of manuscripts submitted: 13

Special Issue on Nanoscale Ferroelectrics

- Guest editor(s): Alexei Gruverman and Andrei Kholkin
- Submission deadline: June 30, 2005
- Estimated publication date: First Half of 2006

Special Issue on Modeling, Optimization and Design of Acoustic Devices

- Guest editor(s): Alireza Baghai-Wadji
- Submission deadline: September 30, 2005
- Estimated publication date: Late 2006

Multimedia Manuscripts

Multimedia manuscripts were first allowed for submission on 1 August 2003. To date we have had 36 submissions nine have been published. To view a multimedia manuscript please visit the UFFC website, www.ieee-uffc.org, or with your web account log onto IEEE Xplore, www.ieeexplore.ieee.org, and look at issues April, June, July, September, and October in 2004 and issues March, April and May in 2005. We hope you are enjoying the multimedia option in our Transactions.

General Statistics

The rejection rate for the TUFFC has been 27%, 29% and 28% for 2003, 2004, and to date in 2005, respectively.

The manuscripts submissions have been sorted into seven

technical areas of the society or Technical Interest Profiles (TIPS). There is some overlap of the categories. Medical Ultrasound has received 28% of the total submissions; Sensors, NDE and Industrial Applications – 15%; Physical Acoustics – 16%; Surface Acoustic Waves – 11%; Transducers and Transducers Materials – 15%; Ferroelectrics – 6%; and Frequency Control – 8%.

Summary

Since we started using MC three years ago, the system has run smoothly without major problems.

- The total number of manuscripts that have been submitted is1142.
- We have initiated 8 special issues.
- 2006 potential reviewers have volunteered to review, with 999 actually having reviewed papers.

Improvements have been made to reduce the number of in-progress manuscripts by:

- Urging authors to submit revisions promptly,
- Contacting Associate Editors (AEs) to speed up the peer-review process, and
- Emphasizing to authors the importance of providing suggested reviewers for AEs

Jian-yu Lu
TUFFC Editor-in-Chief

UFFC Chapter News

UFFC University of Southern California Student Chapter

from left to right, Manpreet Bedi, Nadim Daher, Chun Huang Chou, Chao Chung Hsieh, Dawei Wu, Hyung Ham Kim, Chang Hong Hu, Jungwoo Lee, Winston Tran, Bryce Ching, Chi Hyung Seo, unidentified, Jun Hyui Cha, Emanuel Gottlieb.

Prof. Jesse Yen

The members of the UFFC-USC Student Chapter are: Samer Awad, Rachel Bitton, Jun Hyui Cha, Jin-Ho Chang, Nadim Daher, Emanuel Gottlieb, Chang Hong Hu, Hyung Ham Kim, Bruce Lai, Jungwoo Lee, Ronalee Lo, Wei Pagng, prabhjit sachdeva, Chi Hyung Seo, Komal Shah, Charles Sharp, Winston Tran, Wenli Wang, Dawei Wu, Xiaochen Xu, Anshul Bansal, William Chen, Ankush Goel, Milind Gupta, Beom Soo Kim, Sumit Mediratta, Sphinx Tsau, Robert Weaver.

Professor Jesse Yen, serves as our UFFC-USC student chapter faculty advisor. Thank you Dr. Yen!

Grodins Research Symposium

On 26 March 2005, the UFFC-USC Student Chapter participated in the 9th annual Grodins Research Symposium. The Fred S. Grodins Graduate Research Symposium serves as a forum for Biomedical Engineering (BME) graduate students to present their research.

The Grodins website is at http://bmsrs.usc.edu/~grodins/index.html

This student organized symposium provides an opportunity for faculty, graduate students, and industry representatives to exchange ideas on various research activities. It aims to create new applications from existing technologies, develop new solutions through interdisciplinary research, and initiate collaborations with industry to bring new products to the marketplace.

The symposium also provides an excellent opportunity for industry representatives to recruit motivated USC-BME graduate students as well as opportunity for USC students to learn from those employed in the field. The UFFC society was a silver sponsor for this event. We would like to congratulate the following UFFC student members for their representation of our UFFC student chapter at the symposium:

Rachel Britton

Bitton, Rachel
"High Frequency Photoacoustic Tomography"

Daher, Nadim
"Rectilinear 3-D Ultrasound Imaging Using Synthetic Aperture Techniques"

Hu, Changhong
"Design of a Real-time High Frequency Ultrasound Digital Beamformer with the 30-35 MHz Linear Array Transducers"

Lee, Jungwoo
"Feasibility of Acoustical Tweezer"

Sharp, Charles C.
"Focused High Frequency MEMS Ultrasonic Transducers using ZnO Thick Films"

Gottlieb, Emanuel
"High Frequency Annular Array Ultrasound Transducers"

Xu, Xiaochen
"Miniaturized Analog Beamformer for a 30MHz Linear Array"

David Kim and Jungwoo Lee (UFFC student members) observe a picture of Professor Robert Kalaba, during the memorial service at the Grodins Symposium

A special part of the day-long program was devoted to a tribute to Professor Kalaba, who died September 29, 2004. More information about this event can be found at: http://viterbi.usc.edu/news/news/2005/2005_04_01_grodins.htm

7th Annual Ultrasonic Transducer Conference

March 16 - 18, 2005, many of our UFFC student chapter members attended and presented at the 7th Annual Ultrasonic Transducer Conference, Marina Del Rey, CA. This conference was organized by the Ultrasonic Transducer Resource Center, University of Southern California, Los Angeles, CA (http://www.usc.edu/dept/biomed/UTRC/). We would like to congratulate the following UFFC student members for their representation of our UFFC student chapter at the conference:

"200 MHz Self-Focused ZnO MEMS-Fabricated Ultrasonic Transducers for Biomedical Imaging"
C. Sharp, G. H. Feng, Q. F. Zhou, Ph.D., J. M. Cannata, Ph.D., E. S. Kim, Ph.D., K. K. Shung, Ph.D., USC

"FPGA Based Digital Beamformer for High Frequency Linear Array"
C. Hu and J. Yen, Ph.D., USC

"Miniaturized Analog Beamformer for High Frequency Arrays"
X. Xu, C. Hu, J. Yen, Ph.D., K. Shung, Ph.D., USC

"High Frequency Annular Array Transducers Using Flex Circuit Interconnect"
E. Gottlieb, J. Cannata, Ph.D. and K. Shung, Ph.D., USC

Emanuel Gottlieb
http://www-scf.usc.edu/~uffc/
Email: uffc@usc.edu

UFFC AdCom

UFFC-Society AdCom Meeting Minutes of 28 January 2005

[Subject to AdCom Approval]

Call To Order

Gerry Blessing

The Administrative Committee (AdCom) meeting of the Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S) was called to order at 8:30 am, 28 January 2005, by Society President Gerry Blessing. The meeting was held in Los Angeles California, in conjunction with the Frequency Control TPC meeting.

Attendees

Art Ballato*
Jan Brown
Mike Driscoll
Manny Gottlieb
Jacqueline Hines*
Jian-yu Lu
Rajesh Panda*
Leonhard Reindl*
Clemens Ruppel*
Gerald Blessing*
Paul Clem
Mike Garvey*
Fred Hickernell*
Oliver Keitmann-Curdes
Lute Maleki*
Massimo Pappalardo*
Sorah Rhee
Ahmad Safari*

Mark Schafer*	Tom Shrout*
Peter Smith*	Bernie Tittmann
Susan Trolier-McKinstry*	Herman van de Vaart*
Marjorie P. Yuhas	Don Yuhas*

(Note: A total of 17 voting members* were present for portions of the meeting (One member had to leave after lunch), with at least 16 voting members present for most of the meeting's business. Gerry Blessing stated he will not vote except in the case of a tie (per Robert's rules of Order)).

President's Report

Massimo Pappalardo

Leonhard Reindl

Mark Schafer

Gerry Blessing thanking Jan Brown for her service as VP Publications

Society President Gerry Blessing welcomed everyone, especially the newly elected members, Massimo Pappalardo, Leonhard Reindl, and Mark Schafer. He also welcomed Manny Gottlieb, the new Jr. Student Representative. Gerry thanked Jan Brown and presented her with a certificate recognizing her outstanding leadership from 1996-2004 as the Society's VP of Publications.

Gerry announced that the Presidential appointments made at the beginning of January 2005 were all ratified by a vote of the elected AdCom members. Positions filled by these appointments include all standing chairs and Vice Presidents.

Gerry reflected on the nature of the UFFC-Society, noting that we are one of many societies within the IEEE. People become involved in societies because they want to tell others what technical accomplishments they have made, and what work they want to do. This is accomplished mainly through conferences and publications (the two largest activities of the societies), plus personal contact within the societies. IEEE is the largest scientific and technical professional society in the world. IEEE has over 325,000 members worldwide, and our society has about 2200 members. The group that is organizationally above the Society within IEEE is the IEEE Technical Activities Board (TAB). TAB is comprised of the society presidents and 10 Division Directors, for a total of about 60 people. TAB meets three times per year. Their next meeting is in mid February in San Francisco.

IEEE Review of the UFFC-Society:

Every five years IEEE TAB conducts reviews of the societies. The UFFC-Society was reviewed in June of 2004. The Society was represented by Gerry Blessing, who provided input on the Society in general, and by Jan Brown and Jian-Yu Lu, who provided input from the publications group. The feedback provided by the review panel was quite extensive, and Gerry would like to pass it on to us for those who are interested to review. The entire report is about 27 pages, but the first few pages are a good summary. Some points noted were that the present AdCom voting membership is well spread out between academia, industry, and government. Our Regional distribution is such that our AdCom representation may be too high in the U.S. Jan Brown noted that we just changed our policy on how we are going to elect new AdCom members, so that there will be more representation from regions outside the U.S. in the future (particularly regions 8-10). Also, we were given credit by the review committee for having deliberately attempted to have increased representation from outside the US. We should note that about 44% of our society membership is from outside the US and Canada. We got good feedback for student involvement (including student travel support, paper contests, and the student breakfast at conferences). Finally, we should continue our long range planning. The report gives a five-year view on where we have spent society money, and where we intend to go in the future.

Gerry pointed out that there is an almost limitless opportunity for volunteerism within IEEE and the Society. For example, John Vig is now President of TAB, but is still acting as web editor for FC as well. Gerry said we are looking for someone to volunteer as web editor for Frequency Control, and Leonhard Reindl volunteered for this position. We also need to find liaisons to several IEEE TAB Committees, and IEEE USA is also looking for people interested in working on energy policy, medical technology, R&D committees, and other groups involved in policy development related to technology. Anyone interested in getting more involved should contact Gerry for more information.

Secretary's Report

Jackie Hines

Society Secretary/Treasurer Jackie Hines requested that everyone fill in a sign-up sheet with the number of room nights they stayed at the hotel (to help verify meeting our room block) and also update contact information on the AdCom roster.

Minutes

Several minor corrections were made to the minutes from the last AdCom meeting.

Jackie taking a break with Bernie Tittmann and Peter Smith

Ahmad Safari

Jan Brown is working on getting the minutes and all the attachments on the web. This would allow everyone to view the attachments that are referred to in the minutes on the web site.

Ahmad Safari made and Peter Smith seconded a motion that passed: To approve the 23 August 2004 (Montreal) AdCom minutes as corrected.

