



# UFFC Newsletter

Ultrasonics, Ferroelectrics, and Frequency Control



## President's Message

Dear UFFC Society Members:

Greetings from your Society president. In this 2005 Newsletter message I would like to say a little about the past, and something about the future.

### The Past . . .

2004 was an eventful year for the Society. In August we celebrated our Society's 50th Anniversary with a Joint Conference in Montreal, Canada. It was the first time that our three major technical groups - ultrasonics, ferroelectrics, and frequency control - have joined together at a single conference site. On behalf of the Society I sincerely thank all of you, organizers and participants, for making this a unique and very successful conference.

Another significant 2004 event was the five-year Society review by a committee of the Technical Activities Board - the umbrella organization of all societies within IEEE. The review went smoothly. Elsewhere in this Newsletter there is a summary of key points and recommendations that were generated. Here I would like to just mention one supportive comment by the committee: the Society's 'best-practice' involvement and recognition of its students.

### The Future . . .

The success of last year's Joint Conference begs the thought - maybe we should not wait until our Centennial for our next



reunion! We welcome your opinion (email below). More immediately, in 2005 the International Frequency Control Symposium will be held jointly with Precise Time and Time Interval (PTTI) Systems and Applications in Vancouver, Canada, beginning 28 August with short courses. The International Ultrasonics Symposium will be held in Rotterdam, The Netherlands, beginning 18 September with short courses. The next (biennial) Ferroelectrics Symposium, will be held in North Carolina, U.S., beginning 30 July 2006.

I mentioned the Society Centennial above (50 years hence!), but will the Society even exist then? And what kind of a Society will it be? Will its technical content be driven by publications and symposia as it is now? What will a 'publication' mean then? Right now we are facing the unknown of "open access" - a big big issue for everybody that publishes and/or reads the literature. John Vig, past Society president and now president of the IEEE Technical Activities Board, has suggested the following website for news and analysis about the open-access movement: <http://www.arl.org/sparc/soa/index.html>

Do share your accomplishments and new technology ideas at our symposia. And we invite any opinions and suggestions for a strong and growing Society.





Sincerely,  
Gerry Blessing  
UFFC Society President, '04-'05  
[g.blessing@ieee.org](mailto:g.blessing@ieee.org)



The laser-inscribed optical glass "crystal" presented to all attendees of the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control 50th Anniversary Joint Conference.

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## 50th Anniversary Personal Remembrances

### 2004 IEEE International Ultrasonics, Ferroelectrics and Frequency Control

### 50th Anniversary Joint Conference

24 – 27 August 2004

Montréal, Canada

### Some Personal Remembrances

#### Background



**Thresa and Fred Hickernell**

Conferences are gatherings of our engineering and scientific community members to share ideas, renew acquaintances, honor contributions, and fellowship together. It is a people party for as long as I can remember having attended some 42 consecutive Ultrasonic Symposia and several for Ferroelectrics and Frequency Control. Having had a long history with the society it is still exciting to see old friends and make new acquaintances. It is always very special to see all the new young people attending and share their excitement over new advances. It is the same excitement which we all remember and continue to have. First, a little background on the years preceding our 50th Anniversary conference.

The consideration of Montreal for the 2004 Symposium was put forth in 1999 at the Fall AdCom meeting. The suggestion was made to celebrate our 50th Anniversary with a conference combining the Ultrasonics, Ferroelectrics, and Frequency Control Communities. Our 50th year was actually 2003, since our society started as the Professional Group on Ultrasonics Engineering in May of 1953. However, it worked out better to consider 2004, since the Frequency Control Community had a joint agreement with its European counterpart, the European Frequency and Time Forum (EFTF) for a joint conference in the United States in 2003

and the Ferroelectrics Community had its conferences biannually on even numbered years.

With the blessings of AdCom and the consideration of East Coast sites (our society started in the East, and it was felt that we might be able to draw some of the pioneers of our society) the ad-hoc organizing committee turned its attention to Montreal. This was after looking at possible sites in Boston, New York City, and Miami. A site visit to Montreal



**Mike Garvey**

was made in June of 2000 by Mike Garvey, Fred Hickernell, Jack Kusters, James Greenleaf, Steve Pilgrim, Walter Schulze, all representing the three groups that make up the UFFC Society. We were joined by David Cheeke, Concordia University, Montreal, as a local representative of the area. The group toured the area during the two day meeting and came up with a plan for the conference using the best practices of each of the three groups and the initial date in August 2004 was set. Mike Garvey agreed to be the General Chair and David Cheeke to head local arrangements.



**Guerda and David Cheeke**

The plans were refined as the conference drew closer with Mike Garvey, giving updates at each Ad Com meeting. Herman van de Vaart, agreed to be Finance Chair, Jack Kusters took over the Exhibitor organization, and the Technical Program Chairs were Ton van der Steen for Ultrasonics, Walter Schulz and Steve Pilgrim for Ferroelectrics, and Chris Ekstron for Frequency Control.

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## Conference Week

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Let us fast forward to Montreal, the week of the conference. So what are my personal remembrances of the conference? I hope they will stir some of your own.

On Sunday afternoon before the short course start on Monday a volunteer group gathered to stuff envelopes and help FASS set up for registration. As usual, there were some glitches, material arriving late, etc., but everybody pitched in and FASS was ready for registration. It was a fun opportunity to work with others in helping set up for the conference.

Monday your UFFC Administrative Committee met to hear reports, make decisions on future conference venues, approve budgets, and concern ourselves with the well being and future of the society. The UFFC society is healthy financially and blessed with a large number of dedicated volunteers.

During the AdCom there were several informative short courses going on in parallel with opportunities to move through various topic areas and explore new areas. Special overview courses were given Monday evening in Ultrasonics and ferroelectrics. It was an excellent time for some cross discipline training in related technologies.

The opening session on Tuesday morning was well attended. It is a time of getting acquainted with those who have worked to put the conference together, recognizing special awardees, and in celebration of this 50th year anniversary, the recognition of past presidents of the society. Of the 30 past presidents, 15 were in attendance (See this History Column in this newsletter). A few had passed away, some were unable to come, and the recognition committee was unable to locate a few. Some of our past presidents in attendance had moved on to other areas of interest and had not attended a symposium for some time. There were 8 of our past presidents who have remained active in the society. This brings a wonderful history and continuity to the society. It was especially wonderful to see the renewal of old friendships. In some cases during their tenure it had been tough times for the society, and it was rewarding for them to see how the society has flourished and become more international. It was nice to receive emails following the conference from past-presidents expressing their thanks for the recognition and fellowship.

At the opening of the Ultrasonics Plenary session there were special greetings brought by our founder and first president, Amor Lane. Amor had the foresight to petition the IRE (the forerunner of the IEEE) for the creation of the Professional Group on Ultrasonic Engineering, PGUE in 1953. It was a decision that came after there seemed to be no

venue for the growing field of ultrasonics related to engineering applications. The greeting given by Amor Lane can be found in the History Column of this newsletter. We thank him for his willingness to make a special trip from his home in Maryland to our 50th Anniversary conference celebration.



**UFFC Founder Amor L. Lane**

The plenary speakers for each of our three groups gave excellent presentations and were well received. The speakers represented pioneers in their respective fields. For those who restrict themselves or are restricted to a single conference each year, it was a wonderful opportunity to hear from related, but somewhat different fields of investigation.

The contributed and invited oral papers in all three areas numbered near 1000 and my choices were made on the basis of subject area, interest in, or friendship with the author, and to listen to an area of special interest. My choices in the first area were the latest in SAW and thin film technology that I was involved in over my 38 years at Motorola. The second area was author interest where I had followed the author's work and knew his latest presentation would be a good one. In my special interest categories were the historical papers and invited medical ultrasonic papers. I had the pleasure of chairing a special historical session in Frequency Control.

The poster sessions were a magnificent "art-show" with the colorful displays attracting one and all. The advantage of the poster session is that the authors display in words and pictures the results of their theoretical and/or experimental work. It is special to be close-up and on-on-one with the authors, particularly in areas where there are questions to be asked and answered. It is hard in the regular oral sessions to have enough time for questions and often it is hard to track down the author later at a break. But still a lot of the conference interchanges go on during breaks, at lunches, around the registration area, and especially at reception and banquet functions.

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## Socializing and Remembering

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Of course, all the talk is not on scientific matters. It is also a time of socialization, remembering, and making new acquaintances. Often it is a time for remembering names of familiar faces. After all it has been at least a year or maybe longer. Because the conference is so international, it is a

wonderful opportunity to become directly acquainted with authors whose names you have seen in the literature. Often this can lead to collaboration and exchanges mutually beneficial to both parties. In my case, I agreed to look over a book chapter on thin-films for a research group in Australia. The book chapter was later emailed to me and I responded with comments.

Then there is the wonderful benefit of socialization and sharing good news. Victor Plessky was very excited to introduce me to his former Moscow University roommate, Michael Kogan, who drove over from Toronto. They were roommates 35 years ago at their university in Moscow, a wonderful reunion. Larry Kessler missed the introduction of past presidents since he was at breakfast with Bob Adler reminiscing over the "good old days" at Zenith. Roman Maev helped sponsor a Russian colleague who was not able to secure funds. Therefore, the colleague was able to come and present his paper. Sometimes getting visas is a problem. I heard from some how they got the visas just the day before they were to leave. It was also good to visit with some of our pioneers in the field who are still keeping active as consultants. They have a lot to offer. I am sure each one of the attendees had a special experience that surprised them. That is all a part of being a community.



**Victor Plessky and Roman Maev**



**Ingrid and Bob Adler**

The exhibitors were a special part of our celebration. Often they come out of loyalty to our society. Sometimes the business opportunities are not that great, but again it is the

community spirit which draws them. The exhibitors had some wonderful gifts besides the catalogues and CD's. Quartz crystals were a very popular item.

Then there were the special gifts for attendees, 50th anniversary seals, lapel pins, carrying bags, and the colorfully lit glass block with the UFFC logo. The seals, lapel pins, and blocks came through the diligent efforts of Jan Brown. Jack Kusters with help from the exhibitors supplied the bags. These were some very nice mementos of our 50th celebration.

A good friend, Ivan Anisimkin, the young Russian researcher from the IRE was missed. He was killed in a terrorist explosion near Red Square on December 9, 2003, as he was on his way from the subway station to work at the IRE. I talked with George Mansfeld about this. George and his wife Valentina were on their way to the IRE at the same time when they heard the explosion. Fortunately they were on the back side of the building. It has been very hard on workers at the IRE and especially Ivan's father, Vladimir Anisimkin. George and Ivan were in attendance at the 2003 Ultrasonics Symposium in Hawaii just a month before Ivan's death. It brings to our attention that though we gathered as a community, shared, and enjoyed each other in the safety of our host city, that there are still places in the world where peace and stability are shattered by terrorist attacks. It usually happens "over there," but sometimes its reality is brought home to us when one of our own, a promising young scientist, suddenly leaves us.



**Ivan Anisimkin**



**Yuri Gulyaev and Georgy Mansfeld**

I was honored to coauthor a historical paper with Yuri Gulyaev of the IRE in Moscow. Yuri gave the paper which allowed a unique insight into the Russian and Eastern European contributions to Ultrasonics in the 1960's and 1970's. It was during this time that Yuri discovered simultaneously with Jeffrey Bleustein the existence of a new surface wave on piezoelectric crystals, the shear horizontal Bleustein-Gulyaev or BG wave. Yuri will be celebrating his



70th birthday next year. He will be stepping down as head of the IRE, but his heart and interest will remain with the institution as it has for the past 25 years.

Our fearless Finance Committee Chair, Herman van de Vaart, was not there because of surgery. I am sure he will be back for next year's Ultrasonic Symposium, which is in Herman's home country of The Netherlands. But don't forget the Frequency Control Symposium in 2005 in August in Vancouver and the 2006 Ferroelectrics Symposium in North Carolina beginning the end of July.

The guest program was organized by Lee Adler and Tania van de Vaart. The three tours were well attended. Our international guests always enjoy the tours, as well as, getting reacquainted, meeting new friends, and getting up-to-date on each of the families. This interaction happens not only on the tours, but also during the guests' breakfasts each morning of the conference.

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## In Celebration

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Our celebration was a success in my mind and I hope in yours too. There was a lot of looking back, around, ahead, and within to be done. We looked back and saw the faithfulness of our past leadership and members in keeping our society vibrant and strong. We looked around at all the attendees, saw old friends, met new ones, and had a great fellowship time. We looked ahead as we saw posters, presentations, and exhibitions and anticipated the future. We looked within to see how we could be a part of that future. That is what celebrations such as ours are all about.

**Fred Hickernell**

## 50th Anniversary Joint Conference Highlights



### 2004 IEEE International Ultrasonics, Ferroelectrics and Frequency Control 50th Anniversary Joint Conference 24 – 27 August 2004 Montréal, Canada HIGHLIGHTS



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### A Reflection from the General Chair

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**Mike Garvey**

As I reflect on the Anniversary Conference of four months ago, I recall the concepts that I used to keep it on course. If nothing else, this may help answer the question of "why did it work?" and perhaps provide advice to others who fill the role of General Chair.

I view the overriding purpose of the Conference: to provide a venue for technical exchange in UFFC. Two key mechanisms are available to fulfill this purpose: a) technical

presentations by invited and contributing speakers and b) personal interactions during the conference. At the conference level, a key aspect of the former is to make the audio visual tools work well. It seems that every year, the audio visual presentation technology moves a bit forward. The challenge is how to inform everyone of this evolution. A key aspect of the environment for personal interactions, is to make the Conference a stimulating and supportive venue in which to meet and talk with colleagues. The Conference Chair must also watch the business side to keep a balance between conference cost and the above objectives

In retrospect I think that Montréal was an excellent choice; thank you Fred Hickernell. The professionalism of the city of Montréal and its conference infrastructure made the Conference a great success.



**Debra Coler, Frequency Control Administration**



**Herman van de Vaart**



**Marj Yuhas**



**David Cheeke (l) with Jack Kusters**

The Joint Conference took four years to plan. I can never thank everyone who made the conference a success, but special thanks should go to Debra Coler for her administrative support to my tasks and especially to the speakers and student programs; to Herman van de Vaart for his financial guidance and for his wise counsel on the tough decisions and to David Cheeke for his untiring efforts on the Short Courses and his numerous solutions to the local challenges that arose. I also thank the Technical Program Chairs, Ton van der Steen, Chris Ekstrom, Walter Schulze and Steve Pilgrim for the successful Technical Program. Jack Kusters is to be thanked for the organizing the exhibits. For the historical Conference record, we must thank Marj Yuhas for her efforts to collect and organize the Proceedings.

I hope that everyone who attended the 2004 UFFC Anniversary Conference feels, as I do, that it was useful and successful.

**Dr. R. Michael Garvey  
General Chair**

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## Attendance

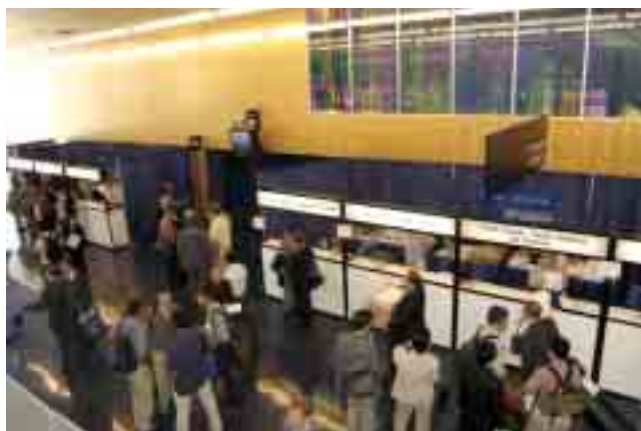
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**Ton van der Steen**



**Chris Ekstrom**



**Steve Pilgrim**



**Water Schulze**

The total attendance for the Joint Conference was 1338, which included:

Members:	484
Non-Members:	316
One-Day Registration:	18
Students:	310



Retirees: 20  
 Life Members/Complementary: 122  
 Guests: 68

Attendees represented 43 countries. 54 percent were from outside the United States. The next largest single country attendance was 13 percent from Japan, 7.5 percent from Canada, 6 percent from France, 4 percent from Germany, 3 percent from the United Kingdom, and about 2 percent each from China, Korea, The Netherlands, Russia, Switzerland, and Taiwan.

The attendance by Regions as designated by IEEE was:

Regions 1 –6 (USA)	46.13%
Region 7 (Canada)	7.51%
Region 8 (Europe, Middle East , Africa)	25.39%
Region 9 (Central and South America)	0.46%
Region 10 (Asia, Australia, New Zealand)	20.51%

### The Plenary Sessions

On Tuesday morning, 24 August 2004, Mike Garvey, General Chair, officially declared the symposium open in a special Opening and Awards Ceremony. The Technical Program Committee Chairs, Ton van der Steen for Ultrasonics, Chris Ekstrom for Frequency Control, and Steve Pilgrim for Ferroelectrics introduced the technical program. UFFC Society President, Gerry Blessing, and Awards Committee Chair, Reinhard Lerch, presented the 2004 Society Awards. (See UFFC Awards Column in this newsletter.)

In commemoration of the Society's fiftieth anniversary and at the invitation of President Blessing, all former Presidents of the Society were invited to attend this year's symposium. Fred Hickernell introduced all the former President's in attendance. It was a special treat to have our Founding President, Amor Lane, join us at this Symposium. Amor's remarks about the early days of the Society and Photos of the Presidents may be found in the History Column in this Newsletter.



**Fred Hickernell**



**Amor Lane,  
 Founding President**

Following this Opening Ceremony and in each of the next two days, the day was opened with a special plenary session in each of the three UFFC technical areas Ultrasonics, Frequency Control, and Ferroelectrics, respectively. A general welcome was followed by awards and a

Plenary Speaker. (The awards and their presentation may be found in the columns of each of the technical groups in this newsletter.)

### Ultrasonics Plenary



**Clemens Ruppel**

Clemens Ruppel, Vice President for Ultrasonics, welcomed the attendees and invited them to become more active in the Society. A most expressive speaker, Nicolaas Bom from the Thorax Center of the Erasmus Medical Center in Rotterdam, The Netherlands, presented the plenary lecture entitled "From Hearing to Seeing: The Ultrasound Stethoscope and the History of Echocardiography".



**Nicolaas Bom**



**Nicolaas Bohm**

### Frequency Control Plenary

The Wednesday morning plenary was opened with a welcome from Lute Maleki, Vice President for Frequency Control, and Chris Ekstrom, Technical Program Chair. "Unwinding a Biological Clock" was the title of the lecture given by Gene Block from the University of Virginia.



**Lute Maleki**



**Chris Ekstrom**



Gene Block

### Ferroelectrics Plenary

Susan Trollier-McKinstry, Vice President, Ferroelectrics, welcomed the attendees and opened the third day of the Symposium. Robert Newnham of Pennsylvania State University demonstrated the connecting links between the three technical groups of UFFC in his lecture “Fifty Years of Ferroelectricity”.



Susan Trollier-McKinstry



Robert Newnham

### Student Paper Competition

A highlight of the Joint Conference was the Student Poster Competition. The UFFC Technical Program Committees (TPCs) selected student paper finalists in each of the major technical areas in each of the three groups of UFFC during the April TPC joint paper selection meeting.

On the first day of the symposium, August 24, all Student Finalist Posters were presented for judging by a panel of experts from each of the major technical groups of the Symposium. The posters remained up for the entire symposium. Many of the papers were also given in oral sessions at the symposium.

The winners received a certificate and \$100 USD. Congratulations to all!

#### 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.

#### Final Judging includes:

- 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

The student paper finalist and the winners (in Red) in each of the technical specialties are:

#### ULTRASONICS:

##### Medical Ultrasonics



Todd Erpelding  
PS1-1



Martijn Frijlink  
PS1-2



Shukui Zhao  
PS1-3



Lisa Treat  
PS1-4



Changhong Hu  
PS1-5



Jessica Foley  
PS1-6



Manabu Suzuki  
PS1-7



Rosario Schiano Lo  
Moriello  
PS1-8



Jeremy Thiele  
PS1-9



Sonal Srivastava  
PS1-11



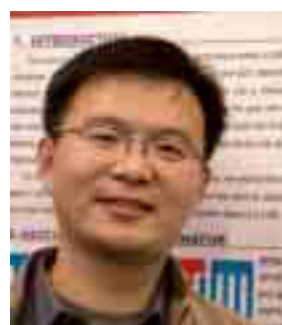
Olli Holmgren  
PS1-12



Masahiko Tominaga  
PS1-13



Jonathan Thierman  
PS1-14



Weibiao Wang  
PS1-15



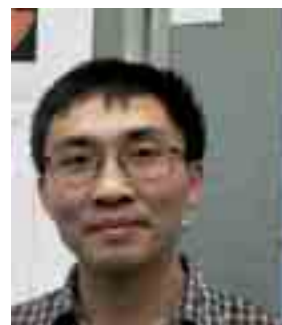
Lucia Vergara  
PS1-16



Thomas Kenny  
PS1-17



Hiroyuki Shimizu  
PS1-18



Yongli Huang  
PS1-19



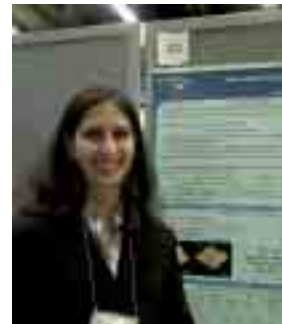
Guillaume Ferin  
PS1-20



Mutsuo Ishikawa  
PS1-21



Matthew Fronheiser  
PS1-22



Nazanin Bassiri Gharb  
PS1-28





**Marko Budumir**  
**PS1-29**



**Mehdi Allahverdi**  
**PS1-30**



**Alexandre Volatier**  
**PS1-33**



**Shigeo Ito**  
**PS1-34**



**Junichi Sakamoto**  
**PS1-35**



**Kwang Hyun Jung**  
**PS1-36**



**Ryan Ong**  
**PS1-37**



**Thomas Pollard**  
**PS1-25**



**Shih-Yung Pao**  
**PS1-26**



**Do-Young Kim**  
**PS1-27**



**Pierre-Yves Bourgeois**  
**PS1-23**



**Paul Stanwix**  
**PS1-24**



**Mohamed Abdelmoneum**  
**PS1-38**



**Seungbae Lee**  
**PS1-39**



**Hyunsoo Kim**  
**PS1-40**



**Yuan-Yu Jau**  
**PS1-41**



**Kevin Holman**  
PS1-42



**Sun Jong Kwoun**  
PS1-43



**Rick Puccio**  
PS1-44



**Laurent Francis**  
PS1-45

PS1-1 Bubble-based acoustic radiation force for monitoring intraocular lens elasticity Erpelding et al.

PS1-2 Intravascular Ultrasound Tissue Harmonic Imaging in vivo Frijlink et al.

PS1-3 Increasing binding efficiency of ultrasound targeted agents with radiation force Zhao et al.

PS1-4 Transcranial MRI-Guided Focused Ultrasound-Induced Blood-Brain Barrier Opening in Rats Treat et al.

PS1-5 FPGA Based Digital High Frequency Beamformers for Arrays Hu et al.

PS1-6 Ultrasound-guided HIFU neurolysis of peripheral nerves to treat spasticity and pain Foley et al.

### Sensors, NDE & Industrial Applications

PS1-7 Counter-propagating Lamb wave Pair for Nondestructive Inspection Hoshimiya and Suzuki

PS1-8 Performance assessment of a new Kalman filter-based method for ultrasonic time-of-flight estimation Angrisani et al.

PS1-9 Dual Configuration High Temperature Hydrogen Sensor on LGS SAW devices Thiele and P. da Cunha

PS1-10 A theoretical study of Love wave sensors mass loading and viscoelasticity sensitivity in gas and liquid environments. Mazein et al.

### Physical Acoustics

PS1-11 Dedicated finite elements for electrode thin films on quartz resonators Srivastava et al.

PS1-12 Visualization of in- and out-of-plane vibrations in a micromechanical RF-resonator Holmgren et al.

PS1-13 An ultrasonic linear motor using a ridge waveguide Tominaga et al.

PS1-14 Combined radiation pressure field in a dual-frequency ultrasound system Thierman et al.

### Surface Acoustic Waves

PS1-15 On minimizing bulk scattering loss in CRF(DMS) devices Wang et al.

PS1-16 SAW and BAW response of c-axis AlN thin films sputtered on platinum Clement et al.

PS1-17 FEM/BEM Impedance and Power Analysis for Measured LGS SH-SAW Devices Kenny et al.

PS1-18 Evaluation of material constants and SAW properties in  $\text{LaCa}_4\text{O}(\text{BO}_3)_3$  single crystals Shimizu et al.

### Transducers & Transducer Materials

PS1-19 Optimized Membrane Configuration Improves CMUT Performance Huang et al.

PS1-20 Inverse calculation method for piezocomposite materials characterisation Ferin et al.

PS1-21 Wide frequency band and high intensity thickness vibration of hydrothermal lead zirconate titanate polycrystalline film Ishikawa et al.

PS1-22 Real-Time 3D Ultrasound with Multiple Transducer Arrays Fronheiser et al.

### FERROELECTRICS:

#### Piezoelectrics, Dielectrics, Pyroelectrics & Optics Characterization, Domains, Fundamentals & Theory Thin Films & Device Integration

PS1-28 Non-linear dielectric response in  $\{111\}$  and  $\{100\}$  oriented  $0.5\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3$ - $0.5\text{PbTiO}_3$  thin films Gharb and Trolier-McKinstry

PS1-29 Piezoelectric anisotropy-phase transition relations in perovskite single crystals Budimir et al.

PS1-30 Grain orientation of new lead-free piezoelectric ceramic in the system of  $(\text{Bi}_{1/2}\text{Na}_{1/2})\text{TiO}_3$ - $(\text{Bi}_{1/2}\text{K}_{1/2})\text{TiO}_3$ - $\text{BaTiO}_3$  Hagh et al.

PS1-31 Spatial Resitivity Profiling of Multilayer Capacitors as a Function of Furnace Conditions Williams et al.

PS1-32 Complex Lattice Quasicontinuum Theory and Its Application to Ferroelectrics Kowalewsky et al.

PS1-33 Design, fabrication and characterization of tunable PZT film bulk acoustic resonators Zinck et al.

PS1-34 Conversion of 45 o rotated X-cut  $\text{KNbO}_3$  plates to Y-cut plates by compression Nakamura et al.

PS1-35 Cooling-Rate-Dependent Domain Structures of PMN-PT Single Crystals Observed by Contact-Resonance Piezoresponse Force Microscopy Sakamoto et al.

PS1-36 Effects of  $\text{Li}_2\text{CO}_3$  and  $\text{Bi}_2\text{O}_3$  additives on sintering temperature and piezoelectric properties of PCW-PMN-PZT ceramics for multilayer piezoelectric transformer Chung et al.

PS1-37 Sol-Gel Derived  $\text{Pb}(\text{Zr},\text{Ti})\text{O}_3$  Thin Films: Residual Stress, Orientation, and Electrical Properties Ong et al.

## FREQUENCY CONTROL:

### Materials and Resonators

PS1-25 SH-SAW Transducer Analysis on Single Crystal  $\text{KNbO}_3$  for Liquid Sensors Pollard et al.

PS1-26 An Efficient Numerical Method in Calculating the Electrical Impedance Different Modes of AT-Cut Quartz Crystal Resonator Pao et al.

PS1-27 Effects of electric bias and  $\text{O}_2$  content on properties of ZnO films and characterization of ZnO-based film bulk acoustic resonator Kim et al.

### Oscillators, Synthesizers and Noise AND Atomic and Optical Standards and Time Keeping

PS1-23 Ultra-Low Drift Cryogenic Sapphire Bourgeois et al.

PS1-24 Evolution of the UWA Solid Nitrogen Dual-Mode Sapphire Microwave Oscillator Anstie et al.

PS1-38 Frequency tuning of vibrating micro-electro-mechanical resonators and filters via laser trimming Abdelmoneum and Nguyen

PS1-39 Mechanically-coupled micromechanical resonator arrays for improved phase noise Lee and Nguyen

PS1-40 Direct Mounting of Quartz Crystal on a CMOS PLL Chip Kim et al.

PS1-41 Large Enhancement of CPT Signals in Frequency Standards Jau et al.

PS1-42 Frequency transfer of optical standards through a fiber network using 1550-nm mode-locked sources Holman et al.

### Sensors and Transducers

PS1-43 A multi-resonance acoustic interfacial biosensor (MAIB) for monitoring a formation process of biological thin films Kwoun and Lec

PS1-44 SAW Sensors Using Orthogonal Frequency Coding Puccio et al.

PS1-45 Techniques to evaluate the mass sensitivity of Love mode surface acoustic wave biosensors Francis et al.

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## Student – AdCom Breakfast

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On Thursday morning the UFFC AdCom sponsored a Student Breakfast that started at 6:30 am. Yes, students actually got up that early. The first ten students to arrive were awarded IEEE and UFFC membership for 2005. UFFC President, Gerry Blessing and the Student representatives to AdCom, Asha Hall and Oliver Keitmann-Curdes, welcomed the students and explained the benefits of remaining connected professionally through the society.



Gerry Blessing



Asha Hall















## 2004 Exhibits Offer a Wide Choice to Attendees

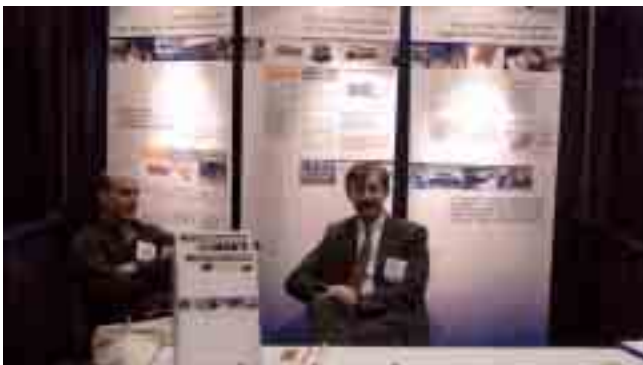
A highlight of the Montreal Joint Conference was the joint exhibit area featuring vendors with products of interest to all three UFFC groups. Thirty-eight exhibitors were present demonstrating and selling innovative products and services.

A Cyber Café with both wired and wireless computer access was located in the Exhibit area and generated great interest and participation. Although we had originally pro-

vided 128 ports for access, by the second day, we had to add two more routers to take care of the overload crowds.

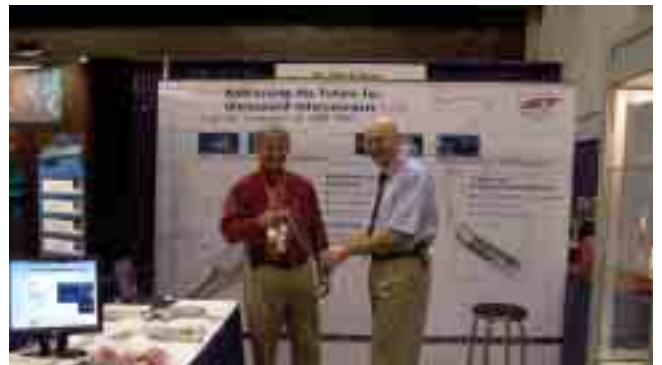
All coffee breaks and the Exhibitor Reception were also held in the Exhibit area, providing many opportunities for contact and interaction between attendees and exhibitors. Final evaluation from the exhibitors was highly positive, with only a few requests to adjust the exhibit hours for the next conference.

**Jack Kusters**  
Exhibits Chair



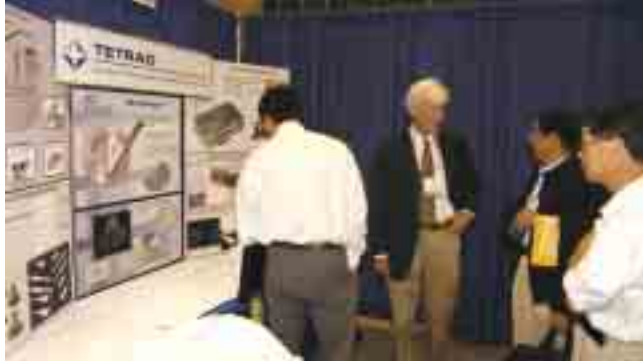
















**At the Awards Luncheon**



**Alfred and Caroline Bahr and William Spencer**



**Amor Lane**



**Dan Stevens**



**Al Meitzler and Lew Claiborne**



**Tom Parker and John Vig**



**Kazuhiko and Junko Yamanouchi**



**David and Guerda Cheeke with Mathias Fink**





**Jim Greenleaf**



**Gerry Farnell**



**David Payne**



**Don and Svetlana Malocha**



**Reinhard Lerch, Bernie Tittmann, and Ahmad Safari**



**Nava Setter and Robert Adler**

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### **UFFC Transactions Associate Editors Luncheon**

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Jian-yu Lu, Editor-in-Chief (EiC) of the UFFC Transactions, convened a luncheon of the Associate Editors. The Associate Editors are an advisory panel to the EiC and Associate EiC, Marj Yuhas, in addition to their duties of ensuring a rigorous review process of the manuscripts. Jian-yu took this opportunity to present certificates of service to the retiring Associate Editors David Cheeke, Steve Pilgrim, and John Kosinski.