Finance Report

Herman van de Vaart

Finance Chair Herman van de Vaart provided an oral report. IEEE comes out with a monthly operating statement which he gets 3-4 weeks after the close of the month, so he just received the December 2004 statement. But this (called the twelfth month statement) does not include several large income items. The thirteenth month statement is better, and the fourteenth month statement has audited results for the previous year. We have not yet received the thirteenth month statement. Also, there have been changes instituted in IEEE accounting procedures that will result in changes to what the anticipated year-end results are. Prior to 2004, conference income had been budgeted for the year you actually anticipated the income coming in (generally the year after the conference was held). Starting in 2004, the IEEE has ordered that the societies credit the account in the year in which the conference is held. Although not everything is in yet, we anticipate the 2004 conference will have about a $74.3k surplus. Given our prior year reserves, and anticipated income from book broker and the All Transactions Package, we anticipate a year end surplus of approximately $584k.

Oliver Keitmann-Curdes

Oliver Keitman-Curdes suggested increasing the annual AdCom travel stipend only for those outside the U.S. because the value of the dollar has decreased so much. After a brief discussion it was determined that the stipend would be left as it is and that excess expenses can be authorized on an individual basis by Gerry if necessary and appropriate.

Herman stated that we have not yet received the final budget for 2005. We anticipate that there will be a slight modification from the version we approved in April. This version was approved by the IEEE Board of Directors, but now it will change, as the conference accounting for 2005 will not include the 2004 conference, but will include 2005 conferences.

As a side note, IEEE recommends that we have about 50% of our annual operating budget as surplus, and we are getting close to that level.

Publications

Don Yuhas

Publications Vice President Don Yuhas presented an oral and written report. Don summarized the composition of the Publications Committee and IEEE Publications Strategy. Some major issues include movement to purely electronic media, where "Open Access" becomes a big issue. The almost $30M surplus IEEE gets from printed publications could dry up if free electronic access becomes the norm. Income is currently passed to societies through the All Transactions Periodicals Package (ATPP) and Book Broker programs, but this may all change. The PSPB (Publication Services and Product Board) is moving in new directions with a new major strategy. They want to determine how to achieve open access and still continue the income stream coming into IEEE. IEEE's competition (particularly Elsevier) sells journals, primarily to individuals, and makes about a $1B gross/yr with high profitability. By 2015, PSPB wants IEEE to double the intellectual property content of our publications and to double the profitability for IEEE. To double the content, they propose expanding content to take articles from the applications and "non-scientific" areas, to compete with commercial publishers. This "Supply the most articles to the most people" approach raises some questions, though, such as where do we draw the lines? What are the bounds? Also to increase content, PSPB thinks IEEE should cover the entire spectrum from training through hard core technical papers. This could include tutorials, and "author formatted" material as well, which would be separate from the reviewed material.

A discussion ensued, with several AdCom members stating that it seems like there is a divergence between the goals of supporting membership and earning money with expanded pubs. Many AdCom members expressed the feeling that they would hate to see IEEE dilute the quality of technical journals and/or become an arm of the manufacturing industry. The question arose: What is the driver behind the goal to double content and income? Is there a "Grand Plan"? If so, What is it? Don Yuhas indicated that the Executive Director of IEEE had stated that we need a plan to deal with how IEEE deals with the changes going on in publications. Some of the goals IEEE plans to achieve by 2015 include:

Be a leader in creating, organizing, and disseminating IP from all sources; Double the amount of IP published in our fields of interest; Be a premiere source of information to all practitioners; Double the inflation adjusted net surplus created by IP, and Facilitate the creation of scientific standards. Some of the goals address the issue of providing some extra value to attract and hold members.

Additional discussion brought up the point of whether growth in itself is a good measure of success, and the thought that we should stick to what we do well. There seems to be a divergence between these stated IEEE goals and what IEEE historically has been "about". IEEE is supposed to be a non-profit organization, yet these stated goals are legitimate IF it were a for-profit business. We see echoes of this with the Standards board, where the organization is taking precedence over the membership. With the current IEEE Electronic Library (IEL) and Member Digital Library (MDL) services, anyone with dollars can buy things from the web site. A person used to need to become a society member to get information such as this, but now it looks like we're doing business marketing – where does membership in societies fit into this new plan?

Dues cover about 30% of the operating costs of IEEE. The largest percent of the remaining costs comes from sale of IP, what has changed in the past 10 years due to the fact that it is available online. Do we need to look at things on a per article basis rather than a whole proceedings? A huge amount of money comes from sale of publications, specifically book broker and transactions, and we are not changing anything there. How should we sell to members? We can require members to belong to a society and grant access, or by MDL. If all publications are going to be open access and "free", then a huge amount of income needs to come from somewhere else. John Vig gave an example of a society that was selling something for $80k that was like what IEEE sells for $400k. If people leave the membership and just buy articles, we need to figure out how to pay for these publications. IEEE has roughly a 30% net profit of $234M for publications. Publications provide over 50% of total revenue for IEEE, while membership provides 19%, conferences provide 28%, and the remaining 3% is from "other" sources.

An extensive discussion ensued, with the consensus being that while this is a complex issue, it is critical that the emphasis of IEEE publications remain on technical quality and technical content, with value added (peer review). While the changing world may require new strategies to ensure continuity of the income stream, doubling the income does not necessarily help - What plan does IEEE have that requires we double our income? What problem are we solving with the money we are going to raise? While the leaders at IEEE have reached a consensus, that we could not stay within the current IEEE research and Technology box and guarantee the income desired, no firm plan has yet been elaborated for how to proceed. Don Yuhas stated that he will go to the April meeting and convey our comments.

Transactions:

Jan Brown discussed the Periodical Review Committee, which was also discussed at the last AdCom meeting. They found that we had a well written report and have made significant progress since our last review. They like the EIC turnover process we have, and also like our real-time publishing policy. However, they are concerned about our low rejection rate. We left it up to the Publications Committee (Don Yuhas, Jian-yu Lu, Jan Brown, and Marj Yuhas) to talk about what if anything should be done about this. Many other publications have no "major revision" category in the review process, which would result in having no multiple cycles of paper submission and revision. We can change our statistics if we change this practice. Also, getting our submission rate up so we can still publish the same amount but with a higher rejection rate would improve our statistics. Our impact factor is high for an engineering journal (1.5), but low for a medical journal (which can be as high as 9 for an influential journal). How do we balance these issues? The Review Committee made a recommendation, that we adopt a policy for term limits for associate editors. Our current policy for Associate Editors is 5 year terms with unlimited reappointments, while the Committee would like to see it be 3 year terms with a cap on reappointments without a break. The Publications Committee will review the findings and get comments back to TAB.

Regarding outside vendor issues, IEEE is trying to bring us into the IEEE "fold" for Publications. We went through a thorough review and comparison with FASS, and so far everyone is happy with us being associated with FASS for Transactions Publication. IEEE would not be able to accomplish publication in as timely a fashion as FASS, nor would it be "real-time" publication, where papers are assigned to issues as soon as they are ready for publication.

Jian-yu Lu

Transactions Editor In Chief Jian-yu Lu gave a detailed presentation updating issues for the Transactions publication process. We have had eight special issues in specific technical areas. The page budgets were on target for the last 3 yrs at 1874 pages. We have increased the page budget for 2005 to 2000 pages, to allow for the special issues that are planned. The Manuscript Central (MC) system has been running for 2 yrs and 8 months, and is now becoming stable. We should compare current numbers (delay times, etc.) with the old manual system, not with the numbers achieved during the first two years of MC. These would not be comparable since when MC was started, all the papers in the system were new ones, so the observed delay times would be artificially short. Jian-Yu indicated that the low rejection rate was discussed at the AE lunch at the last conference, and we decided no big changes are needed to artificially change our rejection rate.

There are some problems with the Digital Archive not being compatible with IEEE Xplore. FASS has been using the "PitStop" program to try and generate compatible files, but this had created lots of problems. The output is different than the input, which is not good, and worse yet, there are no digital flags to tell you there are problems with it. It can only be seen if you examine each document. Ron Keller is working on this and thinks there is a solution.

A discussion ensued regarding the length of time it takes for articles to be published. This time delay depends in part on FASS. Right now we have a reserve of papers there, with enough papers to fill 6 months worth of standard issues. We need to push FASS harder to reduce the time manuscripts are in process with FASS from the current 90-100 days per manuscript down to 55 days. Don Yuhas will take the challenge of finding out what is taking so long at FASS and present an analysis at the next meeting. The amount of time manuscripts spend with authors for revisions was also discussed. Currently authors have up to 90 days to revise and resubmit manuscripts without having them administratively withdrawn. Several AdCom members thought this was too long a time period, and the suggestion was made that we administratively reject papers held by authors more than30 days. This was objected to by several other AdCom members, and no change will be made to the current system at the present time.

Newsletter:

Jan Brown

Newsletter Editor Jan Brown asked Gerry to submit some of the information he discussed about changes and strategy to her for inclusion in the "about IEEE" column in the Newsletter. Oliver Keitmann-Curdes suggested a student corner/column, which was well received. Jan thanked AdCom for letting her update her hardware and software to more efficiently handle photos, and to get the newsletter out more efficiently. The next newsletter should be available to members by mid July, so Jan needs input by early June. The Ultrasonics TPC meeting will be mid June, so Jan needs information immediately after this meeting (with background information submitted before, if possible).

Web:

Sorah Rhee

Sorah Rhee, the Society Web Chair, has changed her professional position and her new company has communications issues that cause attachments to filter out, etc. Jan Brown suggested that Sorah get a home line, which AdCom can pay for. The new Ultrasonics web site editor, Kendall Waters, has done a very good job. Frequency Control should be able to get back on track now that Leonhard Reindl has taken on this position. Ferroelectrics also has a new web editor, Ruyan Guo from Pennsylvania State University. She updated a lot of the info a few weeks ago. FASS has established a mailing list program with the current list (has a little over 10,000 entries). Sorah will provide them with one more list to be added. The list is separated by technical area. When we combine the lists, some people get both messages.

A discussion ensued about the e-mail list being developed and kept by FASS. FASS currently does not update the list with the current UFFC-S member list, since this would be an "out-of-scope" cost. FASS has not really received any directions on maintaining the list, so Don Yuhas will talk to them. We also need to come up with a good protocol for maintaining this list, and Society volunteers (at least the President) should also have a copy that is updated as changes are made.

The process of obtaining publicity for our meetings in other journals has raised the issue of whether we will cross advertise other conferences or not. There are several issues, including advertising in journals, and on the web site. As we do not currently have a policy related to this, Gerry asked Sorah Rhee to gather volunteers for discussion, and bring a policy proposal to the next meeting.

Ferroelectrics Committee

Susan Trolier-McKinstry

Susan Trolier-McKinstry, Ferroelectrics Vice President, gave an oral report. The last Ferroelectrics Committee meeting was held last Wednesday. Regarding Standards, Susan has not yet finished the standard definitions and terms revisions that she had hoped to finish in December, but they should go out later this spring. There are two new areas in which standards are desired. The first is ferroelectric random access memory, where an industry group would like an IEEE standard for how imprint and retention should be measured. The second area is scanning probe microscope measurements of piezoelectric devices. The Ferroelectrics group is interested in extending this to include thin film piezoelectric measurements, including scanning microscope measurements. Susan will be suggesting these topics to the Standards Committee.

Bob Newnham and Ahmad Safari both became fellows in Ferroeletrics this past year, and a significant number of senior memberships have gone in from Ferroelectrics. Dragan Damjanovic is now serving as a new Associate Editor for Transactions, and we have one additional candidate. We are hoping to see more ferroelectrics papers in the Transactions in the future.