**David Cheeke and Jian-yu Lu**



**Steve Pilgrim and Jian-yu Lu**



**John Kosinski and Jian-yu Lu**



**Don Yuhas, Mike Driscoll, Ray Filler, and Massimo Pappalardo**



**Alireza Baghai-Wadji, Eric Furgason, and Bernardo Jadaszliwer**



**Enrico Rubiola and Lute Maleki**



**Steve Pilgrim, Pierre Khuri-Yakub, and David Cheeke**



**Reinhard Lerch, Vasundara Varadan, and Don Malocha**



**Qiming Zhang and Steve Pilgrim**

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### At the Banquet

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**This is quite a party**



**Are we beat! Mike Garvey and Chris Ekstrom**



**Yep, this one is mine**



**Ahmad and Jaleh Safari**





**We're Full**



**Cheers!**



**Jacques Vanier**



**Julie and Helge Engan**



**Sonja Chesley and Errol EerNisse**



**Charles Maerfeld and Jim Greenleaf**



**Our glasses are empty!**



**We're happy to pose.**



**Don and Marj Yuhas**



**Having a good time.**



**Helmut Ermert sharing a secret?**





**Marco Scabia and his wife**



**Dessert time**



**Another Toast!**



**It's a fine banquet!**



**We're full too!**



**This is good!**



**Odile Bonnefous and John Reid**



**Oh that was sour!**



**Victor Plessky, Jan Brown, Yuri Gulyaev, Georgy Mansfeld**



**Dmitry Tsarapkin, John Dick, and Dmitry Bogomolov**



**Thumbs up!**



**Sheng-Shian Li and Seungbae Lee**



**Oooh I am too full for dessert.**



**David Cheeke (c) with Bruce and Caroline Chick**



**Irina and Victor Plessky**



**Thrygve and Joan Meeker**



**Lew and Margaret Claiborne**



**Susan Trollier-McKinstry and friends**



**Glen Fox and Derrick Hongerhold**



**The table really is higher**





**We're done!**



**John Hassock (I) and friends**



**Steve Pilgrim and Rajesh Panda**



**I only had two drinks, honest!**



**Okay, we'll pose**



**We had a good time.**



**To a successful conference**



**Lucia Vergara and friends**



**More coffee please**



**Paul Gonnard and Christophe Augier**



**What's next?**



## Around the Symposium



Thresa Hickernell with Amor Lane, Fred Hickernell and Larry Kessler



The corridors were full



Clemens Ruppel and Gerry Blessing



Helge Engan and Charles Maerfeld



Taking a break



Smile for the camera



Ken-ya Hashimoto (r) making a point



At the Speakers' Breakfast



Joel Kent and Robert Adler



**Jian-yu Lu and Don Yuhas**



**Sorah Rhee, Peter Smith, and John Kosinski**



**Mike Driscoll**



**Guerda Cheeke**



**Irina Plessky**



**Charles Maerfeld**



**John Hall**



**Tom ShROUT and Sorah Rhee**



**Ken, it's a joke!**



**Janice Dodd, Marj Yuhas and Janet Lakin**



**Lew and Margaret Claiborne with Bill Spencer and his wife**



**David Payne sharing a moment with Bob and Pat Newnham and their daughter**



**David and Guerda Cheeke, Bikash Sinha, Irina Plessky, Lute Maleki**





**Kazuhiko and Junko Yamanouchi**



**John Prestage with John Hall (r)**



**Lute Maleki**



**Gerry Blessing**



**John Prestage**



**Ton van der Steen**



**Chris Ekstrom**



**John Kosinski, Peter Smith, and Fred Hickernell**



**Tom and Peg English with Jack Kusters**



**David Payne with Kiyoshi Nakamura**



**Bob Newnham and Bernie Tittmann**



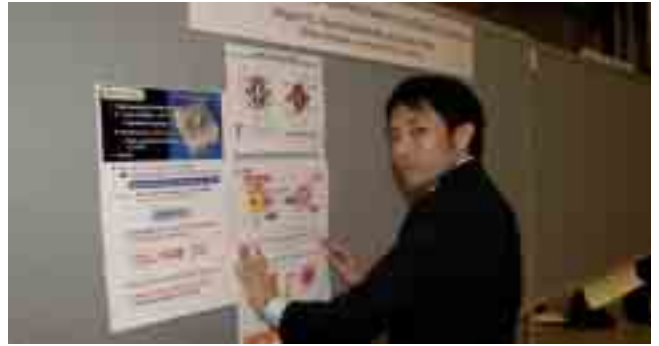
**Lew and Margaret Claiborne with Irina and Victor Plessky**



**Reinhard Lerch and Manfred Kaltenbacher**



**Dick White and Roger Tancrell rapt in discussion.**



**Shigeo Ito putting up his poster**



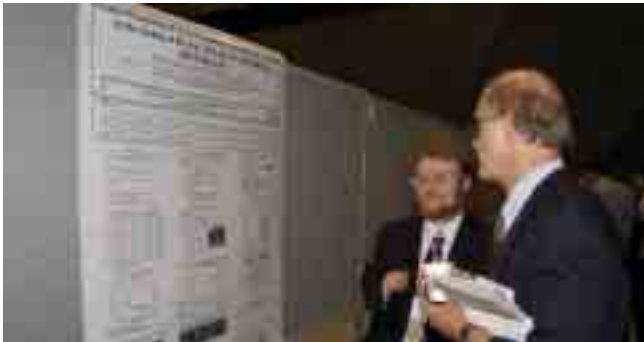
**Gerry Blessing**



**Mike Garvey**



**Bob Addison**



**Steve Pilgrim and Walter Schulze**



**Corridor Confabulation**



**Margaret Ballato and Thresa Hickernell**



**Gary Johnson – I know I saw it!**



**Kiyoshi Nakamura, Thrygve Meeker, Al Meitzler, and Bill Spencer**



**Margaret and Art Ballato, Fred and Thresa Hickernell, Ahmad Safari, and Roger Tancrell**





At the break



At the break



At the Break



At the break



Corridor confab



At the Sessions



Mauricio Pereira da Cunha and Don Malocha



At the sessions



Kiyoshi Nakamura in the foyer of the Palais des Congrès de Montréal



After the last session of the Symposium



At the sessions

## In Memoriam

It is with great sadness that we report the loss of three esteemed members of the UFFC community. We wish to extend our condolences to the family, friends and colleagues of Martti M. Saloma, Lev Aleksandrovich Shuvalov and Hans E. Boemmel.

### Martti M. Salomaa



1949 – 2004

Professor Martti M. Salomaa (born 6 Oct 1949 in Kotka, Finland), director of the Materials Physics Laboratory at Helsinki University of Technology (TKK), passed away on the 9th of December 2004.

Salomaa was one of two Finns to receive, for the first time, a 2-year scholarship from the Finnish Cultural Foundation for studies at the Atlantic College (Glamorgan, Wales) in 1966. In addition to an international matriculation exam, the heritage of this period of time for Salomaa includes his passion for boating and the large circle of friends encompassing people from various quarters of international society. One prominent and pleasing assignment for Salomaa and one of his fellow students at the Atlantic College was to design and build a lifeboat achieving a speed higher than 30 knots per hour. At the time, this successful project aroused extensive attention in the British press.

Professor Salomaa graduated from Helsinki University of Technology (TKK) in 1972 and received his LicTech and PhD degrees in 1974 and 1979, respectively. His dissertation dealt with the theory of superfluidity of  $^3\text{He}$  in ultralow temperatures. This and his further work was closely connected to the ultralow-temperature research of the Low Temperature Laboratory at TKK. For those efforts, the award of the Körber Foundation (Germany) was granted jointly to Salomaa and his three colleagues to acknowledge their exceptional merits in promoting European science.

Professor Salomaa had an exceptionally extensive international research career. He was unanimously regarded as an appreciated lecturer and an eligible collaborator. For Professor Salomaa, the cumulative time passed as a visiting researcher or a professor in Denmark, Germany, the United

States, Switzerland, Austria and Japan extended to several years. The international collaboration resulted in a great number of publications with other top-ranked researchers.

Salomaa was appointed the professor of theoretical materials physics at TKK in 1994. He rapidly assembled a new group consisting of young active researchers. He had the ability to adopt the newest trends of his discipline. He was also capable of channeling his inexhaustible energy into initiating highly interesting research projects. As the director of the Materials Physics Laboratory, he immediately transferred these new ideas into the teaching.

Professor Salomaa was an inspiring character who succeeded in surrounding himself with young talented physicists. He dedicated himself full-heartedly to promoting the careers of his students. In particular, he showed exemplary devotion in his role as an instructor for the various research projects of his students.

In Finland, Salomaa and his theory group were the pioneers in Bose-Einstein condensation and in quantum computing. His group was also among the first national groups studying nanotechnology. In addition to the theoretical research, Salomaa initiated research topics related to modern wireless communications systems. His group studying crystal and surface acoustics grew to be one of the best known university groups in the world. The academic merits of both groups are remarkable.

Since his appointment as professor in Materials Physics, Professor Salomaa supervised close to 60 Master's Theses, a dozen Licentiate Theses and around 30 Doctoral Theses. He has contributed to ca. 130 scientific refereed papers, 115 refereed papers at international conferences (12 invited



papers) and over 20 articles popularizing science.

Professor Martti Salomaa participated in the activities of the UFFC Society during a relatively short period of about 10 years since 1995. In that time, he co-authored over 40 refereed journal papers and nearly 60 conference papers in the field of acoustics. The works of Salomaa's group on Green's function theory of leaky surface acoustic waves (SAW), SAW propagation in reflecting structures, investigations of leaky longitudinal waves, laser probing (visualization) of GHz-range SAW devices were noticed and well-appreciated by the SAW community. Characteristic of his dedication as an instructor, he always strived to bring his students working in acoustics along to the annual IEEE Ultrasonics Symposia and paid attention to the high quality of papers and posters produced by his group. He was the co-recipient of the 2001 Outstanding Paper Award of the UFFC Society. In the 2003 IEEE Ultrasonics Symposium, a paper from his group was one of the winners of the Student Paper Competition. Such achievements can be largely attributed to Martti's guidance and everyday attention. Martti

Salomaa was a member the Technical Program Committee of the Ultrasonics Symposium.

Professor Salomaa was known for his capability of assuming an immense workload and an uncompromising work attitude. He had an amazing ability to totally immerse himself in matters he considered important, and a willingness to pursue them. Solving new and intriguing problems, both in practical and theoretical realms, was an endless source of joy and satisfaction for Professor Salomaa. He never tired of research and creative efforts of any kind.

In addition to his work as a university professor, Salomaa's focus in life was his beloved family - his wife Margaretha and his four children, Krista, Maria, Tommi, and Linda. Recently, a successful summer cottage building project served as a counterbalance to his exhausting office work.

Professor Salomaa was a great spirit with astonishing vigor. He will be missed by a great number of people from his private and professional life.

**Saku Lehtonen**  
**Victor Plessky**

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## Lev Aleksandrovich Shuvalov



**Professor Lev  
Aleksandrovich Shuvalov  
1923-2004**

Professor Lev Aleksandrovich Shuvalov, a leader in the field of crystal physics, physics of ferroelectrics and ferroelastics, passed away in December 2004. He was born in 1923 and belongs to the generation that took part in the Second World War 1941-1945 and was marked by it. He learned all the hardships of war immediately after graduation from school. As a participant of the battles at Moscow, Stalingrad and Kursk, he was awarded the order of the Red Star and several other medals including the Medal of Valor. After the end of the war, he graduated from the Faculty of Physics of Moscow State University in 1951 with distinction. In 1956 he started to work at the Institute of Crystallography under Professor A. V. Shubnikov and later for 20 years headed the Laboratory of Phase Transitions. He published more than 700 scientific papers and was the author or coauthor of 20 inventions.

Between 1956 and 1974 Shuvalov performed fundamental studies, which formed a key role in the development of the symmetry approach in the crystal physics of ferroelectrics. He found an elegant solution to the problems associated with the change of symmetry during ferroelectric, ferroelastic and ferromagnetic phase transitions and established general rules governing the corresponding domain structures. His work became classical and is discussed in numerous handbooks and monographs. For this work he obtained the State Prize of USSR in 1976. He is considered to be the founder of the field of ferroelastics. For his work in this field and in domain physics he was awarded the Fedorov Prize of the Russian Academy of Sciences.

Shuvalov and his coworkers also discovered a number of new families of ferroelectrics and antiferroelectrics, notably the alkali trihydro-selenites and his work on improper and

quasi-one-dimensional ferroelectrics should be remembered. He also discovered a new class of superprotonic conductors and developed a number of techniques to investigate the real structure of ferroelectrics and ferroelastics.

Shuvalov supervised more than 35 Candidate theses and 8 Doctoral theses. He was Editor-in-chief of the journal *Kristallografiya* and member of the editorial boards of international journals *Ferroelectrics*, *Ferroelectric Letters*, *Zeitschrift für Kristallographie*, *Crystallography Reviews*, and *Condensed Matter News*. He became an honorary doctor of the Martin Luther University in Halle, Germany and an associated member of the Josef Stefan Institute in Ljubljana, Slovenia. Together with Yurin, Stankovsky and

Wapylak he was awarded the Prize in Physics of the USSR and Polish Academies of Sciences.

He was an optimistic and open personality, ready to help everybody and happy for scientific achievements of his students, friends and colleagues. He loved good food, good wine and good company and was always interested in new ideas and scientific discussions. He was a brilliant scientist and recognized leader of the field of crystal physics. The field of ferroelectrics will benefit from his work for years to come.

**Robert Blinc**  
**Josef Stefan Institute, Slovenia**

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## Hans E. Boemmel



**Hans E. Boemmel**  
**1912 – 2004**

### A UFFC'ers tribute to Hans Boemmel

UFFC has lost a legendary and outstanding “ultrasoniker,” who made headlines with GHz ultrasonic waves when the Ultrasonic Symposia were very young. Hans Boemmel passed away at the age of 91 in Switzerland near Lake Konstanz in March 2004.

Boemmel and Dransfeld while at Bell Research Labs made a major breakthrough when they demonstrated the generation and detection of ultrasonic waves in the GHz range of frequencies. This work spawned many interesting studies and techniques among these the Scanning Acoustic Microscope developed by our well-known and esteemed colleague Cal Quate from Stanford University. Both Hans Boemmel and Klaus Dransfeld were participants in the Ultrasonics Symposia of the early and middle 1960's.

As his first student at UCLA, Physics Department I was impressed by his wide knowledge of fundamental Physics, his intelligence and above all his wonderful sense of humor. This latter characteristic made it fun to work with him in the laboratory over and above his inspired determination to help in a material way with equipment, assistantships and

general support.

Hans Boemmel was also a friend on a personal level to his colleagues and graduate students in that he and his wife attended weddings, came to our houses for garden parties, some birthday celebrations, allowed us to camp in his backyard in Switzerland and kept in touch by at least one letter a year. Walter Arnold a student of Klaus Dransfeld and now from IZFP, Germany and I had the unique opportunity to visit him on his 90th birthday at his home in Switzerland near Lake Konstanz and found him bright, alert and still with the same humor. He told us of his early days at the University of Konstanz when he set up the Physics Department there.

And so we really miss this remarkable scientist who was respected and admired by his colleagues first for his scientific contributions but also for his intelligence, integrity, forthrightness and his kind personality.

A comprehensive description of his career can be found in Ernst Bucher's article in *Physics Today*, January 2005, pp 64-65.

**Bernie Tittmann**



## Ultrasonics

### Rayleigh Award

The Rayleigh Award is presented by the IEEE UFFC Ultrasonics Committee recognizing meritorious service to the UFFC Society in the field of Ultrasonics. The achievement may be in technical innovations, research, education, publications and related professional endeavors. Typically, the recipient will have demonstrated these accomplishments over a sustained period of time. An Awards Committee consisting of the Rayleigh Award Chair, the Technical Program Chair and the Technical Program Vice-Chairs will make selection in the spring of each year.

The award consists of an honorarium of \$1,000, a plaque and a certificate.

#### 2003 Rayleigh Award Recipient

The UFFC Society offers its congratulations to the recipient of the 2004 Rayleigh Award, Dr. James F. Greenleaf. The citation on the certificate and plaque reads:

**“For pioneering and continuing contributions to medical diagnostic research and education.”**

Professor James Greenleaf was awarded the 2004 UFFC Achievement Award at the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control 50th Anniversary Joint Conference in Montréal, Canada, 24 August 2004.

#### Rayleigh Award Nominations

Nominations may be submitted at any time. A member may submit a nomination by sending the nominee's name, affiliation and that person's main contributions, along with the submitter's own name and affiliation to:

Dr. J. David N. Cheeke  
Microbridge Technologies Inc  
1980 Sherbrooke St West Suite 505  
Montreal Qc Canada  
H3H 1E8

Fax: 514-938-9089  
e-Mail: [cheeke@alcor.concordia.ca](mailto:cheeke@alcor.concordia.ca)

#### Past Recipients of the Rayleigh Award

The first presentation of the Rayleigh Award was in 2001.

**Richard M. White**, 2003; for pioneering contributions in ultrasonics to the development of SAW interdigital transducers, laser ultrasonics and Lamb wave acoustic sensors and for continuing contributions to the field of education.



(l – r) Mathias Fink, Jim Greenleaf, and David Cheeke



Mathias Fink lauding  
Jim Greenleaf



Jim Greenleaf accept-  
ing the Ultrasonics  
Rayleigh Award



David Cheeke introducing the Rayleigh Award

**Calvin F. Quate**, 2002; for pioneering contributions to the development of the scanning acoustic microscope and the atomic force microscope.

**Gerald W. Farnell**, 2001; for his devoted service and contributions to the IEEE UFFC Society in the field of Ultrasonics and for his original work in the areas of surface wave propagation in anisotropic materials.

# 2005 IEEE International Ultrasonics Symposium

## 18 – 21 September 2005

### Rotterdam, The Netherlands



#### Special Notes

Location: De Doelen, Rotterdam, The Netherlands  
Dates: 18 – 21 September 2005  
Abstract Deadline: 12 May 2005

#### An Invitation from the General Chair



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 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. This 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.

The first call for papers is available on the UFFC website <http://www.ieee-uffc.org/2005/>. The abstract deadline is May 12th, 2005.

Hope to meet you all in Rotterdam, Best Regards,

**Ton van der Steen**  
General chair

#### A Welcome from the Technical Chair



On behalf of the Technical Program Committee I would like to invite you to contribute a paper and join us at the 2005 IEEE International Ultrasonics Symposium to be held September 18 through September 21, 2005 in Rotterdam, The Netherlands.