2004 Joint meeting

Mike Garvey

Mike Garvey submitted a written report summarizing the 2004 Conference. Attendance was about as anticipated and short courses went well. Visas were a real problem issue. It is basically a full time job to manage the visa process. Plus, the process depends very much on the person's origin. Gerry presented a two page outline that describes how IEEE says we should proceed with Visas. Mike Driscoll requested a copy of the guidelines for use in 2005. The conference organizing committee was disappointed with the work done by FASS at the conference. Additionally, they charged substantially more than their estimates for the work done ($84k in billed labor expenses compared to an original budget of $45.6k, revised to $54k in July). Chuck Sapp from FASS explained that the 84% overrun on actu-

al expenses was for "unexpected" and "out-of-scope" work. This does not include direct costs, which are related to having FASS people on site, and amounted to an additional $13k. This year FASS is not involved in the Proceedings. There were a lot of requests about where you could buy a red shirt like those provided to AdCom. If we could have sold shirts like these at the conference, it could have added to revenues.


Marj Yuhas

Marj Yuhas discussed the Proceedings. Authors did submit 808 papers, which resulted in a 33% increase in the number of pages and a 13% increase in the number of CDs requested. Ultrasonics was so large we had to go to three volumes (567 pages). Marj was concerned with what it would cost, but it ended up about $7500 over the quote, which is quite good for a 33% overrun in number of pages. We had over 800 submissions with only one member complaining profusely about the process. Since we started doing electronic submissions, FASS has been involved with proceedings, and this is the first year IEEE has handled it. IEEE does not seem to attend to the details well, at least no better than FASS. We kept the window for paper submission open very long for Ferroelectrics and Frequency Control, from 6 wks to 2 months. Also, we should have started dialoging with IEEE on the format of the CD. It was inappropriate that the IMS admin assistant had to do quality control on things as they came in (not IEEE). IEEE did have dedicated staff, which was great.

A discussion of the conference budget results ensued. Herman van de Vaart indicated that, while not everything has been finalized, he anticipates about $780k total income and $670k total expenses, for a surplus of $110k. The conference spent $110k US for travel support ($44k for Ultrasonics, $44.5 for FC (although FC assisted only half as many attendees), and $19k for Ferroelectrics). The expenses from FASS were of concern, since initially there was a $45.6 k budget, which was revised in July to show expected labor expenses of $54k, while the actual billed expenses were $84k. We now have a "Time and Materials" approach, since we have a contract to continue to work with them through the Rotterdam conference this fall. We may want to get alternate bids for future conferences. Jan Brown noted that this tendency for FASS to charge significantly more than budgeted was also consistently seen on Transactions until we went to a negotiated four year contract. Since then, our Transactions costs have been under control.

2006 Meeting


Paul Clem

Paul Clem, General Chair for '08 ISAF, gave a presentation for '06 and '08. The '06 conference is scheduled for July 30 through August 02, 2006, at the Sea Trail resort in North Carolina. Contracts are under negotiation with the resort, and a preliminary budget has been developed. This will be an all-inclusive conference registration fee (including all meals). The Program Committee has been expanded, and is still looking for more academic and industry members, particularly from Japan. We anticipate about 300 technical attendees and about 50 guests. Parasitic hotels do not appear important for this conference, as they are too far away to be really convenient, and are not lower in price than the resort. However, it is good to know that if we have more attendees, there are other places sufficiently close to use. A first pass at the budget shows about $188k in expenses and about $202k of income. This does not include income from exhibitors, which should be about $10k, nor does it include outside funding. While this would result in a surplus that is less than the 15% that AdCom uses as a guideline (and lower than the 20% IEEE wants us to have as a goal), the Ferroelectrics Committee feels that having the technical quality needed to attract people to the conference is more important than having a large surplus. Advertising costs will cover hardcopy mailings (especially to the far east), posters at Universities, a web site, and other appropriate techniques. The budget should be submitted to Herman for review by the end of Feb 2005, and can be voted on at the AdCom meeting in September. Herman noted that the preliminary budget included hardcopy proceedings, while the IEEE is not buying any hardcopy proceedings anymore from conferences. Susan stated that a hardcopy of the proceedings is still the preferred media at some places overseas. Herman noted that members can buy hardcopy on demand from IEEE, and suggested that the conference not make any hardcopies. This issue was not resolved.

2008 Meeting


Paul Clem

The Ferroelectrics Committee has selected Paul Clem and Bruce Tuttle to host the '08 meeting.

Susan Trolier-McKinstry introduced a motion (from the Ferroelectrics Committee) that passed: That Bruce Tuttle and Paul Clem be approved as General Co-Chairs for ISAF 2008 in Santa Fe New Mexico.

The conference will be in March 2008, with the exact date TBD. We are looking at whether or not to make the conference joint, and are considering two possible venues.

2010 and Beyond

Susan stated that the Ferroelectrics Committee will be taking suggestions on locations for 2010 at their upcoming meeting in April, but wants to know if UFFC is interested in doing another joint conference like in 2004. A discussion ensued, with some AdCom members indicating that they like the smaller, unique nature of separate conferences, and others saying that a great deal was gained from the joint conference. While the 2004 conference ran very smoothly and was a success overall, some issues arose that were not altogether satisfactory for everyone involved. Many of these issues related to changes in the culture of the conference, such as including (or not including) lunches for attendees, etc. Also, perhaps we could have arranged for technical sessions that overlap between areas rather than having parallel sessions. Gerry Blessing stated that we had a very good start

with the 2004 conference, and it is beneficial to work together with three technical groups. However, we probably do not want to do it five years from now. A discussion ensued regarding the possibility of holding a joint meeting periodically, possibly every 10 years, or every 8 or 12 years so as to not conflict with the joint FC/EFTF meetings. No decision was reached, although it was decided that Ferroelectrics should proceed on their own for 2010.

Standards

Susan Trolier-McKinstry

Susan Trolier-McKinstry is the acting Standards Chair until we have a permanent replacement for Eva Ferre-Pikal, who recently stepped down as Chair. Susan submitted a written Standards report that describes two new standards that are in the works.

Frequency Control Committee

Lute Maleki

Lute Maleki, Frequency Control VP, gave a report. The FC committee will meet in April. The TPC meeting was yesterday. There was discussion of wanting to increase the visibility of student awards - and even some talk about increasing the award amount, and presenting the winner's award at the president's reception. In connection with the 2006 meeting, they are talking about having the first TPC meeting at the 2005 meeting. The Second TPC meeting will be April 29 or May 13, somewhere in the Baltimore/Washington area.

2005 Symposium

The 2005 meeting (August 28-31 in Vancouver) is joint with PTTI, and we have a MOU in place. We will be using the Alliance Management Group for abstract and TPC preparation, including help organizing and preparing the abstract booklet and program booklet at the second TPC meeting. The budget has been approved by AdCom and the IEEE.

2006 Symposium

Mike Driscoll

For 2006 the location has been chosen as the Hyatt Regency Miami, FL. It is a very nice venue, with reasonable hotel rates, and is easily accessible. Mike Driscoll is Chair. We have a hotel contract signed by the IEEE. Dates are June 4-7 2006. Budget shows about 14% surplus, but that does not include any exhibit expenses, so we need some tweaking.

2007 Symposium

The 2007 meeting will be in Switzerland (joint with EFTF), with all work handled by Europeans. Details will be decided in March (location and exact date, chairs, etc). The role of the U.S. co-chair will be primarily ceremonial, while the responsibility for the technical program will be shared about 50/50.

Ultrasonics Committee

Clemens Ruppel

Clemens Ruppel, Ultrasonics VP, gave an oral report.

2005 Symposium

All decisions have been finalized for the '05 Ultrasonics Symposium in Rotterdam, the Netherlands. The only remaining problem is the change in exchange rate between the Euro and the Dollar. When we began planning, it was at about 1.2, but a few weeks ago it was at 1.36. Since the income is mainly in dollars and expenses are mainly in Euros, this shift will eat up the surplus. Herman van de Vaart suggested that we increase the registration fee by $25 across the board to boost the surplus 3-4%, which would not make up for the drop completely, but will help. Herman will make this change (it is within the allowed changes after budget approval).

2006 Symposium

Stuart Foster

The site for '06 is Vancouver, with Stuart Foster as general chair. The contract with the hotel has been approved by IEEE conference services and signed (Westin Marina hotel). This is not the same location as the FC conference. However, we have a problem, as we had planned for Oct 1-4, but Oct 2 is Yom Kippur. Since we had made a decision not to violate such holidays, we must shift the conference to a later date (the two weeks prior to Yom Kippur are also religious holidays or holy weeks). We are looking into moving it to Oct 3-6, with short courses on Oct 3. The date of the AdCom in Vancouver is TBD – Clemens and Stuart Foster will decide.

2007 Symposium

John Kosinski

For 2007 we plan for the conference to be in New York City. There will be a meeting in NY on Monday Jan 31 of the General Chair John Kosinski with IEEE Conference Services and the Hilton. The hotel contract is not yet signed – hopefully it will be soon, as pricing is changing.

2008 Symposium


Jian-yu Lu

Jian-yu Lu is in contact with several sites and is negotiating prices and details from the potential promising venues, one of which is the Bejing International Conference Center – next door to the Olympic Center.

Future Symposia

For 2009 two sites were being considered. Reinhard Lerch is evaluating Lisbon, Portugal, with Mauricio P. da Cunha looking into hotels, etc. Victor Plessky is also going to look into Warsaw, Poland. For both of these cases, the proposals have almost been withdrawn, for lack of local support. Currently we are also considering going to Italy – possibly to Rome. This looks like a potentially expensive alternative. Current prices are over $500 US, and there is no telling where they may go from here.

The next Ultrasonics Committee meeting will be in Chicago on June 17, the Friday before the TPC meeting.

Rayleigh Award Chair

Finally, David Cheeke and Reinhard Lerch want to come up with a proposal for a candidate to take over the position of Rayleigh Award Chair, but so far they have no proposal, and are still looking for a candidate appropriate to do this task for our community. A few people are under consideration, but they are still soliciting candidates, and Clemens would be happy to get suggestions.

At the conference committee meeting, they discussed the conference web sites. Every year, we re-invent the web site – why not have a generic web site and just fill in the information each year? This could include the call for papers and all related infromation. AdCom agreed that this would probably be worthwhile, to provide a little more consistency and less reinventing the wheel each year.

Awards


Bernie Tittmann

Bernie Tittmann, Awards Vice Chair, discussed the Society Distinguished Lecturer who represents UFFC with worldwide lectures. They are selected on the basis of speaking style, prominence in the field, and willingness to present many lectures in an 18 month period. We seek successive representation of the three areas of the society. Nava Setter is serving from last July through December 2005, representing the Ferroelectrics community. From Ultrasonics we have Ken-Ya Hashimoto serving July 2005 through December 2006. For July 2006 through December 2007, we want to represent FC. The resume and lecture title have been distributed for two candidates, both or whom are eminently qualified to serve. A vote determined that Andreas Bauch will be the Distinguished Lecturer from July 2006 – December 2007.

Without going into any detail, we have continued to submit applications for the major technical awards. There are no results to report yet. Bernie continues to seek candidates – we presently have two in the running from our Society. The IEEE has a number of Institute level awards. There are 23 technical field awards, 14 medals, and the Medal of Honor. There is an awards committee at the TAB level – we could have more input by having a Society representative on the committee.

Finally, Herman van de Vaart noted that the Rabi Award is $1k, yet we give more than this as travel support to some speakers. This situation is a little "out of whack", and the Awards committee should look into our own awards.

Membership Services


Rajesh Panda

Chair Rajesh Panda gave an oral and written report. We have 2200 members now, which is very similar to where we were last year. We are retaining and slightly growing our dues paying members. We have increased student membership by 17%. Associate membership went down by 27%, although we are not sure why. Renewal rate for IEEE and UFFC together is 58% this year (compared to 70% last year). The main reason we think this is low is because people are dropping IEEE membership as a whole – but we are doing better than IEEE as a whole, which is probably related to Society loyalty. Once the "terminator" is run by the IEEE, which is a program that is run at the end of a grace period of two months (end of Feb), we will have more accurate numbers.