Our past three symposia in Munich, Hawaii and Montreal have all been extraordinarily successful and I feel confident that Rotterdam

will follow in the same vein. Abstracts will cover the five areas of focus of this meeting: Medical Ultrasonics, Sensors, NDE and Industrial Applications, Physical Acoustics, Surface Acoustic Waves, and Transducers and Transducer Materials. After reviewing all the abstracts in each group, the Technical Program Committee along with FASS, the symposium management group, will put together a program of oral and poster sessions. The first call for papers can be found on the UFFC website <http://www.ieee-uffc.org/2005/>.

We will continue the tradition of invited papers with a total of 20 papers that either highlight new technologies or give overviews of key areas. As in the past, we will arrange the invited oral presentations so that they do not overlap each other, allowing attendees the opportunity to attend these key presentations in all areas. Finalists for the Student Paper Award will be selected from each of the five focus areas, and they will be judged by a panel of experts from each area.

I am confident that in addition to the gaining professional value from a diverse and high quality technical program, all the attendees will enjoy the social and guest programs and the opportunities to relax in a culturally rich city.

In advance, I thank authors for their efforts to compose high quality papers, for the members of the Technical Program Committee for the arduous task of selecting the best contributions, and for FASS in assisting in assembling a well organized schedule.

Regards,

**John A. Hossack**  
2005 IEEE Ultrasonics Symposium Technical Chair





# 2005 IEEE International Ultrasonics Symposium



**Short Courses & Tutorials on September 18,  
Symposium on September 19-21 2005**  
**Conference centre De Doelen, Rotterdam, The Netherlands**  
*Sponsored by the IEEE Ultrasonics, Ferroelectrics & Frequency Control Society*

## General Chair

Ton van der Steen  
Erasmus University Medical Centre,  
Rotterdam, The Netherlands  
[a.vandersteen@erasmusmc.nl](mailto:a.vandersteen@erasmusmc.nl)

## Technical Program Chair

John Hossack  
University of Virginia,  
Charlottesville VA, USA  
[hossack@ieee.org](mailto:hossack@ieee.org)

## Short Course/Tutorial Chair

Nico de Jong  
Erasmus University Medical Centre,  
Rotterdam, The Netherlands  
[n.dejong@erasmusmc.nl](mailto:n.dejong@erasmusmc.nl)

## Finance Chair

Herman van de Vaart  
[vdv@ieee.org](mailto:vdv@ieee.org)

## Publicity Chair

Sorah Rhee  
Fraunhofer – IBMT FTeCH,  
Hialeah, FL USA  
[sorah.rhee@ieee.org](mailto:sorah.rhee@ieee.org)

## Editorial-Chair

Marj Yuhas  
Industrial Measurement Systems Inc,  
Aurora, IL USA  
[myuhas@imsysinc.com](mailto:myuhas@imsysinc.com)

## Exhibit/ Sponsor Chair

Chris de Korte  
Nijmegen University Medical Centre,  
Nijmegen, The Netherlands  
[C.deKorte@cukz.umcn.nl](mailto:C.deKorte@cukz.umcn.nl)

## Awards Chair

Reinhard Lerch  
Friedrich-Alexander-Universitat,  
Erlangen, Germany  
[reinhard.lerch@lse.e-technik.uni-erlangen.de](mailto:reinhard.lerch@lse.e-technik.uni-erlangen.de)

## First call for papers

**Abstract deadline: May 12, 2005**

The 2005 IEEE International Ultrasonics Symposium will be held in Rotterdam, The Netherlands from September 18 through September 21, 2005.

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For this conference papers are solicited describing original work in the field of ultrasonics. The deadline for submission of abstracts will be May 12, 2005. Poster and oral presentation formats will be used at the symposium. Prospective authors should note that poster sessions provide an alternative format which allows for greater flexibility and expanded audience interaction. The abstracts should be submitted in electronic form according to the specific information posted on the conference web page. Additional conference information can be found at the Symposium web site: <http://www.ieee-uffc.org/2005>

Each abstract will receive careful review and evaluation by the Symposium Technical Program Committee. Evaluation criteria will include originality of the work, contribution to the state-of-the-art, and overall interest to the ultrasonics community. Each abstract should be specific, contain clearly identified new material, and include quantitative information or data. *A good abstract must clearly and concisely explain the hypothesis, methods and conclusion of the paper. Results of research should be clearly indicated in the abstracts.* Papers are solicited from the following **subject classifications**:

### Group 1 Medical Ultrasonics

MBB Medical Beamforming and Beam Steering  
MBE Biological Effects & Dosimetry  
MBF Blood Flow Measurement  
MCA Contrast Agents  
MEL Elastography  
MIM Medical Imaging  
MSP Medical Signal Processing  
MTC Medical Tissue Characterization  
MTH Therapeutics, Hyperthermia, Ultrasound in Surgery

### Group 2 Sensors, NDE & Industrial Applications

NAM Acoustic Microscopy & Imaging  
NAS Acoustic Sensors  
NDE General NDE Methods  
NMC Material & Defect Characterization  
NPM Wave Propagation  
NSP Signal Processing  
NTD Transducers: NDE and Industrial

### Group 3 Physical Acoustics

PBW Bulk Wave Effects & Devices  
PGP General Physical Acoustics  
PMI Magnetic Interactions  
POI Optical Interactions  
PUM Ultrasonic Motors & Actuators

### Group 4 Surface Acoustic Waves

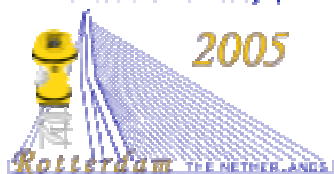
SAO SAW Acoustoelectric Effects & Devices  
SDO SAW Devices & Oscillators  
SFT SAW Filters & Transducers  
SMP SAW Materials & Propagation  
SSA SAW System Applications  
SSP SAW Signal Processing  
STD SAW Thin-Films & Devices

### Group 5 Transducers & Transducer Materials

TFA Transducer Modeling (FEA and Analytical)  
TFT Transducer Fabrication Technology  
TMC Transducer Material Characterization and Modeling  
TMM Materials/Technology for Medical Transducers  
TMT Medical Transducers  
TMU Micromachined Ultrasound Transducers  
TPF Piezoelectric and Ferroelectric Transducer Materials

**Student Travel Support:** Limited funds are available to support student attendees at the 2005 symposium. Awards will be made on a competitive basis. Further information will be posted on the web page. **Student Paper Competition:** Students who are submitting abstracts for presentation are invited to participate in a special student paper competition. Student paper finalists will be chosen by the Technical Program Committee (TPC) to join the final competition at the 2005 Symposium and to receive special accommodation during the Symposium. Five winners (one from each area of the TPC) will be chosen to receive a cash award. Students should indicate their interest in the competition by marking the appropriate box on the abstract submission form. More information about the competition can be found on the meeting web site (<http://www.ieee-uffc.org/2005>).

IEEE International Ultrasonics Symposium



# Minutes of the Ultrasonics Standing Committee Meeting

## 22 August 2004

### Montreal, Quebec, Canada

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#### Call to Order

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The Ultrasonics Committee met on 22 August 2004 in Montréal, Quebec, Canada. The committee meeting preceded the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control Joint 50th Anniversary Conference.

#### Attendees

Clemens Ruppel	John Kosinski
Ton van der Steen	Stuart Foster
Gerry Blessing	Jackie Hines
Jian-yu Lu	Mauricio Pereira da Cunha
Victor Plessky	Tom Shrout
Kendall Waters	Ahmad Safari
Reinhard Lerch	Sorah Rhee
Ji Wang	Oliver Keitmann-Curdes



Clemens Ruppel and John Kosinski

The meeting began with a brief discussion regarding the keeping and circulation of minutes from Ultrasonics Committee meetings. The Committee as a whole voted that the minutes should be typed and circulated to those in attendance, for their review, after each meeting.

Vice President Clemens Ruppel introduced three new members of the Ultrasonics Committee:

Oliver Keitmann-Curdes who will focus on student issues in the Ultrasonics community.

Kendall Waters is the new UFFC Web Editor for Ultrasonics. Ji Wang is a member at large.

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#### Rayleigh Award Chair

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The Committee addressed the resignation of David Cheeke as Rayleigh Award Chair with discussion of the purpose and nature of the award in order to identify the characteristics that the new Chair should possess. No decision was taken at

the meeting, with an open action for David Cheeke and Reinhard Lerch to suggest candidates and for the Committee to vote on selection by e-mail.

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#### Ultrasonics Symposia

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The committee received brief reports from the Chairs or Committee Members of the upcoming Symposia for 2005, 2006, 2007, and 2008. The status of planning, finances, and contractual issues were discussed. No significant issues were identified.

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#### 2005 Symposium

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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. One new issue for discussion came up regarding free registration for invited speakers for the 2005 Symposium. The consensus discussion of the Committee was to encourage future Symposia Chairs to follow suit if possible. For the 2005 Symposium, the financial plan includes substantial corporate support which makes the subsidy possible.

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#### 2006 Symposium

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

Stuart Foster gave an update on the 2006 International Ultrasonics Symposium to be held in Vancouver, British Columbia, Canada. The Symposium Committee presently consists of:

<b>General Chair:</b>	Stuart Foster
<b>Technical Program Chair:</b>	Geoff Lockwood
<b>Short Courses Chair:</b>	John Hassock
<b>Local Arrangements:</b>	Leonard Bond

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#### 2007 Symposium

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General Chair: John Kosinski  
j.a.kosinski@ieee.org



New York City, New York, USA  
28 – 31 October 2007

John Kosinski reported on planning for the 2007 Ultrasonics Symposium in New York City. IEEE Conference Services is negotiating with the New York Hilton and Towers. Mauricio Pereira da Cunha will be the Technical Program Chair, Jackie Hines will be the Finance Chair, and Koray Akdogan will be the Local Arrangements Chair for the 2007 IUS.

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## 2008 Symposium

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General Chair: Jian-yu Lu  
Jilu@eng.utoledo.edu  
Beijing, China  
October 2008

Jian-yu Lu reported on planning for the 2008 Ultrasonics Symposium to be held in Beijing, China. Tom Shrout will be the Technical Program Chair. There was some discussion of advantages and disadvantages of several specific venues, with the Beijing International Conference Center emerging as the leading candidate. Jian-yu Lu will pursue competitive bidding among the candidate hotels.

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## 2009 and Beyond

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The Committee considered formative proposals for the 2009

Ultrasonics Symposium. The desired location is somewhere in Europe. Reinhard Lerch presented some information on Lisbon as a candidate venue, and the possibility of having Reinhard Lerch and Mauricio Pereira da Cunha as co-chairs was discussed. Victor Plessky suggested Warsaw as a second candidate venue. Neither proposal was felt to have sufficient maturity or detail for a decision to be taken, and the proposers were asked to bring full detail to the next Committee meeting. Both Victor Plessky and John Kosinski agreed to contact their colleagues in Poland with respect to the Warsaw proposal.

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## New Business

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Vice President Clemens Ruppel introduced discussion of electronic abstract submission using procedures similar to those used by the IEEE Microwave Theory and Techniques Society for the International Microwave Symposium. This was followed by a presentation from Jackie Hines on how to budget for a symposium.

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## Next Meeting

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The next meeting of the Ultrasonics Committee will be held in Chicago, Illinois, USA, on Friday, June 17, 2005, in conjunction with the second Technical Program Committee meeting for the 2005 Ultrasonics Symposium.

John A. Kosinski  
Clemens C.W. Ruppel

# Ferroelectrics

## Ferroelectrics Recognition Award

The Ferroelectrics Recognition Award is given out by the Ferroelectrics Standing Committee in a two-year term in order to honor members of the Ferroelectrics Society for outstanding achievements in their scientific work as well as in promoting the Ferroelectrics Community.

Past recipients of the Ferroelectric Recognition Award may be found at [http://www.ieee-uffc.org/awards/fe\\_rec.html](http://www.ieee-uffc.org/awards/fe_rec.html)

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### 2004 Recipients of the Ferroelectrics Recognition Award

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Congratulations to the 2004 recipients of the Ferroelectrics Recognition Award on behalf of the IEEE UFFC!

**Dr. Nava Setter** was awarded the 2004 Ferroelectrics Recognition Award at the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control 50th Anniversary Joint Conference in Montréal, Canada, 26 August 2004. She was introduced by Ahmad Safari. Her citation reads:

**“For significant contributions to the fundamental understanding and the application of ferroelectric ceramics.”**



Ahmad Safari introducing Nava Setter



**Nava Setter (c) receiving the Ferroelectrics Recognition Award from Ahmad Safari and Susan Trolier-McKinstry**



**Ahmad Safari (l) presenting the 2004 Ferroelectrics Recognition Award to David Payne with Susan Trolier-McKinstry**



**Dr. Nava Setter accepting the Ferroelectrics Recognition Award**



**Dr. David Payne Accepting the 2004 Ferroelectrics Recognition Award**

**Dr. David Payne** was awarded the 2004 Ferroelectrics Recognition Award at the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control 50th Anniversary Joint Conference in Montréal, Canada, 26 August 2004. He was introduced by Susan Trolier-McKinstry, UFFC Vice President for Ferroelectrics. Dr. Payne's citation reads:

**“For significant contributions to the field of ferroelectric thin layer, sol-gel processing and science”**



**Susan Trolier-McKinstry**

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### **2003 Special Ferroelectrics Recognition Award Recipient**

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A special posthumous Ferroelectric Recognition Award was bestowed upon Dr. Seung-Eek (Eagle) Park

**“For excellence in the growth and characterization of piezoelectric single crystals.”**

Dr. Park passed away in early 2003 due to cancer.



**Park Family**



## Ferroelectrics Recognition Award Nominations



Nominations 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 primary contributions, along with the submitter's own name and contact information to:

Dr. Steven M Pilgrim  
School of Ceramic Engineering and Materials Science  
Alfred University  
2 Pine Street  
Alfred, NY USA  
Fax: 607-871-3469  
Pilgrim@alfred.edu

## Drexel Transducer Meeting



A special symposium on Piezoelectric Composites and Their Applications was held at Drexel University in Honor of Professor Robert Newnham, winner of the 2004 Benjamin Franklin Medal of Electrical Engineering. The meeting was organized by Professor Peter Lewin of Drexel University, and was co-sponsored by Drexel, Penn

State, and the Franklin Institute. The symposium featured talks on the design, processing and performance of composite materials as piezoelectric transducers, sensors and actuators. Phased arrays made from piezoceramics, polymers, and metal electrodes have been widely used in biomedical, underwater, and engineering systems for the past several decades.

Speakers included Eric Cross, Ali Houshmand, Peter Lewin, Robert Newnham, Ahmad Safari, Thomas Shrout, Nadine Barrie Smith, James Tressler, Susan Trolier-McKinstry, and Dennis Wint.

## IEEE International Symposium on Applications of Ferroelectrics

The IEEE International Symposium on Applications of Ferroelectrics is the primary venue for ferroelectrics research. Watch for updates on the UFFC website [www.ieee-uffc.org](http://www.ieee-uffc.org).

### IEEE ISAF 2006

General Chair: Jon-Paul Maria  
Jpmaria@ncsu.edu  
Sunset Beach, North Carolina, USA  
30 July – 2 August 2006



David Cann and Jon-Paul Maria

GENERAL CHAIR: Jon-Paul Maria (NCSU)  
– jpmaria@ncsu.edu

TECHNICAL CHAIR: David P. Cann (ISU)

PROGRAM COMMITTEE: Glen Fox (Ramtron)  
Hiroshi Funakubo (TIT)  
Alexei Gruverman (NCSU)  
Xiaoli Tan (ISU)  
Christopher Lynch (GTech)  
Xiaoqing Pan (U Mich)  
Others to be determined

PROCEEDINGS CHAIR: Alexei Gruverman (NCSU)

FINANCE CHAIR: Angus I. Kingon (NCSU)

PUBLICITY CHAIR: Susan Trolier-McKinstry (PSU)

The symposium will take place at the Sea Trail Plantation & Golf Links on Sunset Beach which is located midway between historic Wilmington, NC, and the resort city of Myrtle Beach, SC. Sea Trail covers more than 2,000 acres of winding creeks and densely wooded lots, and features three renowned championship golf courses; located only five minutes away from the barrier island oceanfront beaches at Sunset Beach.

The Call for Papers will be issued this spring. Watch for updates on the UFFC website [www.ieee-uffc.org](http://www.ieee-uffc.org).

### IEEE ISAF 2008

Co-Chairs: Paul Clem and Bruce Tuttle  
Sante Fe, New Mexico, USA  
March 2008 (Proposed)



Watch for updates on the UFFC website [www.ieee-uffc.org](http://www.ieee-uffc.org).

## Frequency Control

### Frequency Control Awards

Three IEEE awards are presented annually at the IEEE International Frequency Control Symposium: the Cady Award, the Rabi Award, and the Sawyer Award.

Any of the three awards is open to any worker in any of the fields traditionally associated with the Frequency Control Symposium. The nominee should be responsible for significant contributions to the field selected. The awards shall be given to one or more specific individuals rather than to laboratories or groups. No posthumous awards will be made. The time span over which the contributions have occurred is not limited. The significance of the contributions may be measured, in part, by: the degree of initiative, ingenuity, and creativity displayed; the quality of the work and degree of success attained; and the overall importance of the work and its impact on frequency control and associated communities.

The selection of the recipient for each award is made by the Frequency Control Symposium Technical Program Committee during its paper selection meeting. The decision of the committee is final. If, in the opinion of the committee, no suitable nominee exists or there are insufficient nominations, no award will be given.