We have been sending out welcome letters to new members, as approximately 15-20 people join each month. Several wrote back saying our digital archive is a real benefit to them, especially from the Asia-Pacific region. The Ambassador program is being renewed. This is a program whereby UFFC pays the (reduced) dues for individuals from countries with distressed currency.

Regarding the free memberships we put out at conferences, we usually get about 5-6 people. In Montreal, we got only one. Nobody assigned volunteers to our booth in Montreal, so people could not find people to turn in applications. For the future, we should think about having FASS handle taking applications (unless they would charge a lot to handle it). We could have a volunteer at the registration desk to handle this. A discussion of staffing the booth at conferences and linking this to student travel support ensued, and it was concluded that we should provide student support to society members only, and we should put that restriction on the web site.

Conference Coordination Committee

This is an Ad-Hoc committee formed for coordinating the handover of conference information. Each year, IEEE has about 350 conferences. Conferences are one of the major sources of surpluses for the IEEE, and for our Society.. Ahmad set up


Ahmad Safari

committees of general chairs of past conferences, but not many people showed up at the meeting yesterday. We discussed sending representative to the TAB meeting on conferences. TAB is studying the centralization and decentralization of conferences. Decentralization means going to different countries and using local sections. There was no decision on how to proceed. We discussed standardizing a checklist for how to organize a conference in detail, since everyone comes up with their own checklist when they start organizing a conference, and then the information gets lost after the conference. There is an existing web site accessible to conference chairs with historical information for 2004.

Should we make our mailing list available to other societies and/or competitors? Consensus was yes, we will get info from other societies about conferences, etc and we can forward it to our membership if it seems to be of benefit to our membership. Jan Brown mentioned that all the chairs should be careful that conference titles are consistent – if there is a joint meeting, we can add another subtitle. This could present problems for archiving joint conferences.

Fellows


Fred Hickernell

Fred Hickernell reported that there were 6 nominations submitted in mid-June to the IEEE Fellows Committee. There were a total of 80 points possible in all of five categories. Our Society evaluation is 20 points. We have four of the six elected to fellow – Robert Newnham and Ahmad Safari from Ferroelectrics, Ken-Ya Hashimoto from Ultrasonics, and Jack Kusters from Frequency Control. This is an outstanding result for our society. Fellow nominations for 2005 are due at IEEE HQ before 1 March 2005. On our web site, there is a link so you can go directly online from there to IEEE web site and get the required forms. Applications go directly to IEEE, then are sent back for review by the societies. The IEEE evaluation committee is interested in a change in procedure whereby they would drop the bottom _ of candidates – but societies having less than 12 candidates would be exempt from this, so it would usually not affect us.

Nominations

No report. Bob Potter is seeking nominees for a slate of AdCom members so we can disseminate the information and vote on the slate so they can come to the Sept AdCom meeting.

Historical Committee

Fred Hickernell stated that we have had some good historical articles in the Newsletter, and thanked Jan Brown for that. She has also tapped the history center for some good information. This is the 125th anniversary of the discovery of piezoelectricity. The Curie brothers discovered the effect in 1880. Fred encourages anyone who would like to submit historical articles to the newsletter to do so.

Education

No Report

Long Range Planning

The UFFC Society long range plan, which has a total of eight goal areas and tactics for each area, is available and on our web site. A lot of the items in the plan have been implemented. One thing John Vig had suggested as a goal was for us to assign milestones and responsibilities for achieving them. Some of the areas are being addressed, but it would be good to revisit this.

Constitution and Bylaws Review Committee


Art Ballato

Art Ballato is reconstituting a committee to review our Bylaws and Constitution. We plan to have a long face-to-face meeting in Rotterdam. Art is also looking at what MTT has done to their bylaws. Anyone who wants to make suggestions, please submit to Art at a.ballato@ieee.com

UFFC-S Representatives


Oliver Keitmann-Curdes


Manny Gottlieb

Oliver Keitmann-Curdes started a student column in the newsletter. Manny Gottlieb, the new Jr. student representative said that since AdCom wants greater communication between the Society and students, perhaps we can form some student chapters? Manny will work towards this at USC. It would be great if we had a student link on the main page of UFFC. Rajesh Panda said that IEEE is soon going to start differentiating graduate students memberships from undergraduate memberships. Jan Brown will forward information of students from the student breakfast, so Manny can write letters inviting them to join.

Old Business

Herman van de Vaart stated that a discussion was started in Montreal about whether it would be appropriate or not to add AdCom conference matching support for funds obtained


Herman van de Vaart

by conference organizing committees as grants from outside organizations. A motion related to this was made by Jan Brown and seconded by Lute Maleki at the last AdCom committee meeting: That AdCom amend its policies regarding conference matching funds to provide matching funds to Society conferences in an amount not to exceed $30k per conference to match funds obtained from outside organizations. Following discussion at the previous meeting, another motion was made and approved to refer the motion to the finance committee for generation of a recommendation. Herman summarized past AdCom "matching funds" use, indicating that for Ultrasonics, in 2001, 2002, and 2003 the outside resources obtained by the conference committee were $0, and travel support provided by the conference each year was about $33k, with AdCom reimbursing $15k each year. For Frequency Control, travel support was about $30k, with $14k reimbursed by AdCom.

A brief discussion ensued regarding whether we want to encourage outside funding. Herman van de Vaart expressed the opinion that he is against getting outside subsidy, particularly if the conference is having a large surplus anyway. Susan Trolier-McKinstry thought that we should solicit funds, but also be specific about what it's used for. We don't want to be in a position that an outside donor might ask why we needed the funds if the conference has a surplus. Several other AdCom members thought that it would be a good idea to encourage outside funding. However, providing matching funds from AdCom for this outside funding is not something everyone thought was a good idea. Following this discussion, Jan Brown suggested that we withdraw the motion under consideration, and Lute Maleki agreed, so the motion was withdrawn.

Currently, AdCom provides "matching funds" to pay half of the total amount spent by the conference for travel support, up to a total of $15k for students and $15k for speakers for each conference.

Mike Garvey made and Fred Hickernell seconded a motion: That AdCom amend its existing subsidy to students and speakers at conferences as follows: AdCom will match funds solicited (from outside sources) by conferences for support to students and speakers on a dollar for dollar basis up to an amount not exceeding $15k for students and $15k for speakers.

A lengthy discussion ensued, where it became clear that this actually raises several issues. First, the original "match" was put in place specifically to encourage conferences to support students. At the end of the cold war, speakers were included (especially from Eastern Europe at the time). This was not originally meant to encourage outside funding. Now, conferences do need to bring in "new blood", and providing student and speaker support does just this. The thought was expressed that AdCom needs to "put our money where our mouth is" and provide this type of support to conferences independent of the conferences committee's ability to obtain outside funding. It was mentioned that perhaps AdCom should provide travel support directly to the students and speakers, and take this task completely out of the organizing committee's purview. Several people felt uncomfortable tying travel support to outside funding, since conferences held at different times and in different locations may be more or less able to raise outside funds, and withholding support from those who do not obtain outside funding would penalize specific conferences. Second, the issue of providing an incentive for the conference committee to obtain outside support for the conference is distinct from the issue of providing support for students and speakers. Providing a match for funds obtained would provide an incentive for the organizing committee to try to obtain these contributions. Third, if we do provide matching funds, it would be more complicated when the conference is joint. For instance, in 2005 when FC is joint with PTTI, would we just match IEEE corporate support, or outside support obtained by PTTI as well? When the conference asks for support, we usually mention that contributions are matched (at least partially) by IEEE. Bigger conferences – should be able to have more support than smaller conferences. It was mentioned that when we do obtain outside support, it would be worthwhile for IEEE to provide some type of certificate thanking or recognizing the companies for their support. Also, it is important that when we go to companies, we are soliciting funds to support something almost no one can argue with.

The question was called by Mark Schafer, and the motion failed (in favor – 3, opposed – 11)

Herman van de Vaart made and Lute Maleki seconded a motion that passed (in favor – 14, opposed - 0): That it is AdCom's intent to encourage conference organizing committees to get outside funding to be used for any purpose they consider appropriate and desirable.

It was noted that, if you solicit support and indicate that it will be used for a specific purpose, it must be used for that purpose. Also, while there is nothing keeping the conference organizing committee from matching the funds obtained with conference funds, without a commitment to matching there is no particular incentive. As a historical note, back when Frequency Control started doing this, AdCom decided to leave the issue of soliciting outside funds to the three technical areas – as a "states' rights" issue.


Ahmad Safari

Herman van de Vaart stated that we need to determine how much AdCom is willing to spend on student and speaker support. The current policy is for AdCom to subsidize 50% of travel support up to $30k per conference. For some historical perspective, we should know that in Montreal travel support was $44k (Ultrasonics), $44.5k (Frequency Control) and $19k (Ferroelectrics). Also, Ultrasonics for the past three years has given money only to students. It was noted that the areas each have different limits on travel support for an individual. Ultrasonics had a limit of $1k travel support, while FC had up to $2k per person. We should probably come to some common agreement on appropriate

support levels. Support for non-student speakers also varies by technical area. Also, the conference registration had to be paid out of the money people (getting travel support) received for the Montreal meeting, but this has not been done in the past. Ahmad Safari suggested that the conference committee consider this issue and bring ideas and suggestions back to AdCom at the next meeting.

Jan Brown said that AdCom wanted to thank Mike Garvey for the tremendous job he did in Montreal.

New Business

Jan brought up supporting the IEEE History Center. They have asked the Societies if we would be willing to support the History Center at some nominal level for some period of years. Right now there are seven societies that are contributing about $100k per year total. We are not sure which ones they are.

Art Ballato

Art Ballato made and Herman van de Vaart seconded a motion: That the UFFC-Society contribute $5k per year for each of the next five years in support of the IEEE History Center.

After a brief discussion of the need to protect both our history and our future, Lute Maleki suggested that we amend the motion to add:

That the UFFC-Society also provide $5k per year for each of the next five years to fund a UFFC-scholarship.

The amendment was seconded by Fred Hickernell.

Following a discussion, the question was called (13 in favor of stopping discussion) and a vote was taken, and the amended motion failed (2 in favor, 8 opposed).

A discussion then ensued regarding the original motion, with some AdCom members expressing the thought that we are a society with a surplus of half a million dollars that should be spent to benefit everyone, and that perhaps $25 k is a reasonable amount. Others expressed the opinion that this large an amount would be completely out of line, when we are not spending this amount on our future, getting new members, etc. It was suggested that perhaps we would prefer to consider a one-time contribution and see how it goes and what value it has to us, rather than making a five year contribution commitment. Jan Brown asked what the criteria would be to continue this support beyond one year.

Don Yuhas made and Fred Hickernell seconded a motion: That we provide $5k to support the history center for 1 year.

Following another discussion of whether we have the details of how the money will be spent, and the importance of history to our group, Clemens Ruppel made a motion that passed (12 in favor, 0 opposed): To table the motion for consideration as old business at the next meeting.

Jan Brown will take an action item to come to next meeting with budget information on the history center.

Adjournment

Art Ballato made and Mark Schafer seconded a motion for adjournment, that passed (20 in favor, 0 opposed, 0 abstaining). The meeting was adjourned at 5:28 pm, 28 January 2005.

THE NEXT UFFC-S AdCom MEETING will be held on Sunday Sept. 18th 2005 in Rotterdam in conjunction with the IEEE International Ultrasonics Symposium.