### The W. G. Cady Award

The W. G. Cady Award is to recognize outstanding contributions related to the fields of piezoelectric or other classical frequency control, selection and measurement; and resonant sensor devices. The award consists of \$1000 USD, a laminated certificate and a quartz crystal ball on a wood base. Due to Lack of sufficient nominations no award was made in 2004.

### The I. I. Rabi Award

The I. I. Rabi Award is to recognize outstanding contributions related to the fields of atomic and molecular frequency standards, and time transfer and dissemination. This award consists of \$1000 USD, an original print, and laminated certificate.

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#### 2004 I. I. Rabi Award Recipient

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Congratulations on behalf of the IEEE UFFC Society to Dr. John L. Hall, the 2004 recipient of the I. I. Rabi Award. The award was presented at the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control 50th Anniversary Joint Conference in Montréal, Canada, 25 August 2004.

Tom Parker, Chair Frequency Control Awards, and Lute Maleki, Vice President for Frequency Control presented the 2004 Rabi award to Dr. John Hall

**“for fundamental contributions to the development of ultra-high performance optical frequency standards, and for pioneering novel techniques and methods that enable the realization of optical standards and their applications in metrology”**



**John Hall (c) receiving the Rabi Award from Tom Parker and Lute Maleki (r)**



**John Hall accepting the I. I. Rabi Award**

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#### The C.B. Sawyer Memorial Award

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The C. B. Sawyer Memorial Award (“Sawyer Award”) is to recognize outstanding contributions in the development, production or characterization of piezoelectric materials of interest to the Symposium Technical Program Committee, or to recognize entrepreneurship or leadership within profit or non-profit organizations in the frequency control community (including all parts of the community). The Sawyer Award consists of \$1000 USD, a laminated certificate, and an appropriately engraved quartz crystal



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## 2004 C. B. Sawyer Memorial Award Recipient

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The UFFC Society offers its congratulations to Dr. Thomas C. English, the 2004 C. B. Sawyer Memorial Award recipient. The award was presented at the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control 50th Anniversary Joint Conference in Montréal, Canada, 25 August 2004.

Tom Parker introduced the Award and Jack Kusters presented the Sawyer Award to Tom English

**“for outstanding contributions to the development of wide-scale commercial gas cell rubidium frequency standards, and for contributions to the understanding of the processes and control of variations in manufacturing these standards.”**



Jack Kusters lauding Tom English



Tom English receiving the 2004 Sawyer Award from Jack Kusters



Tom English Accepting the 2004 Sawyer Award

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## Frequency Control Awards Nominations

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Nominations are welcome from anyone and should be submitted to the Awards Chair (see the current Call-For-Papers for contact information). All nominations must be submitted in writing (e-mail preferred) and must contain a proposed citation.

- Each written nomination must include the following:
- Name of the nominee
- Current contact information (e-mail, if available) of the nominee
- Name of the award for which nominated
- Description of accomplishments (for example initiative, ingenuity, creativity, quality and degree of success, etc.) and their importance to the frequency control community
- Proposed citation (see examples on the first pages of any Proceedings since 1983 or visit <http://www.ieee-uffc.org/ulmain.asp?page=awarddescript>)

The nomination should not exceed two typewritten pages and must contain the name and address of the nominator.

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## Piezoelectric Devices Association Awards

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The Exhibits at the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control 50th Anniversary Joint Conference in Montréal, Canada were sponsored, in part, by the Piezoelectric Devices Association (PDA). The PDA also sponsors two awards: The David P. Larsen Memorial Award and the Juergen H. Staudte Memorial Award, both of which were presented at this year's anniversary symposium.

The UFFC Society congratulates this year's award recipients!

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## 2004 David P. Larsen Memorial Award Recipient

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The David P. Larsen Memorial Award is presented annually for many years of dedication and engineering contributions to the industry.

Dr. Daniel S. Stevens received the 2004 David P. Larsen Award

**“In recognition of his innovative work to advance the theory of piezoelectric resonators, leading to improved oscillator products using both bulk acoustic waves and surface acoustic wave technologies.”**

Michael Nusbaum lauded Dr. Steven's achievements and presented him with the David P. Larsen Memorial Award.



Michael Nusbaum presenting the 2004 David P. Larsen Award to Daniel Stevens



Gary Johnson lauding Daryl Kemper



Dan Stevens accepting the 2004 David P. Larsen Award



Daryl Kemper (I) receiving the 2004 Juergen Staudte Award from Gary Johnson and Marci Staudte

### 2004 Juergen H. Staudte Memorial Award Recipient

The Juergen H. Staudte Memorial Award is bestowed annually for many years of outstanding leadership, dedication, and contribution to the industry.

Daryl M. Kemper received the 2004 Juergen H. Staudte Memorial Award

**“In recognition of an outstanding career in the Frequency Control Industry, service to the Piezoelectric Devices Association and mentoring of numerous people in the quartz crystal industry.”**

Marci Staudte introduced the award named after her late husband. Gary Johnson presented the highlights of Daryl’s career and lauded his achievements.



Daryl Kemper accepting the 2004 Juergen Staudte Award from Gary Johnson and Marci Staudte



Marci Staudte

## Frequency Control Standing Committee Minutes August 25, 2004 Montreal, Canada

### Call to Order

General role was taken as follows:

- Lute Maleki, Standing Committee Chair
- Sam Stein, Standing Committee Vice-Chair

Tom Parker, IEEE Awards Chair  
John Prestage, Tutorial Chair  
John Vig, Publications Chair  
Ray Filler, Finance Chair  
Jack Kusters, Exhibits Chair  
Kurt Gible, 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 and began with recognition of Mike Garvey for the excellent work of organizing and managing this 50th Anniversary UFFC joint conference. Chris Ekstrom was also recognized for the excellent technical program.

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### Adcom Review



**Lute Maleki UFFC  
Vice President for  
Frequency Control**

Lute reported that the review of the society was held by TAB. He announced that John Vig is the vice-president elect of TAB. The societies are being reviewed every five years. Frequency Control was recently reviewed and we expect to have the results of that review in the next six months. One of the items discussed at this meeting was to approach the idea of outreach more seriously. Several ideas were discussed about how to reach children regarding the work of IEEE. There was much discussion

about the changes being brought by the electronic media and how that is affecting all publications of the IEEE. Education outreach was discussed and how to make sure we embrace and bring in new technologies. The MOU for EFTF was approved for the "every four year" joint conference.



**Debra Coler and Ray Filler**

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### Finance

Ray reported that we have been fined \$500 for getting our 2003 financial report in later than one year after the conference. This is a new rule and he is going to request a refund of that money since the delay is due to the book broker. 2003 is finished and there was a 3% surplus. The loans for 2005 and 2006 have been received from IEEE.

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### 2004 Conference



**Mike Garvey**

Mike Garvey said that the meeting is in progress and there are no substantive things to report yet. The budget is about a million dollars and we have surpassed the breakeven point. He thinks the service has been very good. If you count everyone the attendance is about 1,300. If you count paying attendees the count is about 1,150. We may have picked up some ideas such as the student poster competi-

tion. An area for further development is how we get the presentations onto the computers. The abstract submittal process needs more work. There was discussion about the foreign attendee/vendor issues and the fact that we will be in Canada again next year.

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### Exhibits



**Jack Kusters**

Jack Kusters reported that he needs a letter with the legal name of the conference to submit to Canadian Customs. Mike Driscoll said the name has already been submitted to IEEE for approval. Custom brokers are in line since their contract was for 2 years.

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### Awards



**Tom Parker**

Tom Parker reported that he is interested in people's thoughts about the student awards, we will probably continue that. Tom is going to start getting recommendations ahead of time for the different awards, compiling a list, and then worry about getting nominations for them. If we don't have an adequate slate for a particular award then we won't present that award. Non-winners can stay on the slate for the next year but it is not automatic.



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## Tutorials

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John Prestage reported that the tutorials went very well. The AV staff was very good. The attendance for the tutorials was about 250. It was suggested that we invite Clark Nyguen again for next year. Lute suggested that we keep an eye on DARPA program managers for prospective tutorial presenters because they tend to be doing the "next new thing".

John Vig suggested to the committee that we ask Clark Nyguen to be a member of the Technical Program Committee. Chris said he would take that as an action item.

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## Publications/Web

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John Vig

John Vig reported that the web is doing well, the tutorial section is up to date, and the link to the company directory is being added to all the time. There was discussion about the all electronic vs paper programs and proceedings. John explained IEEE Explore and how it works.

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## Academic

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Kurt Gible has been appointed to this new Academic chair position. This is Kurt's first Standing Committee meeting and he thanked everyone for this opportunity and said that he would like to see us keep the student paper competition and part of our regular conference program. The student breakfast was also a good addition. Lute said for Kurt to send his ideas to the committee for feedback and also for the committee to send any ideas they have to Kurt.

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## 2005 Frequency Control Symposium

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**General Chair: Michael Driscoll**  
**[Michael.driscoll@ngc.com](mailto:Michael.driscoll@ngc.com)**  
**Vancouver, Canada**  
**28 – 31 August 2005**



Mike Driscoll

Mike Driscoll presented a status report. He reiterated that the conference which will be combined with PTTI will be held in Vancouver, British Columbia at the Hyatt Regency beginning on August 28-31st. The contract has been signed with IEEE and the hotel. The budget has been approved. We have a signed MOU with PTTI and IEEE. We still need to select and contract with an abstract submittal company, we have

several bids. There was discussion about exhibitors and the number who are not here in Montreal. Sheila feels that a good projection for next year is 40-45 exhibitors. Bob Tjoelker reported that the TPC meetings dates and locations will be decided this week.

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## 2006 Frequency Control Symposium

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**General Chair: Michael Driscoll**  
**[Michael.driscoll@ngc.com](mailto:Michael.driscoll@ngc.com)**  
**Miami, Florida USA**  
**4 - 7 June 2006**

Mike presented a status report. The location has been determined as The Hyatt Regency Hotel in Miami, Florida, June 4-7, 2006. The budget has been prepared and indicates a potential 14% surplus.

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## 2007/2008 Frequency Control Symposium

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Lute said we need to determine who our General Chair is for these two years. 2007 will be the joint conference with EFTF and is to be held in Europe. Lute asked that suggestion be made to him in the next couple of days so that a determination can be made very soon.

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## Other Business

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Lute called for the approval of the minutes for the December 3, 2003 meeting. It was seconded and the motion carried. The meeting was adjourned.

Debra Coler

Visit us online at:  
<http://www.ieee-uffc.org>



## 2005 Joint IEEE International Frequency Control Symposium and Precise Time and Time Interval (PTTI) Systems and Applications Meeting



Short Courses & Tutorials on 28 August, Conference 29-31 August 2005

Hyatt Regency Hotel, Vancouver, Canada

Sponsored by the IEEE Ultrasonics, Ferroelectrics & Frequency Control Society and the PTTI Executive Committee

### Call for Papers

Abstract Deadline: April 15, 2005

Electronic abstracts should be submitted to

[www.epapers.org/IFCS-PTTI2005](http://www.epapers.org/IFCS-PTTI2005)

#### General Chairs

Michael M. Driscoll  
Northrop Grumman Electronic Systems  
Baltimore, MD  
[michael.driscoll@ngc.com](mailto:michael.driscoll@ngc.com)

Joseph White  
U.S. Naval Research Laboratory  
Washington, DC  
[jaw.white@nrl.navy.mil](mailto:jaw.white@nrl.navy.mil)

#### Technical Program Chairs

Christopher Ekstrom  
U.S. Naval Observatory  
Washington, DC  
[ekstrom@stn.nso.navy.mil](mailto:ekstrom@stn.nso.navy.mil)

Robert Tjoelker  
Jet Propulsion Laboratory  
Pasadena, CA  
[tjoelker@jpl.nasa.gov](mailto:tjoelker@jpl.nasa.gov)

#### Short Course/Tutorial Chair

John D. Phillips  
Jet Propulsion Laboratory  
Pasadena, CA  
[johnph@jpl.nasa.gov](mailto:johnph@jpl.nasa.gov)

#### Awards

Tom Parker  
NIST, Time & Frequency Div.  
Boulder, CO  
[tparker@boulder.nist.gov](mailto:tparker@boulder.nist.gov)

#### Finance Chair

Raymond Filer  
U.S. Army CERDEC  
Fort Monmouth, NJ  
[raymond.filer@us.army.mil](mailto:raymond.filer@us.army.mil)

#### Exhibits

Sheila Faulkner  
Sachs Freeman Associates, Inc.  
Falls Church, VA  
[sfaulkn@sfai.com](mailto:sfaulkn@sfai.com)

Jack Kusters  
[jkusters@ieee.org](mailto:jkusters@ieee.org)

#### Meeting Management

Sheila Faulkner  
Sachs Freeman Associates, Inc.  
Falls Church, VA  
[sfaulkn@sfai.com](mailto:sfaulkn@sfai.com)

#### Registration

Barbara McGinley  
Synergistic Management, Inc.  
Wall Township, NJ  
[McGinley@smi.com](mailto:McGinley@smi.com)

The 59<sup>th</sup> consecutive meeting of the Frequency Control Symposium will be held jointly with the Precise Time and Time Interval (PTTI) Systems and Applications Meeting at the Hyatt Regency Hotel, Vancouver, BC, Canada. These are two of the leading international technical conferences for research, development, and applications of frequency control and precision timekeeping.

Authors are invited to submit papers dealing with recent and original work of interest to the frequency control and timing communities in the following subject categories:

#### Group 1 Materials & Resonators

- A. Fundamental Properties of Materials
- B. Theory and Design of Resonators and Filters

#### Group 2 Oscillators, Synthesizers, & Noise

- A. Oscillators - BAW and SAW
- B. Oscillators - Microwave to Optical
- C. Synthesizers and Other Circuitry
- D. Noise Phenomena and Aging
- E. Timing Error and Digital Systems

#### Group 3 Timekeeping & Atomic Standards

- A. Atomic, Microwave, and Optical Frequency Standards
- B. Atomic Clocks for Space Applications
- C. Measurements and Specifications
- D. TAI and Time Scales
- E. Frequency and Time Coordination and Synchronization
- F. Applications of Frequency Control and Timing
- G. Satellite Time Transfer
- H. Galileo, GPS, GLONASS
- I. Algorithms and Methods
- J. Laboratory Updates
- K. Military Systems

#### Group 4 Sensors & Transducers

- A. Resonant Chemical Sensors
- B. Resonant Physical Sensors
- C. BAW, SAW Sensors
- D. Transducers

#### Group 5 Manufacturing Technology

- A. Crystals, Oscillators, and Filters
- B. MEMS

For conference information as it becomes available, please visit the IEEE and PTTI websites at: <http://www.ieee.org/uffc/fc> or <http://tycho.usno.navy.mil/ptti.html>

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## Environment

Vancouver is a beautiful city in Western Canada on the Pacific Rim. Vancouver attractions include Stanley Park, Gastown, Chinatown, and Granville Island. A 90 minute drive will take you to Whistler Mountain, home of the 2010 Winter Olympics. Vancouver is a city with excellent restaurants, easy walking, and is known for its garden climate. Victoria, on Vancouver Island and home to the world renowned Butchart Gardens, is just a short seaplane or ferry ride away.

The **Vancouver Hyatt Regency** will host the Joint conference in 2005. The hotel is centrally located and connected to a small shopping center including restaurants, a newsstand, and gift and clothing shops. The hotel itself has three dining options. It will be possible to reserve rooms on-line with information available shortly on the conference web sites. Reservations may also be made by contacting the hotel directly or by calling 1 800-233-1234. Ask for IEEE IFCS PTTI 2005.

### Travel/Tours:

Uniglobe Travel will provide information on airline travel with the best fares on any airline, as well as planned cruises, railroad trips, and tours both before and after the meeting.

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## Award Nominations

Nominations and suggestions of candidates for the IEEE/UFFC Cady, Rabi and Sawyer Awards should be sent to the IEEE/UFFC Awards Chairman, Thomas E. Parker, [tparker@boulder.nist.gov](mailto:tparker@boulder.nist.gov). (Also see "Awards" at <http://www.ieee-uffc.org/fo>.)

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## Abstract Submissions

Abstracts will be collected through a web-based submission tool at [www.epapers.org/IECS-PTTI2005](http://www.epapers.org/IECS-PTTI2005). The deadline for submission is midnight, (Eastern Standard Time) April 15, 2005. Further information will also be available at the conference web sites (<http://www.ieee.org/uffc/fo> and <http://tycho.usno.navy.mil/ptti.html>).

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## Student Paper Competition

Students submitting abstracts for presentation are invited to participate in a student paper competition. To participate the student must be the lead author and present the paper. A poster presentation is required for selected authors, which will be in addition to any oral presentation. Winners will receive a cash award and a certificate. Further information will be posted on the conference web site. Student authors selected for the Student Paper Competition will be given preference for travel support.

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## Exhibits

For information on arranging for exhibit space, please contact:

Sheila Faulkner  
Sachs Freeman Associates  
3159 Patrick Henry Drive  
Falls Church, VA 22044  
703-532-6411  
FAX: 703-532-6338  
[soopenyan@aol.com](mailto:soopenyan@aol.com)

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## Tutorial Information

On Sunday, 28 August 2004, there will be a series of tutorials covering a wide range of related topics. The tutorials include both the fundamental topics of frequency and timing at a level suitable for practitioners new to the field, and more advanced and specialized topics related to specific areas. As such, the tutorials aim to provide useful knowledge to the beginners in the community, as well as those with extensive experience. Additional information and topics will follow in the Advance Program. Previously presented tutorial topics may be found at <http://www.ieee-uffc.org/fo> and <http://tycho.usno.navy.mil/ptti.html>.