Jacqueline H. Hines
UFFC-S Secretary/Treasurer

Financial Report

UFFC 2004 OPERATING STATEMENT

As can be seen from the accompanying Operating Statement, UFFC ended the year 2004 with income of $1,323.8K and expense of $1,123.5K. If you look through the statement, you may note that some income items, considered reimbursements, are listed as negative expenses.

First, we got a pleasant surprise in that UFFC was credited with $51.2K from the IEEE investment fund. During the past two or three years these incomes were used to shore up the financial condition of the IEEE as a whole. Now apparently some of the income and the increase in value are credited to the Societies again.

The surplus from the Transactions was up from the budget primarily as a result of a higher than expected income from the All Transactions subscriptions, a much lower Editor's office expense, and a much lower printing and mailing expense (fewer members opt for the hard copy Transactions). The Transactions surplus ended up to be $101.1K, up from the budgeted $29.8K.

Regarding the Symposia, the 2003 IFCS did worse than expected, but the 2003 IUS made up for it with a surplus of $116.3K. There is also some income and expense listed for the 2004 Joint Conference in Montreal. These would normally not have been accounted for until 2005, but have been included due to an accounting change.

The AdCom expenses were much higher in 2004 than normal. We spent a lot on travel support for students and speakers for the 2004 Joint Conference which were partially supported by AdCom and the expenses for the mementos given out at the Conference were not included in the budget.

Nevertheless, the bottom line is that the 2004 Surplus ended up to be $200.3K, increasing our Net Worth to $626.3K.

Herman van de Vaart
Chair Finance and Operations Committee.
June 6, 2005

UFFC	INCOME		EXPENSE		NET	
	BUDGET	ACTUAL	BUDGET	ACTUAL	BUDGET	ACTUAL
Long Term Investments	0.0	0.0	0.0	-51.2	0.0	51.2
Membership Fees	43.6	35.1	0.0	0.0	43.6	35.1
Transactions	437.1	432.5	407.3	331.4	29.8	101.1
Periodical Related (TMI,JLT)	0.4	0.4	-22.4	-41.1	22.8	41.5
Newsletter	0.0	0.0	27.0	31.1	-27.0	-31.1
Non-Perodicals	0.1	0.0	2.7	3.8	-2.6	-3.8
Symposia	724.6	855.8	428.0	563.0	296.6	292.8
IEEE/TAB Administration	0.0	0.0	162.2	143.1	-162.2	-143.1
AdCom/Other	0.0	0.0	83.6	143.4	-83.6	-143.4
TOTAL	1205.8	1323.8	1088.4	1123.5	117.4	200.3

TRANSACTIONS	INCOME		EXPENSE		NET	
	BUDGET	ACTUAL	BUDGET	ACTUAL	BUDGET	ACTUAL
Members Hard Copy	44.7	41.1			44.7	41.1
Individual Non-Member Subscriptions	55.6	63.0			55.6	63.0
Subscriptions APP/IEL/MDL	242.6	264.3			242.6	264.3
Voluntary Page Charges	30.0	23.3			30.0	23.3
Overlength Page Charges	36.4	28.9			36.4	28.9
Reprints	17.0	11.9	18.1	-7.3	-1.1	19.2
Miscellaneous	10.8	0.0	0.0	0.0	10.8	0.0
UFFC Editors Office			30.0	5.9	-30.0	-5.9
On line peer review (IEEE)			0.0	6.0	0.0	-6.0
Edit-Composition (FASS)			141.6	163.6	-141.6	-163.6
Web Support (FASS)			12.0	17.1	-12.0	-17.1
CD-ROM (FASS)			12.0	0.0	-12.0	0.0
Printing/Mailing (IPC)			157.7	112.8	-157.7	-112.8
Indexing (IEEE)			3.8	3.2	-3.8	-3.2
Manuscript Central (IEEE)			4.8	4.7	-4.8	-4.7
Pub Admin (IEEE)			14.1	12.2	-14.1	-12.2
Subscriber Handling (IEEE)			3.6	3.6	-3.6	-3.6
Xplore (IEEE)			9.6	9.6	-9.6	-9.6
TOTAL	437.1	432.5	407.3	331.4	29.8	101.1

SYMPOSIA	INCOME		EXPENSE		NET	
	BUDGET	ACTUAL	BUDGET	ACTUAL	BUDGET	ACTUAL
2003 Ultrasonics	459.1	396.6	388.5	280.3	70.6	116.3
2003 Frequency Control	267.6	230.4	225.2	223.3	42.4	7.1
2004 Joint Conference	0.0	232.4	0.0	193.8	0.0	38.6
Student/Speaker Travel			44.2	57.1	-44.2	-57.1
Grants			15.6	0.0	-15.6	0.0
Conf. Proc. Program (BookBroker)			-245.5	-192.1	245.5	192.1
Miscellaneous	-2.1	-3.6	0.0	0.6	-2.1	-4.2
TOTAL	724.6	855.8	428.0	563.0	296.6	292.8

ADCOM	BUDGET	ACTUAL
President's Office	13.3	13.5
AdCom Expenses (Meetings, etc.)	34.0	82.2
Standing Committees	10.4	5.0
Dist. Lecturer	17.7	4.8
IEEE HQ Direct Expense	9.1	10.7
Web	0.0	21.0
Miscellaneous	-0.9	6.2
TOTAL	83.6	143.4

OUTSTANDING LOANS	
2005 Freq. Control	25.0
2006 Freq. Control	25.0
2005 Ultrasonics	35.0
TOTAL	85.0
Net Worth 1/1/04	426.0
Surplus/Deficit	200.3
Net Worth 12/31/04	626.3

Appointments

Nanotechnology Council

Tadashi Takenaka

Dr. Tadashi Takenaka has been appointed to represent the UFFC on the IEEE Nanotechnology Council replacing Dr. Leonard Bond.

Dr. Tadashi Takenaka (M '83, SM '04) is full Professor in Electrical Engineering, Faculty of Science and Technology at Tokyo University of Science (former name: Science University of Tokyo) from 1996. He is now the Chair of IEEE Ultrasonics, Ferroelectrics, and Frequency Control Japan Chapter (UFFC-20). His major field is ferroelectric, piezoelectric and pyroelectric properties, materials and applications in the lead-free materials and grain-oriented bismuth layer-structured ferroelectric (BLSF) ceramics. He received the Ph.D. degree (Dr. of Engineering) in electrical engineering from Kyoto University in 1985.

Dr. Takenaka was Visiting Researcher of Material Research Laboratory (MRL) of the Pennsylvania State University from August, 1986 to August, 1987 (1 year). He is the recipient of the 1993 Edward C. Henry Award of the Electronics Division of the American Ceramic Society for the superior paper on Electronic Ceramics published in Journal of the American Ceramic Society during the year 1989. He also received the 55th Ceramic Society of Japan Awards for Academic Achievements in May, 2001.

He is an active member of the UFFC, serving on the International Advisory Committee of the IEEE International Symposium on the Applications of Ferroelectrics (ISAF) since 1994 and designated the Co-Chairman in 2002 (Nara, Japan). He is also the member of the Ferroelectric Committee Meeting of IEEE UFFC since 1998. He was the General Chair of the Ninth US-Japan Seminar on Dielectric and Piezoelectric Ceramics held in Okinawa. He is now the Chair of Asian Ferroelectric Association (AFA) from December, 2003. He is a member of 10 Japanese Societies or Institutes, the American Ceramic Society and the Materials Research Society.

UFFC Standards Standing Committee

Bill Hunt

Dr. William (Bill) Hunt has been appointed as the Chair of the UFFC Standards Standing Committee replacing Dr. Susan Trolier-McKinstry who has been acting Chair.

Dr. Hunt grew up in the literary haven of Columbus, Mississippi, the boyhood home of Tennessee Williams, and received his B.S.E.E. from the University of Alabama in 1976. He worked for Harris Corporation for two years in the areas of acousto-optics and surface acoustic wave (SAW). He then entered the Massachusetts Institute of Technology where he earned his S.M.E.E. in 1980 and conducted research in the field of auditory physiology. After four years with Bolt, Beranek and Newman, Inc. he entered the University of Illinois, Champaign-Urbana where he received his Ph.D. in electrical engineering in 1987. His research there was on acoustic charge transport (ACT) devices and the SAW properties of Gallium Arsenide.

Dr. Hunt joined the faculty of the Georgia Institute of Technology in the fall of 1987 as one of the original members of the Pettit Microsystems Research Center. There he founded the Microelectronic Acoustics Group which focuses on the development of ultrasonic devices that can be integrated with Microsystems. Among these have been, ACT devices, micromachined polyvinylidene fluoride-trifluoroethylene (PVDF)-based transducers for intravascular ultrasound, acousto-optic devices for tunable lasers as well as SAW and bulk acoustic wave (BAW) devices for wireless and chemical sensor applications.

Web Editor Frequency Control

Dr. Leonhard Reindl has been appointed to replace Dr. John Vig as the Web Editor for Frequency Control. John was the founding Web Editor-in-Chief as well as Web Editor for Frequency Control. After passing the Editor-in-Chief baton to Sorah Rhee, he remained as Editor for Frequency Control. Many thanks to John for establishing our Web presence and continually striving to improve it.

Leonard Reindl

Leonhard M. Reindl received the Dipl. Phys. degree from the Technical University of Munich, Germany in 1985 and the Dr. sc. techn. degree from the University of Technology Vienna, Austria in 1997. From 1985 to 1999 he was a member of the microacoustics group of the Siemens Corporate Technology department, Munich, Germany, where he was engaged in research and development on SAW convolvers, dispersive and tapped delay lines, ID-tags, and wireless passive SAW sensors.

In winter 1998/99 and in summer 2000 he was guest professor for spread spectrum technologies and sensor techniques at the University of Linz, Austria. From 1999-2003 he held a university lecturer position for communication and microwave techniques at the Institute of Electrical Information Technology, Clausthal University of Technology. In May 2003 he accepted a full professor position at the laboratory for electrical instrumentation at the Institute for Microsystem Technology (IMTEK), Albert-Ludwigs-University of Freiburg, Germany.

Newsletter Associate Editor – Frequency Control

Dr. R. Michael Garvey has been appointed Newsletter Associate Editor for Frequency Control.

R. Michael Garvey (M '81; SM '01) is Chief Technical Officer at the Symmetricom Technology Realization Center

in Beverly Massachusetts. Throughout his career, he has been involved in the design of atomic frequency standards. He lead the design team which developed the first microprocessor controlled atomic frequency standard. He has been intimately involved in development of cesium beam frequency standards for the Global Positioning System. He is now responsible for the development of new clock technologies at Symmetricom.

Dr. Garvey received the BS degree in physics from Davidson College, Davidson, NC in 1969 and the PhD degree, also in physics, from Duke University, Durham, NC in 1975. In 1976, he was awarded a U.S. National Research Council Fellowship in the Time and Frequency Division at the National Bureau of Standards (NBS) in Boulder, CO. While at NBS, he conducted research in the area of advanced atomic frequency standards and precision frequency metrology.

In 1979, Dr. Garvey joined Frequency and Time Systems, Inc. (FTS) in Beverly MA as a Research Physicist. During his career at FTS he has had responsibility for the research and development of precision ovenized quartz oscillators and atomic frequency standards and clocks using rubidium gas cell, cesium beam and hydrogen maser technologies.

Dr. Garvey is an active member of the UFFC, serving on the Technical Program Committee of the IEEE International Frequency Control Symposium since 1988, and as the Local Arrangements Chairman in 1994. He was the General Chairman for the Frequency Control Symposium in 2003 and the General Chairman for the UFFC 50th Anniversary Joint Conference in 2004.

Dr. Garvey is the recipient of the 2002 IEEE UFFC Society's C. B. Sawyer Award:

"For outstanding contributions to the development of successful commercial atomic frequency standards, and for providing exceptional technical leadership in the field of time and frequency products"

Dr. Garvey has served as a member of the Scientific Program Committee of the European Frequency and Time Forum since 1998. He serves on the National Research Council Review Panel for Physics at NIST. He holds two patents in the area of cesium beam frequency standards and has published approximately 15 technical papers.

UFFC AdCom - 2005

Ultrasonics, Ferroelectrics, and Frequency Control Society Administrative Committee & Associates

SOCIETY OFFICERS

PRESIDENT	Gerald V. Blessing	Natl. Institute of Standards & Tech (retired)
PRESIDENT-ELECT	Art Ballato	U. S. Army RDECOM CERDEC HQ
VP, FERROELECTRICS	Susan Trolier-McKinstry	The Pennsylvania State University
VP, FREQUENCY CONTROL	Lute Maleki	Jet Propulsion Laboratory
VP, ULTRASONICS	Clemens C. Ruppel	EPCOS AG
VP, PUBLICATIONS	Donald Yuhas	Industrial Measurement Systems Inc.
SECRETARY-TREASURER	Jacqueline H. Hines	J. H. Hines Consulting

ELECTED ADMINISTRATIVE COMMITTEE MEMBERS

2003 - 2005 Thomas R. Shrout	Pennsylvania State University
2003 - 2005 Mathias Fink	Universite Denis Diderot
2003 - 2005 Kullervo Hynynen	Brigham and Women's Hospital Harvard Medical School
2003 - 2005 Mike Garvey	Symmetricom Inc.
2004 - 2006 Victor P. Plessky	GVR Trade SA
2004 - 2006 Nava Setter	EPFL Swiss Federal Institute of Technology in Lausanne
2004 - 2006 Peter M. Smith	McMaster University
2004 - 2006 Daniel S. Stevens	Vectron International
2005 - 2007 Ruyan Guo	Pennsylvania State University
2005 - 2007 Massimo Pappalardo	University of Roma Tre
2005 - 2007 Leonhard M. Reindl	Albert-Ludwigs-University of Freiburg
2005 - 2007 Mark E. Schafer	Sonic Tech, Inc.

STANDING COMMITTEE CHAIRS & VICE-CHAIRS

AWARDS	Reinhard Lerch	University of Erlangen
Awards Vice-Chair*	Bernhard R.Tittmann	The Pennsylvania State University
FELLOWS*	Fred S. Hickernell	Motorola (retired)
FINANCE	Herman van de Vaart	Retired
Finance Vice-Chair*	Jacqueline H. Hines	J. H. Hines Consulting
ULTRASONICS	Clemens Ruppel	EPCOS AG
Ultrasonics Vice-Chair*	John Kosinski	U. S. Army CERDEC
FERROELECTRICS	Susan Trolier-McKinstry	The Pennsylvania State University
Ferroelectrics Vice-Chair*	Steve Pilgrim	Alfred University
FREQUENCY CONTROL	Lute Maleki	Jet Propulsion Laboratory
Frequency Control Vice-Chair*	Samuel Stein	Timing Solutions, Inc.
MEMBERSHIP SERVICES	Rajesh K. Panda	Philips Medical Systems
Chapters Vice-Chair*	Elizabeth H. Schenk	Diebold Incorporated
NOMINATIONS	Bob Potter	Vectron International - Hudson
Vice-Chair Nominations*	Daniel S. Stevens	Vectron International
PUBLICATIONS	Donald Yuhas	Industrial Measurement Systems Inc.
Vice-Chair Publications*	TBD	
TRANSACTIONS EIC*	Jian-Yu Lu	University of Toledo
Trans. Associate EIC*	Marjorie P. Yuhas	Industrial Measurement Systems Inc.
NEWSLETTER EDITOR*	Jan Brown	JB Consulting
Associate Editor for Freq. Control	Mike Garvey	Symmetricom Inc.
WEB EDITOR-in-CHIEF*	Sorah Rhee	MEGGITT Endevco
STANDARDS	William Hunt	Georgia Institute of Technology
Standards Vice-Chair*	TBD	
Sr. Past President	Fred S. Hickernell	Motorola (retired)
Jr. Past President	Ahmad Safari	Rutgers University
Sr. Student Member*(2004-2005)	Oliver Keitmann-Curdes	Ruhr-University Bochum
Jr. Student Member*(2005- 2006)	Emanuel Gottlieb	University of Southern California

*Non-voting position

AD HOC COMMITTEES

EDUCATION	E. Koray Akdogan	Rutgers University
HISTORIAN	Fred S. Hickernell	Motorola (retired))
LONG RANGE PLANNING	Fred S. Hickernell	Motorola (retired)
CONFERENCES	Ahmad Safari	Rutgers University
CONSTITUTION/BYLAWS REVIEW	Art Ballato	U. S. Army RDECOM CERDEC HQ

SUB-COMMITTEE MEMBERS

Standards

Ferroelectrics	Allen H. Meitzler	AHM Consulting
	Susan Trolier-McKinstry	The Penssylvania State University
Ultrasonic ID Tags	Clinton S. Hartmann	RF SAW, Inc.
	Lewis T. Claiborne	RF SAW, Inc.
Piezoelectric Crystals	Bikash K. Sinha	Schlumberger-Doll Research
Piezomagnetic Technology	Robert W. Schwartz	Univ. of Missouri – Rolla
Sensors, Actuators & Trans.	Fabien J. Josse	Marquette University
Surface Acoustic Wave Devices	Pierre Dufilie	Thales Components
Time & Frequency	Eva Ferre-Pikal	University of Wyoming
UFFC Stds. Liaison to SCC-27	John R. Vig	U.S. Army CERDEC

Web

Web Editor for Ferroelectrics	Ruyan Guo	Pennsylvania State University
Web Editor for Freq. Control	Leonhard M. Reindl	Albert-Ludwigs-University of Freiburg

Web Editor for Ultrasonics	Kendall Waters	National Institute of Standards & Tech.

DISTINGUISHED LECTURERS

July 2004 – December 2005	Nava Setter	EPFL Swiss Federal Institute Tech.
July 2005 – December 2006	Ken Ya Hashimoto	Chiba University 1-33
July 2006 – December 2007	Andreas Bauch	Physikalisch-Technische Bundesanstalt

SYMPOSIA LEADERSHIP

Ultrasonics Symposia	Clemens C. W. Ruppel –Chair	EPCOS AG
2005 Rotterdam, The Netherlands	Ton A. van der Steen	Thorax Centre
2006 Vancouver, Canada	Stuart Foster	University of Toronto
2007 New York City, New York USA	John A. Kosinski	U. S. Army Comm.-Elec. Command
2008 Beijing, China	Jian-yu Lu	University of Toledo
Ferroelectrics Symposia	Susan Trolier-McKinstry – Chair	The Pennsylvania State University
2006 Sea Trail, North Carolina USA	Jon-Paul Maria	North Carolina State University
2008 Santa Fe, New Mexico USA	Paul Clem	Sandia National Laboratories
	Bruce Tuttle	Sandia National Laboratories
Frequency Control Symposia	Lute Maleki – Chair	Jet Propulsion Laboratory
2005 Vancouver, Canada	Michael M. Driscoll	Northrup Grumman Corp.
2006 Miami, Florida USA (joint PTTI)	Michael M. Driscoll	Northrup Grumman Corp.
2007 Switzerland (joint EFTF)		

UFFC Society Representatives

Committee on Man & Radiation	Paul J. Benkeser	Georgia Institute of Technology
Educational Activities Board Liaison	E. Koray Akdogan	Rutgers University
Journal of Lightwave Technology	David L. Hecht	Xerox (Retired)
	John N. Lee	Naval Research Laboratory
Nanotechnolgy Council	Tadashi Takenaka	Tokyo University of Science, Japan
Sensors Council	Nava Setter	EPFL Swiss Federal Institute Tech.
Superconductivity Council	Moises Levy	Retired
Transactions on Medical Imaging	Ahmed Amin	Naval Undersea Warfare Center
IEEE Professional Activities Committee (PACE)	TBD	
TAB Finance	Herman van de Vaart	VDV Associates
TAB New Technology Directions	TBD	
IEEE WIE Liaison	Asha Hall	Rutgers University

UFFC SOCIETY CHAPTERS

Connecticut Section Joint Chapter	Charlotte Alvarez	
Germany Section Chapter	Helmut Ermert	Ruhr-Universitaet Bochum
Japan Council Chapter	Tadashi Takenaka	Tokyo University of Science, Japan
Oregon Joint Chapter	Pradeep Kumar	
Phoenix Joint Chapter	Charles Weitzel	
Russia Northwest Section Joint Chapter	Yuri Filatov	
Russia Section Chapter	Georgy D. Mansfeld	Institute of Radioengineering and Electronics RAS, RUSSIA
Toronto Joint Chapter	Sridhar Krishnan	

IEEE HEAD QUARTERS

Director Division IX	John A. Reagan
TAB Managing Director	Mary Ward-Callan

Other Conferences

The 26th Symposium on Ultrasonic Electronics

Special Notes

Organizing Committee Chair: Sadayuki Ueha

- Location: Tokyo Institute of Technology, Yokohama, Japan
- Dates: 16-18 November 2005
- International session: 17 November 2005 (whole day)
- Deadline for application for presentation: 5 August 2005
- Deadline for submission of proceedings paper: 26 August 2005
- http://www.use-jp.org/

Welcome From the General Chair

We cordially invite you to participate in the English Session of the 26th Symposium on Ultrasonic Electronics in Yokohama, Japan, on 16-18 November 2005. The first symposium was held in December, 1980, and offered an opportunity for experts in basic and applied research on ultrasonics to meet and discuss their work. Since then, innovations in ultrasound have been presented at subsequent symposia every year for a quarter century. For the 26th session, the symposium is being held on the Suzukakedai campus of the Tokyo Institute of Technology. Last year, to mark the 25th anniversary of the first symposium, and continuing for this year, an English session and guidance in the preparation of English presentations were introduced to internationalize the symposium, as were the establishment of a paper prize and online publication of presented papers.

Recently, industrial participation in the symposium has dropped though the number of papers for each session has increased significantly, and so the quality and quantity of discussion have both suffered. The executive committee is working on changes to the symposium to ensure sufficient discussion even in sessions with many contributions, and to encourage the participation of industrial researchers. Unfortunately, the scenery at Suzukakedai this year is incomparable to last year's beautiful Hokkaido, but it is hoped the extraordinary developments, exposure of young talent, and fruitful discussion to be exhibited at this year's session will make up for the scenery.

I eagerly await your participation in this year's symposium!

Prof. Sadayuki Ueha
Organizing Committee Chair

VIII International Conference for Young Researchers Wave Electronics and Its Applications in Information and Telecommunication Systems

Special Notes

- Date: 4 – 9 September 2005
- Location: St. Petersburg Russia
- http://www.home.ru/weconf/

Welcome from the Organizing Committee

The Conference is for scientists and specialists under 33 years old, but the organizers are encouraging leading Russian and foreign scientists (without age restrictions) to give overview lectures.

This conference is a continuation of our pleasant tradition to hold the annual meetings on Wave Electronics and its Application in the Information and Telecommunication Systems for young researchers and specialists. The conferences from that series very often take place on board of the comfortable ship cruising along the greatest and gorgeous lakes and rivers of the Russian North. The attendees of our meetings have a chance getting acquainted with all the beauties of Saint Petersburg, which is a cultural capital of Russia. They always admire the granite embankments, the elegant silhouettes of palaces, the iron lacework of the railings around the Summer Garden etc.