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## Travel Support

Limited funds are available to support students and foreign authors. Awards will be made on a competitive basis. Further information will be posted on the conference web site.

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## UFFC Awards

Honoring our UFFC Society members is a privilege.

The UFFC Society has a number of awards, which are given at symposia sponsored by our three groups. Each member can get involved in the process by submitting nominations for awards through the respective Award Chairs and committees. Information can be found on the UFFC Society website ([www.ieee-uffc.org](http://www.ieee-uffc.org)). The names and citations of past awardees also appear on the website.

### UFFC Achievement Award

The Achievement Award is the highest Society-wide award presented to a member in special recognition of outstanding contributions. Selection criteria include significant technical publications in the field of ultrasonics, ferroelectrics, or frequency control, as well as contributions to these technical fields, and service to the Society. The winner is selected by the UFFC Officers and the Awards Committee from nominations submitted by the general membership. The award consists of an honorarium of \$2,000, a plaque, and a certificate. Presentation is usually at one of the Society's major symposia. The first award was presented in 1980.

#### 2004 UFFC Achievement Award Recipient

Professor Kazuhiko Yamanouchi, was awarded the 2004 UFFC Achievement Award at the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control 50th Anniversary Joint Conference in

Montréal, Canada, 24 August 2004. The citation on the certificate and plaque reads:

**“For his creative and innovative research on piezoelectric surface and leaky surface waves, SAW transducers and devices, and for his many years of service to the Society.”**

Reinhard Lerch, UFFC Awards chair, introduced the award. Kiyoshi Nakamura lauded Dr. Yamanouchi's excellent scientific work within the ultrasonic community as well as his service to the society. Gerry Blessing, UFFC President, and Reinhard Lerch presented Dr. Yamanouchi the plaque and honorarium.



Reinhard Lerch



Kiyoshi Nakamura lauding  
Kazuhiko Yamanouchi



(l – r) Gerry Blessing presenting Kazuhiko Yamanouchi  
the UFFC Achievement Award with Kiyoshi Nakamura,  
and Reinhard Lerch



UFFC Achievement Award recipient, Professor  
Kazuhiko Yamanouchi

## UFFC Achievement Award Nominations

Nominations 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 to:

Prof. Dr. -Ing. Reinhard Lerch  
Chair, UFFC-S Awards Committee  
Friedrich-Alexander-University Erlangen-Nuremberg  
Department of Sensor Technology  
Paul-Gordan-Str. 3/5  
91052 Erlangen  
Germany  
Fon: +49 9131 85 23131  
Fax: +49 9131 85 23133  
e-Mail: reinhard.lerch@lse.e-technik.uni-erlangen.de

## UFFC Distinguished Service Award

The Distinguished Service Award recognizes long-term support of the Society's activities. Recognition is given to those who innovate new Society programs, administer major Committees, manage Society functions, or promote the Society's areas of technical interest to the larger community. The recipient usually has served for many years with sustained participation in the Society's management. Selection is made by the Officers and the Awards Committee from nominations submitted by the general membership. The award consists of an honorarium of \$2,000, a plaque and a certificate. Presentation is usually at one of the Society's major symposia. The first award was presented in 1997.

### 2004 Distinguished Service Award Recipient

Dr. Fred S. Hickernell was awarded the was awarded the 2004 UFFC Achievement Award at the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control 50th Anniversary Joint Conference in Montréal, Canada, 24 August 2004. The citation on the certificate and plaque reads:

**“For respected and diligent service to the IEEE UFFC Society as President, as well as, notable and enduring contributions to AdCom as Newsletter Editor, Fellows Committee Chair, Society Historian, and other positions, extending over more than thirty years.”**

Reinhard Lerch introduced the Award. The laudation was given by Art Ballato praising Fred's active and continuous volunteer service to the Society.



**President Gerry Blessing Introducing President-Elect, Art Ballato**



**Art Ballato Lauding Fred Hickernell**



**Gerry Blessing presenting the Distinguished Service Award to Fred Hickernell with Art Ballato and Reinhard Lerch looking on.**



**Fred Hickernell, Distinguished Service Award recipient**

## UFFC Distinguished Service Award Nominations

Nominations 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 to:

Prof. Dr. -Ing. Reinhard Lerch  
Chair, UFFC-S Awards Committee  
Friedrich-Alexander-University Erlangen-Nuremberg  
Department of Sensor Technology  
Paul-Gordan-Str. 3/5  
91052 Erlangen  
Germany  
Fon: +49 9131 85 23131  
Fax: +49 9131 85 23133  
e-Mail: reinhard.lerch@lse.e-technik.uni-erlangen.de

## UFFC Outstanding Paper Award

The Outstanding Paper Award is presented to the author(s) of a paper published in the IEEE UFFC-S Transactions which exemplifies excellent technical contributions and is clearly written. The winner is selected on the basis of: originality, interest to the membership, contributions to the field, clarity of writing, and timeliness. Selection is made by the Awards Committee. Nominations and comments from the Editor-in-Chief, Associate Editors and Guest Editors of the Transactions are solicited.

Papers are reviewed as a group for each Volume of the UFFC-S Transactions (January through December). In a given year, usually one paper is selected, but the Awards Committee may choose to give no award or multiple awards when circumstances warrant. Presentation is usually at one of the Society's major symposia.

The award consists of a plaque and a certificate. The Outstanding Paper Award was first presented in 1956.

### 2003 Outstanding Paper Award Recipients

The UFFC is proud to announce the winners of the 2003 Outstanding Paper Award: Bajram Zeqiri, Pierre N. Gelat, Mark Hodnett, and Nigel D. Lee for their paper:

**“A Novel Sensor for Monitoring Acoustic Cavitation. Part I: Concept, Theory, and Prototype Development”**

This work was performed at the National Physical Laboratory, Centre for Acoustics and Ionising Radiation, Middlesex, United Kingdom. Each author will receive a plaque and certificate. During the opening ceremony of the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control 50th Anniversary Joint Conference in



Reinhard Lerch (l) and Gerry Blessing (r) present Bajram Zeqiri (c) the Outstanding Paper Award for the 2003 Transactions on UFFC



Bajram Zeqiri accepting the 2003 Outstanding Paper Award

Montréal, Canada, 24 August 2004, Bajram Zeqiri accepted the award on behalf of himself and fellow authors.

The Awards Committee Members selected this paper from among all others that appeared in Vol. 49 of the Transactions on UFFC because it was extremely well written with vivid descriptive language and logical development. It contains a comprehensive review of past studies and includes a systematic analysis and discussion of the physics of acoustics to create a much needed specialized measuring instrument for understanding elusive acoustic phenomena. It is a significant advance in the field of basic acoustic measurements.

**Reinhard Lerch**  
Chair, UFFC Awards Committee

## 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.

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## 2003 – 2004 Distinguished Lecturer

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**Dr. Steven R. Jefferts**  
National Institute of Standards & Technology  
NIST - Time and Frequency Division  
325 Broadway  
Boulder, CO 80305  
[jefferts@boulder.nist.gov](mailto:jefferts@boulder.nist.gov)



**Dr. Steve Jefferts 2003-2004 UFFC Distinguished Lecturer**

Dr. Jefferts completed his term as Distinguished Lecturer at the close of 2004. Bernie Tittmann, Chair of the Distinguished Lecturer Committee, presented Steve a certificate of service at the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control 50th Anniversary Joint Conference in Montréal, Canada, 24 August 2004.



**Bernie Tittmann introducing the Distinguished Lecturer Award**



**Bernie Tittmann with Steve Jefferts**

### Dr. Jefferts Reports

Well, it is time for an update and conclusion to my 2003-2004 Distinguished lecturer report. Last March I traveled to Milwaukee at the kind invitation of Professor Shrinivas G. Joshi to give a colloquium entitled "Atomic Clocks, Past Present and Future" at the Department of Electrical and Computer Engineering of Marquette University. This private university in Milwaukee has a vibrant electrical engineering department and I very much enjoyed my (too short) time at the school.

In the following week I was pressed in to service to give the same atomic clock talk at the University of Colorado Department of Electrical Engineering here in Boulder, CO.

Later in the Spring I traveled to the symposium dinner lecture at the 2004 ASM/TMS Spring symposium on Smart and Functional Materials in Niskayuna, NY. The symposium attendees were very kind and only a handful fell asleep during my presentation on atomic clocks in spite of the late hour and open bar before dinner! I was impressed as I certainly felt like napping...

The bulk of my travel for the IEEE lectureship was this autumn. First, in early October I traveled to Richland in eastern Washington State to give the Atomic Clocks, PPF talk at the William R. Wiley Environmental Molecular Sciences Laboratory of Battelle's Pacific N.W. Laboratories. The talk, given mostly to physical chemists, highlighted the differing views used by electrical engineers and physical chemists! I sometimes wonder if we are really all sharing the same language or not... In any case, I believe that the time was fruitfully spent and we all walked away richer for the interaction! Thanks to Dr. Stephan Barlow for organizing the visit.

Finally the last big trip approached.....Europe. I first visited the Institute of Physics and University of Belgrade in Belgrade, Serbia. During my two-day stay I gave several talks on atomic clocks at the Institute of Physics. I also toured the laboratories and facilities. Finally it turns out that I appeared as a visiting "expert" on Yugoslavian TV! This, a result of being in the right place at the right time, I guess. All in all Belgrade was a fascinating city and I had a great time. Many thanks to Dr. Brana Jelenkovic and especially to Dr. Zoran Petrovic for helping to arrange my stay.



**Inspecting the not quite atomic, but much more clever, clocks in Prague!**

From Belgrade I traveled to Prague. This fascinating and beautiful city should be on every list of places to see. I was hosted by Dr. Jan Cermak of Czech Academy of Sciences Institute of Radio Engineering and Electronics. I spent a day with Jan at his institute seeing their facilities which include a deep underground clock vault originally used for housing stable quartz clocks. In the afternoon of that day I presented my lecture on atomic clocks. The next day was spent as a tourist walking around Prague in the rain and reacquainting myself with this beautiful place. Finally that evening Jan accompanied us on a breathtakingly beautiful walk around the castle culminating in a dinner of traditional Czech cuisine and we left Prague the next morning for....Sicily.



**The view out to the Ionian Sea from the Physics Building at the University of Catania in Sicily**



**Delivering the Atomic Clocks Lecture in Palermo**

We arrived at the airport in Palermo (Punta Raisi) late Saturday evening and immediately started driving east towards Catania on the East coast of Sicily where I was to give a lecture Monday morning. We spent the night in the interesting small town of Enna in the mountains of inner Sicily and drove the next morning to Augusta an hour by car south of Catania where my wife has relatives. Monday morning we drove from Augusta to Catania and spent an hour finding the University. The traffic in Catania has to be experienced to be believed, think Boston at Rush hour....now square it....and you begin to approach the Catania traffic albeit not at rush hour! The Dipartimento di Fisica at the Università di Catania is beautifully located on a hill above the Ionian Sea. I spent the day with my host, Dr. Francesco Cataliotti touring the department and in the afternoon gave my lecture titled "Atomic Clocks, Past Present and Future". After a quick dinner with Francesco (of superb traditional Sicilian delicacies) at the end of an all too short day we left for Palermo where I was to give a lecture the next morning.



**Visiting Red Square in Moscow**



**Lunch at the Institute for Metrology of Time and Space in Moscow, wonderful food, but Vodka with lunch takes practice I suspect!**

Palermo is a beautiful vibrant city and the University is quite ancient by American standards, being officially founded in 1805, although its earliest roots date back to 1498 when medicine and law were taught here. We were graciously hosted by Dr. Franco Persico of the Physics department. Having spent several hours giving us a complete tour of his department we spent an hour visiting the gardens of the arboretum next door. Finally at 6:00 in the evening (we were in the South after all!) it was time for my lecture. I had an enthusiastic audience and the question and answer period was extended. Having made many new friends, we left Palermo that evening for a small island (Favignana) off of Trapani in the northwest corner of Sicily for a couple of days of rest and dry cleaning.

With our newly clean clothes it was time for the last leg of the lecture tour, Moscow! We left the Palermo airport with a temperature of 75F (23C) and arrived in Moscow to 25F (-4C), a bit of a shock! We were met at the airport by Dr. Volodja Vilichansky of the Lebedev Physics Institute. The next day I delivered my (now standard!) talk on atomic clocks to an audience of about 100 people at the Institute. That evening we had a wonderful meal of Georgian cuisine (not grits and barbecue!) with Volodja. The following day we visited the Russian Institute of Metrology for Time and Space where I once again delivered the talk on atomic clocks to an audience of maybe 50 people. I spent the remainder of the day touring the Institute learning a great deal and seeing the impressive facility. The following day, our last in Moscow, I delivered an advanced talk on atomic clocks in the morning and followed it with a few hours spent as a tourist. It would have been impossible to go to Moscow and not even see Red Square! Through all of our adventures in Moscow we were guided and accompanied either by Volodja or his students. Finally having had a wonderful three days we departed Moscow for HOME!!

A very heartfelt thank you to the IEEE UFFC for the opportunity to serve as the distinguished lecturer, it was an adventure and an experience I will treasure always. The IEEE Distinguished Lecturer program allowed me to interact with a large number of people during the past 18 months from a number of diverse cultures. All of these people contributed mightily to this enriching experience, thank you to

all of them! Thank you especially to all the people who went out of their way to host me during my lectures in various places, your kindness helped make this such a wonderful experience. Finally thank you to NIST, my home institution for support during the lecture tours.

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## 2004 – 2005 Distinguished Lecturer

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Dr. Nava Setter  
Ceramics Laboratory  
Materials Institute  
EPFL Swiss Federal Institute of  
Technology  
Lausanne, 1015 Switzerland  
[nava.setter@epfl.ch](mailto: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.

Nava Setter received B.Sc. and M.Sc. degrees in Civil Engineering from the Technion – 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

Trip to Japan (26th October – 6th November, 2004).

As the IEEE UFFC Distinguished Lecturer, I was invited to the 25th Japanese Ultrasonics Symposium that took place in Sapporo, Japan on 28-29 October. My hosts were Prof. Kushibiki, the chairman of the Japanese Chapter of the IEEE-UFFC and Prof. Takenaka of Tokyo University of Science. One day of the conference was held in English giving me the opportunity to learn about advances in ultrasonics in Japan. I saw a wonderful video presentation of modeling of acoustic surface waves, gave my own talk on 'Advances in down scaling of polar ceramics', and answered questions (I disappointed the audience in failing to invent applications of nano-rods of ferroelectrics, but could answer many other questions).

After a short visit to eastern Hokkaido that included hot-springs in lake Akan, getting lost in a snow-storm near Soyunko (a mountain station), and enjoying the rural atmosphere and the incredible hospitality of the people, I traveled to Sendai where I visited a number of exciting laboratories: That of Prof. Cho (non-linear dielectric microscopy), that of Prof. Kushibiki (acoustic microscopy), and that of Prof. Nakamura (domain engineering, acoustic wave devices). I gave a seminar at the University of Tohoku in Sendai, participated in the annual meeting of the IEEE-UFFC Japanese chapter in the presence of the management committee (Prof. Kushibiki, the chairman, Prof. Adachi, Prof. Nakamura, Prof. Kurasawa, Prof. Cho, and Prof. Yamanouchi – the previous chairman). A Japanese meal (14 courses and the corresponding Sake) was a good opportunity to get acquainted with the Japanese colleagues and with some fascinating aspects of the Japanese culture.

Then I traveled to Kyoto and visited the Murata Company (piezoelectrics and dielectric components). It was a good opportunity to meet again many friends, among them Yokio Sakabe, Akira Ando, Hiroshi Tamura, Kosuke Shiratsuyu, and to learn about real-life problems in our field (cost, cost, cost). I gave a seminar to a room full of researchers and enjoyed stimulating questions that brought nice new ideas.

Returning back home from this short trip, I am still in a time lag relative to the European clock, so I can enjoy starting to work at 03:00 hr (but unfortunately falling asleep already at 21:00). Difficult to have it all!

**Nava Setter**  
Lausanne

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## 2005 – 2006 Distinguished Lecturer

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Dr. Ken-ya Hashimoto  
Department of Electronic and  
Mechanical Engineering  
Faculty of Engineering  
Chiba University  
1-33 Yayoi-cho, Inage-ku  
Chiba-shi 263-8522 Japan  
k.hashimoto@ieee.org

## Simulation of Surface Acoustic Wave Devices

Presently, surface acoustic wave (SAW) filters are mass pro-

duced 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, and 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.

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 Kepler 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.

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 for Distinguished Lecturer Award**

Nominations may be submitted at any time. Any member may submit a nomination by sending the nominee's name

## **UFFC Fellows**

### **UFFC IEEE Fellow Class Of 2005**

#### **IEEE Fellow Program**

IEEE Grade of Fellow is conferred by the Board of Directors upon a person with an extraordinary record of accomplishments in any of the IEEE fields of interest. A brief citation is issued to new Fellows describing their accomplishments and the total number selected in any one year does not exceed one-tenth percent of the total voting Institute membership.