The cruising ship visits Valaam archipelago in the Northern Part of Ladoga Lake v the greatest lake of Europe with its ancient monasteries and particular climate, archipelago Kizhi with its famous wooden constructions and other magnificent places on the water.

We welcome all of you to our city!

Organizing Committee

History

This Day in History

2 July 1974
Alfred Norton Goldsmith died on this day in St. Petersburg, Florida. He was a professor of electrical engineering, a radio expert consultant, and vice-president and manager of RCA. He was also one of the founders of the Institute of Radio Engineers and the first editor of the Proceedings of the IRE, a position he would hold for forty two years.

3 July 1846
The French government made the decision to begin replacing optical telegraph lines with electrical ones.

5 July 1882
Max Dieckmann, radio and television pioneer, was born on this day in Hermannsacker, Germany. In 1925 he designed a television set with the help of the Braun tube, and developed a photoelectric scanning and an electronic photograph tube. He died on 28 July, 1960 in Gräfelfing.

6 July 1854
Georg Simon Ohm, né Johann Simon, died on this day. He was a German physicist who demonstrated that there are no "perfect" electrical conductors; all conductors have some resistance. Ohm's law is named for him.

8 July 1900
George Antheil was born in Trenton, New Jersey. He, together with the famous Austrian actress Hedy Lamarr, patented a frequency-hopping radio-control system. He died on February 1959 in New York City.

10 July 1962
Telstar, the first active satellite for communications, was launched. The Telstar communications system was officially honored as an IEEE Milestone in Electrical Engineering and Computing on its 40th anniversary in July 2002.

17 July 1850
The Harvard Observatory took the first photograph of a star, when W.C. Bond, the observatory director, and J.A. Whipple, a Boston photographer, took a daguerreotype of Vega.

18 July 1922
Thomas Kuhn was born on this day in Cincinnati, Ohio. He was a professor of the philosophy and history of science at the University of California at Berkeley, Princeton University, and MIT. He wrote the The Structure of Scientific Revolutions in which he stated that science was "a series of peaceful interludes punctuated by intellectually violent revolutions." He died in Cambridge, Massachusetts in 1996.

19 July 1900
Today is the 105th anniversary of the opening of the Paris Metro subway; the first line ran from Porte de Vincennes to Porte Maillot. An engineering and architectural triumph, the Metro became one of the most important electric traction projects in the world.

21 July 1970
The Aswan High Dam was completed on this day. It was inaugurated in January 1971 by President Sadat. The dam produces hydroelectricity and supplies 50% of Egypt's power needs.

27 July 1866
"ALL RIGHT!" After two weeks at sea, the cable-laying ship, The Great Eastern, steamed into Heart's Content. Then, with these words "all right," the first message was sent on the new transatlantic telegraph cable. The Irish and Canadian cable stations are both IEEE Milestones.

30 July 1889
Vladimir Kosma Zworykin, one of the fathers of television, was born in Murom, Russia. A Fellow of both the AIEE and IRE, he was awarded the IRE Medal of Honor in 1951. He died in Princeton, New Jersey in 1982, just one day shy of his 93rd birthday.

2 August 1835
Elisha Gray was born in Barnesville, Ohio. He invented—almost simultaneously with Bell—a telephone and a facsimile machine. He died 21 January 1901 in Newton, Massachusetts.

2 August 1922
Alexander Graham Bell, Elisha Gray's sometimes bitter rival in the race to patent the practical telephone, died on Gray's birthday at the age of 75. Bell was a founder and early President of the AIEE.

3 August 1926
On this day, the first traffic lights in Great Britain were installed at Piccadilly Circus in London.

5 August 1858
The first transatlantic telegraph cable was completed, establishing communication between Europe and North America. The cable was more than 1,950 miles long and in most places some lay two miles below the surface.

13 August 1928
WRNY, a television station in Coytesville, New Jersey,

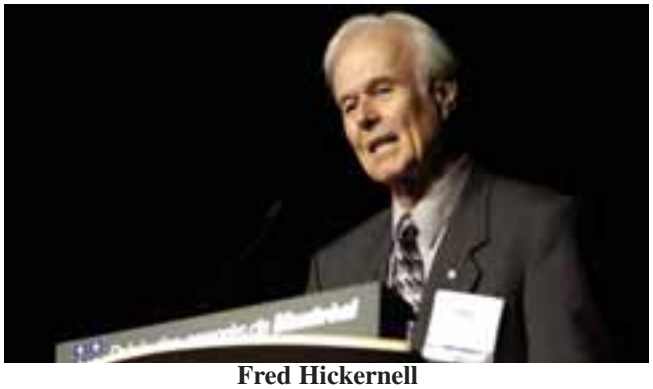
became the first station to broadcast a television image, a 1.5 square-inch picture of a woman's face viewed by 500 people. Interestingly, WRNY had been founded by Hugo Gernsback—considered by many the father of modern science fiction—whose early pulp magazines had predicted such devices.

21 August 1920
A radio station built by the U.S. Navy and the French government, the most powerful radio station in the world at that time, transmitted the first worldwide wireless message.

22 August 1860
Paul Julius Gottlieb Nipkow was born on this day in Lauenburg, Germany. The scanning disk he patented in 1884 lay dormant for 40 years, until the development of electronic amplification and of a rapidly variable light source that allowed John Logie Baird, Charles Jenkins, and others to invent television. Although Nipkow died in Berlin two days after his 80th birthday, he lived to see some important applications of his invention.

1 September 1966
The 7-bit American Standard Code for Information Interchange (ASCII) was adopted.

Conference Short Courses - Tutorials A Little History



Fred Hickernell

Short courses and tutorials have pretty well become standard fare at our three UFFC Symposiums. They serve a number of important purposes:

- To introduce subject matter to the beginner in the field
- To bring up to speed the worker from a related discipline
- To introduce new subject matter to the seasoned veteran

They are meant to be informative and instructive.

Tutorials have been a part of the International Symposia on the Applications of Ferroelectrics (ISAF) since they were first introduced at the1986 ISAF at Lehigh University. During the Sunday preceding the Symposium introductory lectures were given by R. E. Newnham, R.C. Pohanka, and A.M. Glass. The response was enthusiastic with nearly one hundred fifty persons attending. Since then they have become an integral part of the ISAF meetings.

Short courses were first introduced in the 1988 Ultrasonics Symposium in Chicago. It was during the 1986 Ultrasonics Symposium in Williamsburg, Virginia, that it occurred to Roger Colvin that there were a lot of familiar faces at conference, but very few new ones. He was sure that there were many new people coming into the field of ultrasonics, recent graduates, company transfers, and those changing disciplines. Often such people are caught in the circumstance that companies won't pay for their attendance unless they have a paper to present. Roger reasoned that by combining short courses with the symposium these newcomers could attend by using training funds and for the small additional incremental cost could convince their company to let them stay for the symposium. During the 1986 symposium the IEEE UFFC-S AdCom considered this as a means of boosting conference attendance, however lead time on obtaining instructors and publicity precluded an offering at the 1987 symposium.

The 1988 short course offerings at the Ultrasonics Symposium in Chicago, Illinois were highly successful and actually yielded a modest profit. More importantly there was a lot of positive feedback and very little negative reaction. The most common complaint was insufficient time to cover the material. It was very important that a bibliography and recommended reading list be included in the handouts. The courses were also structured for moving from the more general to the technologically specific. This is the pattern that has been maintained and with twenty-seven years of short courses at the Ultrasonics Symposium, and they have continued to be both a financial and training success.

In 1993 tutorials were introduced at the 47th IEEE International Frequency Control Symposium in Salt Lake City, Utah. David W. Allan was the Tutorial Chair through 1996. In 1997 Lute Maleki served as Tutorials Chair through 2001 with John Prestage taking over in 2002. This has been a well attended special part of each Frequency Control Symposia.

The 2004, 50th Anniversary Celebration and Joint Conference was a wonderful opportunity for the short course/tutorial format to be available for cross-fertilization of ideas among the three groups. There were a total of thirty short course/tutorials which allowed attendees to feast on the basics and latest in ultrasonics, ferroelectrics, and frequency control. It gave an opportunity to see and hear what was happening in related technologies for one low cost fee of 175 dollars for regular attendees or 75 dollars for students and retirees. Two hundred and fifty three people attended the short courses. A CD was produced of the power point slides used by the presenters.

We live in an information age and it is often just a matter of knowing where to find the special information we need. The short courses will remain the number one source of information at our IEEE UFFC Conferences. Some of the tutorials are also available on the UFFC website: www.ieee-uffc.org. In this way the training now extends to those beyond the conference halls.

Fred S. Hickernell
UFFC Historian

Around IEEE

IEEE Election

In Late August or early September you will be receiving your ballots for IEEE elections. The three Candidates for IEEE President-Elect 2006 were asked to submit material for your consideration of their candidacy. In alphabetical order by first name, the Candidates are, Gerald H. (Jerry) Peterson, James H. Tien, and Leah Jamieson. We encourage you to visit their websites and acquaint yourself with the candidates.

Gerald H. (Jerry) Peterson

Jerry Peterson

UFFC readers, I am honored to be a candidate for the office of IEEE President-Elect 2006, and to have this opportunity to share a few brief remarks on my candidacy - please see my web site: http://ghpeterson.home.att.net

About Jerry

Over 37 years, I have held positions in hardware and software design and engineering management and hold one US Patent in the field of telecommunications . In the past 17 years I have specialized in industry global strategic standardization. I currently hold the position of Senior Manager Emeritus at Lucent Technologies Bell Labs.

I hold Electrical Engineering degrees from the University of Washington and Rutgers University (both in the USA). I am a member of the Tau Beta Pi Engineering Honor Society. In 2001 I was recognized as a "Who's Who"in its publication, THE BENT of Tau Beta Pi. Also in 2001 I received the American National Standards Institute's Finegan Standards Medal for leadership in the development and application of voluntary standards. In addition to my leadership experience in the IEEE, I have served in elected national and international leadership positions that have delivered global technical standards and fostered increased global cooperation.

Vision for IEEE

We live in a time of accelerating change and globalization. The IEEE must both respond to and help drive these changes if it is to continue to be a preeminent technical society. Key among these changes are how it delivers value to industry worldwide and, thus, value to the members of the IEEE. I see this change to be focused on the technical, educational, regional, publications and standards services and products and in advancing, modifying and replacing them as we evolve both the value of the IEEE and the business model we use to support the delivery of value.

I know both the importance and the scope of the responsibility of being IEEE President and Chief Executive Officer, and if elected I am committed to giving my full time and attention to the office of IEEE President in 2007. I appreciate your consideration and welcome your questions, comments, and suggestions.

James M. Tien

Jim Tien

UFFC Colleagues: Let me begin by thanking those of you who collected signatures for my petition candidacy; I am an IEEE President-Elect 2006 candidate because of your hard work! You may read more about me and my vision for IEEE at my website: http://www.jimtien.com

About Jim

I feel that I have the qualifications to continue to help IEEE become the global resource of choice, as I have tried to do so in all my volunteer activities, including in my recent positions as VP of Publications and as VP of Education. I am culturally sensitive (having resided for extensive periods in Regions 1, 9 and 10); technically involved (having been active in 4 Societies); and professionally involved (having been active on 4 of IEEE's 7 Major Boards). I possess a strong educational background (with degrees from RPI and MIT); extensive industrial experience (having worked at Bell Laboratories, The Rand Corporation, and currently at a company that I co-founded in 1974); extensive academic experience (being on RPI's faculty since 1977). Moreover, I have extensive leadership experience (at IEEE, in Industry, and at RPI where I have been a Department Chair since 1985 and twice the Dean of Engineering) and demonstrated excellence (having been recognized with a number of IEEE and other technical awards, including election to the U. S. National Academy of Engineering).