#### **2004 IEEE Fellow Recipient**

Effective, 1 January 2004 the member grade of IEEE Fellow was conferred upon Kenneth Meade Lakin

**"For contributions to thin-film resonator technology and applications."**

Dr. Lakin elected to receive the Fellow Award at the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control 50th Anniversary Joint Conference in Montréal, Canada, 24 August 2004. Gerry Blessing, UFFC Society President, presented the Fellow Award to Ken.



**Dr. Ken Lakin (r) receiving the IEEE Fellow Award from Gerry Blessing.**

#### **2005 IEEE Fellow Recipients**

The UFFC Society is pleased to announce that, effective 1 January 2005, we have four new Fellows: Ken-ya Hashimoto, Jack Kuster, Robert Newnham, and Ahmad Safari.



**Ken-ya Hashimoto  
Chiba University  
Chiba, Japan**

**"for contributions to simulation and design for surface acoustic wave devices"**



**John Arnold Kusters  
Retired  
Cupertino, CA, USA**

**"for contributions to precision frequency control, quartz resonators and atomic frequency standards"**



**Robert Everest Newnham  
Pennsylvania State University  
State College, PA, USA**

**"for contributions to piezoelectric composite transducers"**



**Ahmad Safari**  
Rutgers University  
Piscataway, NJ USA

**“for contributions to the development of piezoelectric transducers”**

## Fellow Nomination Process

The Fellow Nominations are due at IEEE Headquarters by 1 March each year. Nominations are sent to each Society's Fellow Committee for evaluation in mid-May. The Fellow Committee comments on and scores each nomination and returns the nominations to IEEE Headquarters by mid-June. The IEEE Fellow Committee evaluates and scores the nominations from all societies, completing this work by September.

There is a total of 80 points possible in five categories with each Society evaluation representing a possible total of 20 points. The Fellow Committee makes the final decision on the nominees in October. These recommendations are made to the IEEE Board of Directors who make the definitive selection at their final meeting of the year, usually in November or early December.

## Fellow Nominations

Remember that Fellow nominations for 2005 are due at IEEE headquarters before 1 March 2005. Information on submitting nominations and nomination kits are on the IEEE website - [www.ieee.org](http://www.ieee.org). (Use “Fellow” in the search box.) Nominations and references may be submitted on-line.

**Fred S. Hickernell**  
UFFC-S Fellows Chair

## Honors



Helmut Ermert, UFFC-Society member and IEEE Fellow, received the “Ehrenring” (honorary ring) of the VDE Association for Electrical, Electronic and Information Technologies (Germany) for his contributions to medical imaging using ultrasound and magnetic resonance technologies. The “Ehrenring” is the highest honorary award of the VDE. It was presented in a ceremony during the annual VDE congress on October 19, 2004 in Berlin.

## Students

### Student Welcome

Dear fellow students,

We are very excited to serve as your UFFC Student Representatives to the UFFC AdCom this year.



**Oliver Keitmann-Curdes**



**Emanuel Gottlieb**

Foremost we would like to introduce ourselves to you. Oliver Keitmann-Curdes is currently working on his Ph.D. studies on contour detection within ultrasonic images at the Ruhr-University Bochum (Institute of High Frequency Engineering) in Germany. Emanuel Gottlieb is a Ph.D. student at the University of Southern California (Department of Biomedical Engineering) in the USA, concentrating on high

frequency ultrasonic imaging, acoustic microscopy and transducer design.

How can we serve you as UFFC Student Representatives? Let us present you with some of our duties and achievements. First of all, we are your voice within the Administrative Committee of the UFFC Society. Thus, we are always trying to secure benefits for student members of the UFFC like reduced conference rates. Besides this, we are currently establishing affordable accommodations for you during future UFFC symposia. This year in Rotterdam, in addition to discounted hotels, the UFFC will be offering accommodations in a student hostel. In addition, we are advertising UFFC and its activities among universities around the world by contacting IEEE student branches of UFFC related departments directly. Oliver is mainly concentrating on regions outside of the USA, while Emanuel is mainly responsible for regions within the 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 join the UFFC AdCom in 2006.

We look forward to serving you this year and anticipate meeting you at Rotterdam for those of you who will be attending this year's symposium.

Best regards,

Oliver Keitmann-Curdes

(Sr. Student Representative, [o.keitmann@ieee.org](mailto:o.keitmann@ieee.org))

Emanuel Gottlieb

(Jr. Student Representative, [egottlie@usc.edu](mailto:egottlie@usc.edu))

## UFFC Chapter News

### German UFFC Chapter Meeting Minutes 26 August 2004

#### Meeting Summary

Minutes of the meeting of German members of the UFFC in Montreal (August 26th, 2004):

Attendees: 12 (7 of them UFFC members)

1. Call to Order by the Chapter-Chairman Helmut Ermert with a short introduction of chapter activities, special topics: cooperation of the chapter with national societies in Germany (e.g. VDE, DGBMT, DEGUM), diversification of the local members (U, F, FC).
2. Self-introduction of the attendees
3. Discussion about future activities: The Chapter will continue coordination and co-organization of local meetings of the national societies rather than starting up own events. Besides this, an idea was discussed to start a series of visiting trips to the Chapter members and their affiliations.
4. Planning of next meetings: no special chapter meeting planned.
5. Adjournment

#### Future Activities:

- May 22nd-25th, 2005: 2nd International Workshop on Piezoelectric Materials and Applications in Actuators in Paderborn, Germany. Supported by the German UFFC-Chapter
- September 2005: 39. DGBMT/VDE Annual Conference (German Society of Biomedical Engineering). Cooperation of DGBMT/VDE, the KMR (Bochum) and the German UFFC-Chapter: organization of a common ultrasound-session
- September/October 2005: Ultraschall (Ultrasound) 2005 – 29th “Dreiländertreffen“ (3 countries meeting: Austria, Germany, Switzerland). Cooperation of DEGUM (German Society for Ultrasound in Medicine), DGBMT/VDE, KMR (Bochum) and the German UFFC-Chapter: organization of a common ultrasound-session
- October 2005: Meeting of German UFFC members on the 2005 IEEE Ultrasonics Symposium in Rotterdam.

Helmut Ermert, German UFFC chapter chair  
[http://www.ewh.ieee.org/r8/germany/uffc/index\\_e.html](http://www.ewh.ieee.org/r8/germany/uffc/index_e.html)

### USC Student Chapter



The University of Southern California now has a student Chapter. It was organized and established by Emanuel Gottlieb, the new student representative on AdCom. Look for their activities on the new webpage for the USC-UFFC student chapter: <http://www-scf.usc.edu/~uffc/>.

Emanuel Gottlieb

### Japan Chapter

#### Distinguished Lectures

The Japan Chapter of the IEEE UFFC Society invited Prof. Nava Setter, 2004-2005 Distinguished Lecturer of UFFC Society, to present lectures at Sapporo, Sendai and Kyoto in the fall of 2004. The Japan Chapter organized the



Nava Setter at Hokkaido University



front row (l-r): Prof. K. Yamanouchi, Prof. N. Setter and Prof. K. Nakamura, in the back row: Dr. T. Morita, Prof. J. Kushibiki, Prof. M. Adachi, Prof. Y. Cho and Minoru Kuribayashi Kurosawa

Distinguished Lecture meetings at three places for the members and potential candidates for the members of the UFFC Society. Prof. Setter visited Japan from 27th October to 6th November, which is the best season for red leaves in autumn.

Prof. Setter gave a lecture on “Down Scaling in Piezoelectrics and Polar Materials: Microdevices, Nanofabrication, Small Features and Size Effects” to scientists, engineers and students who are working on the field of ultrasonics, ferroelectrics and frequency control. The first lecture was held on the mid day of the 25th Symposium on Ultrasonic Electronics (USE 2004), 28th October, at Hokkaido University in Sapporo; Figure 1 is a photo of Prof. Setter. In spite of just after the first snow of the season, it was 13 days earlier than the previous year, audience more than 200 people gathered in the hall to listen to the lecture. The lecture attracted the audience’s interest due to the up-to-date matter and focus on the important technologies in the future.

The second lecture was held on 4th November at Tohoku University. After the lecture, Prof. Setter enjoyed Japanese traditional style dinner with the Japan Chapter committee members.

After the lecture meeting in Sendai, Prof. Setter visited Kyoto at Murata Manufacturing Co., Ltd. She gave the last lecture here, then returned to Lausanne, Switzerland.

It is a yearly event that the Japan Chapter of the IEEE UFFC-S organizes the Distinguished Lecture meeting during the Symposium on Ultrasonic Electronics (USE). The schedule of the next Distinguished Lecture meeting will be held on the mid day of USE 2005, namely, 17th November 2005. The Symposium on Ultrasonic Electronics 2005 will be held at Tokyo Institute of Technology, Suzukakedai campus located in Yokohama.

**Minoru Kuribayashi Kurosawa**  
Secretary of the IEEE UFFC-S Japan Chapter

## UFFC AdCom

### AdCom Class of 2007

#### AdCom Class of 2007

Each year our Society-wide membership elects four of its members to serve three years on its Administrative Committee. AdCom’s principal responsibility is to guide the technical affairs of the Society – dominated by its symposia and publications. The newly elected members, and their technical affiliations, serving 2005 through 2007 are:

- Ruyan Guo, Ferroelectrics
- Mark Schafer, Ultrasonics
- Leonhard Reindl, Frequency Control
- Massimo Pappalardo, Ultrasonics – Regions 8-10

#### Ruyan Guo



Ruyan Guo is Associate Professor of Electrical Engineering, Department of Electrical Engineering and Materials Research Institute, Pennsylvania State University, University Park, Pennsylvania.

She holds a Ph.D. in Solid State Science (Pennsylvania State University, 1990) and a M.S. and a B.S. in Electrical Engineering (Xian Jiaotong University, China, 1984 and 1982).

She served as a faculty member in the Department of Electrical Engineering, Xian Jiaotong University, during 1984-85. From 1991 to 1996, she was a research faculty member of the Materials Research Laboratory, Penn State University. Her research interests are in solid state electronic materials and devices, particularly ferroelectric single crystals and their piezoelectric, nonlinear optic, and microwave applications. She is an author or a co-author of more than 160 scientific papers including review articles, three edited books, and two proceeding volumes. She serves currently on the editorial board of journal of Phase Transitions, Journal of Korean Ceramic Society, and Ferroelectrics Letters.

Dr. Guo is a Fellow of the American Ceramic Society, a senior member of IEEE, a member of UFFC, MRS, SPIE, LEOS, and AAAS. She has been a member of the UFFC-IEEE Ferroelectrics Committee. She organized and co-organized several symposia and meetings nationally and internationally in the areas of ferroelectric, electronic, optic and photorefractive materials and devices, including the Ninth IEEE International Symposium on Application of Ferroelectrics in 1994. She served as the Chair of the Electronics Division, American Ceramic Society, in 2002-2003.

Dr. Guo is the Director of a NSF sponsored Research Experience for Undergraduates Site program at Department of Electrical Engineering, Penn State. She teaches dielectric devices, nonlinear optical materials, optical engineering, and optical fiber communication systems, at both undergraduate and graduate levels. She is also a faculty member involved in the NSF Center for Dielectric Studies (CDS), the International Center for Actuators and Transducers (ICAT), the Electrooptics Center, and the Pennsylvania Center for Optical Technology (COT).

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### Mark Schafer

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MARK E. SCHAFER (S '83 - M '85) was born in Pittsburgh, PA on February 25, 1958. He received a S.B. degree in Electrical Engineering from the Massachusetts Institute of Technology in 1979. He received a M.S. in Acoustics from the Pennsylvania State University in 1982, and his Ph.D. degree in Biomedical Engineering from the Drexel University in 1988. His thesis work at Penn State dealt with characterization of transducers for two-dimensional sonar arrays, while at Drexel his primary efforts focused ultrasound propagation through tissue layers using the angular spectrum method. He was the recipient of a Calhoun Foundation fellowship while at Drexel, and was later appointed Visiting Adjunct Professor there ('93-'98). He was a Senior Research Engineer at Interspec, Inc, from 1985 to 1987, working on single-element and annular array transducer design and the development of a low-cost flow imaging system.

Since 1987, he has founded and managed several ultra-

sound development and consulting firms. During this time, he has been heavily involved in ultrasound measurement and dosimetry efforts, including hydrophone development and standard setting activities. He also developed a number of product lines, applying ultrasound to veterinary needs and to process control in the wood products industry. Over a ten year period ('90 to '99), he was the Principal Investigator on thirteen SBIR or other state and federal grants, on topics ranging from ultrasonic wound healing to lumber assessment. He currently works primarily as a consultant, assisting companies in ultrasound related product development efforts. Dr. Schafer is the author or co-author of over 40 publications in peer reviewed journals, book chapters, and conference proceedings and 13 patents. He serves as a reviewer for the Trans. UFFC and for JASA.

Dr. Schafer is a Fellow of the American Institute of Ultrasound in Medicine (AIUM), and a member of UFFC and ASA. He has served on the Technical Program Committee of the UFFC Ultrasonics Symposium for over ten years. He is currently Chairman of the Technical Committee of National Electrical Manufacturers Association (NEMA) Ultrasound Section, and Vice Chairman of the AIUM Technical Standards Committee. He has been a member of the Ultrasound Industry Association (UIA) since 1990, organizing two of their Annual Meetings. In 1996 he was elected to their Board of Directors; he served as President in 1999-2001, and is currently their Treasurer. He had previously begun a dialog between UFFC and UIA, and would continue such efforts between UFFC and other groups worldwide, in support of its mission of technical excellence and information dissemination.

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### Leonhard Reindl

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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.



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## Massimo Pappalardo

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Massimo Pappalardo is full professor in Electronic at the University of Roma Tre. Besides the basic course in Electronic, he is teaching the specialized course "Sensors and Actuators" devoted to the piezoelectric transducer, sensors, actuators and to the acoustoelectronic systems.

Massimo Pappalardo received the Dr. Sc. Degree in Electrical Engineering from the University of Naples in 1967; he started his research activity with a scholarship at the Istituto di Acustica C.N.R., where, in 1968, he came in the staff as a researcher. In 1978 he became Scientific Manager of the Department of Ultrasound and Acoustic Technology and in 1981 he was member of the Scientific Committee. During the period '68-'85 he made research activity at the University of Birmingham, he was responsible of several national and international research programs and he taught as a contract professor at the Universities of Calabria and Salerno.

In 1985 he became full professor at the Department of Electronic of the University of Salerno where he was the Director for many years. Since 1995 he is full professor at the Department of Electronic of the University of Roma Tre, where he is currently the Director.

Massimo Pappalardo worked mainly in the field of ultrasound applications and acoustical imaging for biomedical and underwater prospecting. He is currently responsible of the Acoustoelectronic Laboratory (ACULAB) of the Department of Electronic Engineering where he is involved in the fields of: analytical and FEM modelling of piezoelectric transducers, developments of linear and rotating, piezoelectric actuators, silicon micromachined capacitive ultrasonic transducers (cMUT) and echographic image elaboration.

Massimo Pappalardo is author of more than two hundred papers in these fields published in international magazines and conference proceedings. Further, he was scientific consultant to some Italian companies which have worked, and/or work, in the field of acoustoelectronic such as the ELSAG of Genova, USEA of La Spezia, Italtel of SM Capua Vetere, OPTIKON 2000 of Roma and ESAOTE Biomedica of Genova and Firenze.

Recently Massimo Pappalardo became associate editor of IEEE UFFC Transactions.

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## UFFC Society AdCom Meeting Minutes 23 August 2004

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### Call to Order

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The Administrative Committee (AdCom) meeting of the Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S) was called to order at 8:30 am, 23 August 2004, by Society President Gerry Blessing. The meeting was held

in Montreal, in conjunction with the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control Joint 50th Anniversary Conference.

### Attendees

Koray Akdogan	Kiyoshi Nakamura*
Ahmed Amin	Rajesh Panda*
Art Ballato*	Steve Pilgrim
Gerald Blessing *	Victor Plessky*
Jan Brown*	Bob Potter*
David Cann	Sorah Rhee
Mauricio P. daCunha*	Clemens Ruppel*
Mike Driscoll	Ahmad Safari*
Mike Garvey*	Nava Setter*
Asha Hall	Tom Shrout*
David Hecht	Peter Smith*
Fred Hickernell*	Dan Stevens *
Jacqueline Hines*	Bernie Tittmann
Kullervo Hynynen*	Susan Trolier-McKinstry*
Oliver Keitmann-Curdes	Bruce Tuttle*
John Kosinski*	Ton van der Steen
Reinhard Lerch*	John Vig
Jian-yu Lu	Kendall Waters
Jon-Paul Maria	Marjorie P. Yuhas
Lute Maleki*	Don Yuhas

(Note: A total of 23 voting members\* were present for portions of the meeting (some having conference and short course commitments at various times during the day), with at least 20 voting members present for most of the meeting's business)

Gerry Blessing welcomed everyone and announced that the next AdCom meeting date has not yet been determined, but it will probably be held in conjunction with the FCS TPC meeting to be held in early 2005. As soon as the date and location have been determined, all AdCom members will be notified.

Ahmad Safari made and Jan Brown seconded a motion that passed (18 in favor, 0 opposed, 0 abstaining): To approve the 17 April 2004 (Chicago, Illinois) AdCom minutes as corrected.