Vision for IEEE

My vision for the IEEE is based on the same reasons why I became a member in 1974 and why I started volunteering in 1983. I consider IEEE to be my "Global Resource of Choice" for scientific, educational and professional products and services, and, accordingly, IEEE has played a critical role in my career – ostensibly more for my academic than for my parallel industrial career. If elected, I pledge to make IEEE more relevant and supportive of all careers. As examples, IEEE must offer more global and portable member benefits (to support a typical career that includes multiple employers); IEEE must meet the continuing education needs of our members (who must update their knowledge base while being on the job); and IEEE must think and act globally for the profession and think and act locally for the members (who have different cultural and professional needs).

Finally, I humbly ask not only for your vote, but also for your involvement: Together, We Can Advance IEEE's Global Value.

Leah Jamieson

Leah Jamieson

Information about Leah's candidacy is at http://www.ece.purdue.edu/~lhj/IEEE

About Leah

Leah Jamieson received the BS in mathematics from MIT and the MSE and PhD degrees in Electrical Engineering and Computer Science from Princeton University. She is the Ransburg Professor of Electrical and Computer Engineering at Purdue University and Associate Dean of Engineering for Undergraduate Education. Her technical interests include speech recognition and parallel signal processing algorithms; she has published over 160 papers. Jamieson is co-founder and director of the Engineering Projects in Community Service (EPICS) undergraduate engineering design program, initiated at Purdue and adopted by 17 universities. For her work with EPICS, she was co-recipient of the U.S. National Academy of Engineering's Gordon Prize for Innovation in Engineering and Technology Education. She has served on advisory committees of the National Science Foundation and on the Board of Directors of the Computing Research Association. She is an IEEE Fellow and a member of the U.S. National Academy of Engineering.

Leah has been an IEEE member for 30 years and an IEEE volunteer for 25 years. Currently, Jamieson serves on the IEEE Board of Directors, Executive Committee, and the IEEE Strategic Planning Committee. She is a member of the IEEE Signal Processing, Computer, Education, and Social Implications of Technology Societies and of the Central Indiana Signal Processing Chapter.

Vision for IEEE

IEEE will thrive by combining the strengths of this outstanding organization with a vision for how it will realize future opportunities. My vision is to ensure action in four areas:

- **Career-long support:**
  - Ensure affordable membership.
  - Provide continuity in members' careers through local and technical communities and web services that bridge career transitions.
  - Become an international leader in lifelong learning.
- **Nimbleness in emerging technology areas:**
  - Increase our agility through interdisciplinary communities in emerging areas; use the web to quickly make visible

our activities in new areas.
- Develop entry-level content for newcomers in a technical area; as we enter new areas, focus on theory and applications from the outset.

- **Agility in the information culture:**
  - Develop our understanding of how people – especially young people – access, use, organize, and share information.
  - Test new products and services through "rapid deployment" experiments. Develop an entrepreneurial culture that fosters innovation within IEEE.
- **Global profession, local needs:**
  - Build on IEEE's global nature to enhance members' success in the global profession.
  - Meet local needs in education, accreditation, professional development, information, and technology development and policy.

I will bring to the position of President a deep understanding of the IEEE and record of leadership and service both to the profession and to IEEE. I will be guided by key principles – value of membership, appreciation for volunteers, value to the profession and to society, sound financial models – in helping IEEE realize our myriad opportunities.

IEEE-USA Launches Employment Navigator to Enhance Members' Career Vitality

The IEEE-USA Employment Navigator allows IEEE members to connect quickly with hiring employers, build and send effective resumes and link to salary benchmarking and other career resources.

Employment Navigator collects 5 million job leads from 160,000 Web sites and places them in a single searchable database. The information comes from corporate Web sites, job boards, government and newspaper sites, and niche job sites (geography, industry and occupation specific). With this tool,

IEEE-member subscribers get access to unpublished job opportunities that never leave an employer's Web site (an estimated 30 percent of jobs in the database).

The portal also provides tools for resume creation and distribution, and links to other IEEE resources like the IEEE Job Site (http://careers.ieee.org/) and the IEEE-USA Salary Service (http://www.ieeeusa.org/careers/salary/).

In a recent survey of Employment Navigator users, more than two-thirds rated the tool valuable or very valuable; 75 percent log in daily or weekly to search for jobs; and two-thirds reported finding leads not found on any job board.

A six-month subscription is just $50 for IEEE members.

See http://www.ieeeusa.org/careers/employmentnavigator for more information.

IEEE Names Jeffry W. Raynes Executive Director

PISCATAWAY, N.J., JULY 2005 -- The Institute of Electrical and Electronics Engineers Inc. (IEEE) today announced the selection of Jeffry W. Raynes, CAE, as its new executive director.

Raynes, 51, will assume the position by November. He will serve as chief operating officer and will manage the IEEE staff organization, which consists of approximately 900 employees in several U.S. and overseas locations.

"Jeffry's 25 years of experience as a chief staff officer of professional associations makes him a natural fit for world's largest technical-professional organization," said 2005 IEEE President and Chief Executive Officer W. Cleon Anderson. "The Board and I are confident that his demonstrated expertise in association leadership will help position the IEEE to not only meet, but exceed, the needs and expectations of its members worldwide."

Since 1995, Raynes has served as executive director and chief operating officer of APICS -- The Association for Operations Management, an Alexandria, Va.-based international educational society that represents nearly 60,000 members in 20,000 companies around the world.

His previous positions include executive vice president and chief executive officer of the North American Die Casting Association, Wheeling, Ill., president and chief executive officer of the Better Home Heat Council of Boston, and director of marketing for the Association Management Corporation, Springfield, N.J.

Raynes is a Certified Association Executive (CAE) and was the 2000-2001 chairman of the board of the American Society of Association Executives (ASAE). He was inducted as an ASAE Fellow in 1987.

A graduate of the University of Maine, Raynes also is an honorary life member of the University of Maine Alumni Association Board of Directors.

He succeeds former IEEE Executive Director Daniel J. Senese, who retired in December.

Editor's Comments

Remember to VOTE

The IEEE and UFFC are volunteer run organizations. You have the opportunity to nominate candidates to run for office and the freedom to vote for those candidates you think will best serve your interests and those of the Society. In the next several weeks, you will be receiving two separate ballots giving you the opportunity to vote for candidates running for various IEEE offices and for UFFC Administrative Committee (AdCom) members, respectively. Please take the time to acquaint yourself with the candidates and vote.

In this issue, we have presented the IEEE candidates running for President-Elect in the AROUND IEEE section. The candidates running for UFFC AdCom are presented in the NOMINATIONS section.

Further, in the NOMINATIONS section of this Newsletter we outline the procedure for nominating yourself or others for AdCom candidacy. In addition, AdCom will be electing the next President-Elect of UFFC at its next scheduled meeting 18 September 2005 in Rotterdam immediately preceding the 2005 IEEE International Ultrasonics Symposium. If you would like to run or know others who would, follow the procedures in the NOMINATIONS section.

Whether or not you choose to run for office, we encourage you to VOTE in the elections.

IEEE Senior Membership

While I am encouraging action, if you have not applied for Senior membership and you are qualified please refer to the end of the HONORS section of this Newsletter to find the qualifications and procedures for nominating yourself or others for Senior Membership. You cannot become an IEEE Fellow without first becoming a Senior Member. Self nomination for Senior membership is allowed and encouraged.

Photo Contributions

Photos are a way to get to know each other in the UFFC community. Your photo contributions to the Newsletter are always welcome. It is helpful if the photos are sent as separate .jpg or .tif files. The quality in print is degraded if we have to extract the photo file from a word document.

Newsletter Copies

Many of you have expressed an interest in receiving extra copies of the UFFC Newsletter. You may request extra copies by contacting Loretta Oleksak, UFFC Publications Assistant, at loleksak@imsysinc.com.

Volunteer

President Gerry Blessing has invited you all to consider becoming more involved in the society. It is the efforts of volunteers that keep our society technically strong and vibrant. Jian-yu Lu, our Transactions Editor-in-Chief, is looking for more Associate Editors and reviewers. There are also vacant positions on the various committees of AdCom. Do Not Be Shy! Please let any member of AdCom know of your desire to serve.

Thank You

Thank all of you who sent articles and photos for this issue of the newsletter. The photos capture what words cannot and provide a way for us to see each other. Thanks to the photographers and photo contributors of this issue: Oliver Keitmann-Curdes, Emanuel Gottlieb, Nava Setter, Ken-ya Hashimoto, Mike Garvey, John Sinal, Jan Tuin, and Jan Brown. Extra thanks to Mike Garvey for supplying the photos of the Frequency Control Technical Program Committee meeting. Special appreciation to Paul Doto at IEEE Headquarters for the design and production work.

Please continue to send me information and photos as events occur so that we may post them on the web and include them in the Spring newsletter.

Jan Brown
UFFC-S Newsletter Editor
Jan.brown@ieee.org

Division IX Director

Congratulations to John Reagan, the Division IX Director for receiving the 2005 NASA Distinguished Public Service Medal!

NASA Distinguished Public Service Medal (non-Government personnel) The highest honor NASA awards to anyone who was not a Government employee when the service was performed. The award is granted only to individuals whose distinguished accomplishments contributed substantially to the NASA mission. The contribution must be so extraordinary that other forms of recognition would be inadequate.

Future UFFC Symposia

IEEE International Ultrasonics Symposia

2005 IEEE Ultrasonics Symposium
General Chair: Ton van der Steen
avandersteen@erasmusmc.nl
Rotterdam, The Netherlands
18 –21 September 2005

2006 IEEE Ultrasonics Symposium
General Chair: Stuart Foster
s.foster@ieee.org
Vancouver, Canada
3 – 6 October 2006

2007 IEEE Ultrasonics Symposium
General Chair: John Kosinski
j.a.kosinski@ieee.org
New York City, New York, USA
28 – 31 October 2007

2008 IEEE Ultrasonics Symposium
General Chair: Jian-yu Lu
Jilu@eng.utoledo.edu
Bejing, China
October 2008

2009 IEEE Ultrasonics Symposium
The Ultrasonics Committee is accepting ideas and proposals. You may submit proposals to Clemens Ruppel, UFFC Vice President for Ultrasonics, c.c.ruppel@ieee.org.

IEEE Frequency Control Symposia

2005 IEEE Frequency Control Symposium
General Chair: Michael Driscoll
Michael.driscoll@ngc.com
Vancouver, Canada
28 – 31 August 2005

2006 IEEE Frequency Control Symposium
General Chair: Michael Driscoll
Michael.driscoll@ngc.com
Miami, Florida USA
4 - 7 June 2006

2007 IEEE Frequency Control Symposium
2007 will be the joint conference with EFTF and is to be held in Europe.
General Chair: Bernardo Jaduszliwer
Jaduszliwer@aero.org

IEEE International Symposia on Applications for Ferroelectrics

2006 IEEE ISAF
General Chair: Jon-Paul Maria
Jpmaria@ncsu.edu
Sunset Beach, North Carolina, USA
30 July – 2 August 2006

2008 IEEE ISAF
Co-Chairs: Paul Clem and Bruce Tuttle
pgclem@sandia.gov
Sante Fe, New Mexico, USA
March 2008 (Proposed)

Future Symposia
The Ferroelectrics Committee is accepting proposals and ideas. You may submit proposals to Susan Trolier-McKinstry, Vice President for Ferroelectrics at stmckinstry@psu.edu.

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