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### Secretary's Report

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Jackie Hines told AdCom members where the AdCom reception and dinner were to be held and asked for updated information on attendance plans. She then informed the attendees that Herman van de Vaart was recovering from successful spinal surgery and regretfully would not be attending this conference. Several greeting cards from AdCom were circulated for well wishers to sign for Herman. Finally, Jackie asked about an appropriate lead-time for circulating AdCom reports in electronic format for attendees to review in advance of the meeting. A consensus was reached that one week in advance of the meeting

would be enough time for most people to review the documents and print them to bring to the meeting.

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## President's Report

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Society President Gerry Blessing discussed three items, the UFFC Society's review by IEEE, highlights from the Kansas City TAB meeting, and informing IEEE of awards received by members.

### IEEE Review of the UFFC-Society:

IEEE likes to keep tabs on what's going on within societies by conducting periodic reviews. There are two major parts that are reviewed, the society in general, and publications. Jan Brown will discuss publications later. A specific review group (consisting of 3-4 people) conducted the review this past June. It was a more extensive review than Gerry had anticipated, with a report of about 26 pages, excluding publications. Gerry summarized some of the highlights of the review findings. He briefly described the Society's history, which is relevant to our 50th anniversary, stating that the society was formed in 1953 as the IRE Professional Group on Ultrasonics in Engineering; in 1963 the Society became the IEEE group on Sonics and Ultrasonics (which it remained through 1984); and since 1985 we have been the IEEE UFFC Society (now almost 20 years). The Society's governance is the responsibility of the 26 voting members, of which slightly more than half are elected (including the current President and the Jr. and Sr. Past Presidents), and the remainder are appointed. Regarding finances, there were rough times for all of IEEE around 2000, especially due to the investment environment. Surpluses from all conferences have been the UFFC Society's major source of income, averaging approximately \$120,000 annually over the past five years. Membership is the second major source of income, averaging approximately \$30,000 per year. The Society paid infrastructure charge of \$150,000 (on average) over the past 5 years. So you can see that financially, we have what is almost a balancing act, which puts undesirable pressure on the financial performance of conferences. Chapter activity was identified as a weakness in our society. We have a few strong chapters around the world, but not many and any good ideas would be appreciated. Chapters allow for and encourage local involvement on the individual level, and many active Society volunteers, including Gerry, became involved in this way. We are now awaiting the formal response of the IEEE review committee regarding what they think we should put more energy into.

### Kansas City TAB meeting:

Finances and infrastructure charges to societies were a major topic at this meeting. Gerry would like to see an algebraic expression for determination of this charge. Currently,

the level of Society surpluses from conferences is a major factor in determining this fee. Another topic was the desire on the part of IEEE to provide advertising to promote engineering careers for youngsters, even at the pre-highschool level. IEEE could spend up to \$10M (of a roughly \$250M total budget) for this purpose. At this meeting, TAB did not support a proposed function at EPCOT, but the IEEE Board of Directors (BOD) overrode that decision and is still considering it if they are able to raise adequate matching funds. Overall IEEE governance was discussed, with the goal of determining how to better run the organization. The UFFC Society is one of the smallest societies – some are 10-20 times as large or larger – but each society gets the same vote. Our small infrastructure charge is higher per member than other societies, but overall larger societies contribute more – perhaps \$10M for over 100k members. The impact of electronic publications, particularly as a source of income for the Society, will be discussed in an upcoming workshop.

### Awards:

IEEE is interested in being informed about significant non-IEEE awards received by its members. Please e-mail any such information to: [institute@ieee.org](mailto:institute@ieee.org) so that IEEE can advertise this information.

A discussion ensued regarding what the Society "gets" for our infrastructure charges. We get intangible benefits such as the use of IEEE name (worldwide), and tangible things like handling elections, finance, investments, customer service, membership, publications access, etc. Gerry would like to see this charge cut in half, but Jan Brown stated that IEEE currently charges less than half as much per member for services provided compared to other professional groups outside IEEE. Jan suggested that the total pie chart breakdown of costs at IEEE be presented to AdCom at the next meeting. Additional discussion ensued regarding the opportunity for UFFC to utilize more IEEE services, as the cost for these capabilities (including conference services) is part of the infrastructure charge, and it was stressed that in order for us to utilize such services, we would need to be able to identify the individual person or people within IEEE who would be responsible and accountable to the Society.

Gerry Blessing asked all AdCom members to take a shirt as a token of appreciation for their service, and to please wear the shirt when attending the student breakfast Thursday morning.

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## Finance Report

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Chair Herman van de Vaart provided a written summary report of the Society's finances, which was summarized by Jackie Hines. Because of the timing of the AdCom meetings relative to both conference financial closings and the IEEE budgeting process, there is essentially no change from the last AdCom

meeting. It was noted that IEEE recommends that Societies maintain a minimum reserve level of 50% of their annual operating budget. Currently our reserves do not quite meet this recommended level.

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## Publications

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Jan Brown, Publications VP, presented an oral report. Regarding Transactions, we got way behind after the Munich meeting, but now are caught up and should be able to stay current in getting Transactions out on a timely basis, even with meetings.

The IEEE Review of Publications identified several issues, primarily the ability of the Society to have a positive visibility in its journal publication statistics, e.g. the rejection rate and submission-to-publication time. Manuscript Central (MC) makes it easy for associate editors and reviewers, but it does not allow us to easily print reports on where delays in the process are, etc. We want to see improvements in MC to give us those reports. In the meantime, Jian-yu has written his own scripts to access this data.

Another issue raised was the rejection rate of our Transactions. IEEE indicated that certain academic institutions are now looking at rejection rates of journals for promotion considerations, although a survey of AdCom members showed that very few knew of this being used as a factor for promotion in their organizations. The UFFC-S Transactions rejection rate is between 18% and 28%, depending on how you define it, which IEEE indicated is much too low. Some IEEE journals reject about 80% of the papers submitted. We would argue that our Transactions are of high quality independent of the low rejection rate. Also, our rejection rate is artificially low due to the tendency of AEs to assist authors with several iterations of revisions to make their papers better, rather than rejecting the papers up front and telling the authors to make major changes and resubmit, which would boost our rejection rate. A discussion ensued, with several people indicating that the impact factor of the journal is more important than the rejection rate. Most people thought that the difficulty of getting into the publication mattered as well, but mostly in determining which journals authors will submit their papers to. Authors will often submit to higher impact factor journals initially, and resubmit to other journals if their paper is not accepted. The significance of the impact factor also depends on the field it is being compared to. Our impact factor is 1.5, which is good when compared with other journals on our field of interest, and we were ranked third out of 28 acoustics journals. However, as Kullvero Hynynen pointed out, different disciplines have very different impact factors. For example medical journals can have impact factors of 9, so a journal with a 1.5 impact factor would be considered a “throw away journal” in this field. Thus the impact factor alone is not enough to judge the quality of the journal, unless you understand the field within which it is relevant.



**Kullvero Hynynen**

Finally, IEEE was concerned with the time delay from submission to publication. Ours has improved – decreasing nearly 50% from what it was four years ago, and now ranges from 9 months to 1 year. However, this could be improved further. There are time delays, one of the largest being when the paper is sitting with the author for revision. Some groups automatically have the paper administratively withdrawn if the author does not complete revisions within 90 days, or even reject it 30 days after the author receives reviewers’ comments.

A motion was made by Lute Maleki and seconded by Bruce Tuttle: That we require that authors that submit papers for Transactions and receive comments from reviewers must respond within 30 days or have their papers automatically administratively withdrawn.

A discussion of the motion ensued, which reached a consensus that we should not make changes to our process to artificially “boost” our numbers, nor out of concern for our statistics. However, changes that would improve the quality of the journal, including the timeliness of the journal, should be considered. Also, it was determined that AdCom should not dictate this, but leave such decisions up to the publications committee, who can take into account the impact of such changes on the entire process leading up to Transactions publication. Topics to be considered include giving guidelines to AEs as to what should constitute a rejection vs. requesting revisions for a paper. Clearly, if new experiments are required by the reviewers, the paper should be rejected, as it can be resubmitted later when the work is more complete. Also, helping authors with English takes a lot of time on the part of the AE, so perhaps we should recommend services for authors to go to instead.

Following the discussion, Lute Maleki withdrew the motion.

Jan Brown stated that we should be very pleased with the overall performance of our Transactions, and that we have demonstrated stellar performance during the last three years since Jian-Yu and Marj implemented major changes in the system.

## Transactions:



Transactions Editor In Chief Jian-yu Lu gave a detailed presentation on the performance of the Transactions publication process. In addition to presenting publication metrics, he pointed out that the UFFC-S Transactions has a good impact factor, and is ranked number 3 out of 28 acoustics journals. The fact that impact factor can vary widely with field was discussed. Regarding the view that a journal with a low rejection rate would have a low quality, Jian-yu will seek opinions at the AE lunch on Thursday. Jan Brown indicated that once we get comments from IEEE, we would get an opportunity to reply, with more statistics on other journals in addition to what the committee



had in their report. Regarding content, it was noted that we should continue to encourage more contributions and expand our technical content (particularly in the ferroelectrics and frequency control fields).

All new issues of UFFC-S Transactions (from February 2004 on) now have a PDF version of TUFFC that is compatible with IEEE Xplore, which means that they no longer use scanners to produce low quality PDF papers from printed versions. Jian-yu will work with the digital archive to go back and try to improve prior years, since more and more people are relying on electronic access only, and therefore it is critical to have the desired quality. FASS is prepared to work with IEEE on XML (the next extension of SGML). IEEE would like to handle our publications, but approves our using an outside vendor as long as there is software compatibility.

### Newsletter:

Newsletter Editor Jan Brown mentioned that the IEEE Master Brand (logo format) requires very specific fonts, colors, etc., and reminded AdCom that conference organizers and others need to get the right one for use on any publications, letterhead, web sites, etc. (Should be as it appears on the newsletter). Also, all attendees will get a CD update to the digital archive at this conference, and will get annual updates in the future.

### Web:



**Sorah Rhee**

Sorah Rhee, the Society Web Editor, introduced the new Ultrasonics web site editor, Kendall Waters. Ferroelectrics also has a new web editor, Ruyan Guo from Pennsylvania State University. Regarding e-mail lists - there are three separate ones, with (currently) 10,238 addresses in the overall list, and we continue to solicit new addresses. However, there are some format issues related to the list and the server that need to be fixed, as they resulted in many people on the list not getting the messages. Should the UFFC lists be given away for free, or shared for joint meetings? John Vig expressed the opinion that the groups we do joint conferences with are our competitors, therefore we should not do any exchange.



**Kendall Waters**

The fact that we no longer send the advanced program book in hardcopy was discussed, as some people felt that having only electronic access is not desirable. Several people indicated that they rarely actively seek out information online in response to e-mails, but often delete the messages without even reading them, whereas a hardcopy mailing of some kind may get at least a cursory review before being thrown out. Others indicated that going back to snail-mailing hardcopy was moving backwards - both because we do not have as comprehensive a physical address mailing list as we have an e-mail list, and from a cost point of view. However, the cultural differences between different geographical regions and for different

technical areas was apparent in the registrations for this conference, and this issue needs to be addressed. A postcard mailing was suggested as the most inexpensive means of sending hardcopy information, and the online link could be provided. These issues will be taken into account in planning for upcoming conferences.

### Awards



**Reinhard Lerch**



**Bernie Tittmann**



**Nava Setter**

Awards Chair Reinhard Lerch provided a written and oral report summarizing the results of the elections for our two society wide awards. The Achievement Award recipient is Professor K. Yamanouchi, and the recipient of the Distinguished Service Award is Fred Hickernell. The Outstanding Paper Award was also selected, and we will have presentations tomorrow morning at the plenary session. There will also be presentation of the Distinguished lecturer for '03-04 tomorrow (Steve Jefferts). Bernie Tittmann stated that we will have a discussion on a new distinguished lecturer at the spring AdCom meeting. Nava Setter just started (this July) and will serve through December 2005, while Ken-ya Hashimoto has been elected to serve from July 2005 through December 2006. We have one new IEEE Fellow this year, Ken Lakin, and the recipient of the Rayleigh Award is Jim Greenleaf. Both of these will be presented tomorrow as well.

Gerry Blessing noted that the Publicity ad-hoc committee has been dissolved.

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### John Vig – TAB President-Elect Comments

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**John Vig**

John Vig, President-Elect of the IEEE Technical Activities Board (TAB) presented an overview of IEEE, focusing on two main issues, membership and publications.

### Membership:

IEEE's membership outside the U.S. is growing much faster than inside the U.S. Of current membership, only 8% are female, and most of the females are student members. Only 7.3% of members are Sr. members, in spite of many more members being eligible for this level. We need to push people to become Sr. members and fellows, as members of these groups tend to stay in the IEEE longer. Recent increases in membership would seem to show that IEEE growth is healthy, but when viewed from a broader time perspective, we see that the number of electrical engineers who are part of IEEE has steadily declined since 1960. This appears to be

the result of less and less volunteerism in society as a whole. IEEE is not only an engineering society now, and we should actively solicit members from all related technical areas, including non-EE's (medical scientists, physicists, etc.). Finally, the student membership continues to steadily decline.

### Publications:

Over half of IEEE's \$226M revenue comes from publications. Membership dues account for only 19% of revenue. By comparison, Elsevier has revenue about ten times as large as IEEE publications. It is interesting to note that there are a great number of people accessing "old stuff" through IEEE Xplore (articles over 3 years old), and the peak time for downloads is 4 am EST, indicating downloads being initiated mostly in Europe (where it is 10 am) and Japan or Asia (where it is around 4 pm). Also, it seems that customers think timeliness is more important than peer review, as evidenced by more downloads from proceedings than from Transactions. Another issue being considered by IEEE is the shift in scientists' view of information and journals. Historically, journals were viewed as individual resources of information. Now, with electronic access and search capabilities, researchers tend to look at a whole database of literature, independent of connection to a specific journal. This raises the question – Are IEEE Societies becoming less relevant? Several AdCom members stressed that Societies are still needed as the communities that generate the technical content of the conference proceedings and journals, and provide needed peer review. John Vig indicated that peer review could happen without societies. Also, if many researchers can get free access to publications through their employers (through licenses), why join societies? Sales of IEEE products (especially electronic access for organizations) are increasing rapidly, and the opportunity is huge. IEEE estimates there are over 150,000 more organizations that could need such products, with price based on number of sites, etc. Enterprise, which was launched July 1, is targeted for the smaller companies that make up this potential market. Currently, sales associate agents get a \$20,000 commission for each customer that purchases the IEL (and the same annually if they renew). John is putting forward a proposal that these commissions could go to societies instead of agents. The best salesmen are IEEE members. This proposal should pass in November, and this could be a good revenue generator for UFFC. Gerry Blessing asked that anyone interested please come forward now or later, and thanked John Vig for his presentation.

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### Ferroelectrics Committee

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**Susan Trolier-McKinstry**

Susan Trolier-McKinstry, Ferroelectrics VP, gave an oral report. At the last AdCom meeting, Susan discussed the book being written as a memorial for Seung-Eek (Eagle) Park. The book is complete, with many sold, and Susan had several at the conference, available for \$100 U.S. Dr. Park will be receiving the 2003 Ferroelectrics Achievement Award, and



**Steve Pilgrim,  
Vice Chair  
Ferroelectrics  
Committee**

his widow will receive a check for \$10,000 from proceeds of the book sales on Thursday. Susan asked if AdCom would like to support a revised and extended version of the book by handling publication, with proceeds still to support the family. She would be glad to organize the revisions, but would need assistance with getting an ISBN number, publishing, sales, storage, etc. Nava Setter indicated ISBN numbers can be assigned in Europe much more easily than in the U.S., and she could provide assistance with this aspect. No decision was made by AdCom regarding support of this concept. Susan reiterated that Ferroelectrics was hard hit by the purely electronic publicity around the current conference. Some segments of this community need a paper reminder, and need to see ISAF in addition to IEEE to recognize what the meeting really is. We will try to improve the effectiveness of publicity for future conferences.

### Ferroelectric Standard

The proposed Ferroelectric standard developed last year was published in the December or January issue of Transactions, and Susan is getting input from people around world with desired changes. At the Standards Committee Meeting at the conference we hope to get input from everyone and finalize the standard by this December so it can be submitted to IEEE for formalization. As a reminder, AdCom agreed to pay the standards committee dues for the entire standards development team, so we should expect this expense within a couple of months.

### 2004 Joint meeting

Defer discussion until Mike Garvey is here.

### 2006 Meeting



**David Cann and Jon-Paul Maria**

The conference is scheduled for July 30 through August 02, 2006, in North Carolina. One consequence of not having meetings in the U.S. is lots of graduate students never having attended. The goal of moving the 2006 meeting to the east coast of the U.S. is to attract many more students. The General Chair, Jon-Paul Maria of NCSU, has done a lot of work to secure the availability of the Sea Trail resort in North Carolina. Jon-Paul gave a presentation about the conference plans and attributes that make it a desirable venue.

Accommodations are diverse in size and cost, with many under \$100/night, which should be good for bringing in more student participation. An all-inclusive package is proposed, as there is not a lot else in the immediate area off the resort. The total per-person budget including all meals, coffee breaks, etc. is such that for about \$550 an IEEE member would get an all-inclusive program at a very nice venue. The preliminary budget assumes 15% surplus, and will be presented at the next AdCom meeting. David Cann of Iowa State is the Technical Chair, and will canvas programs in academia and industry to try and capture the new and emerging areas in ISAF to capture in our technical program. We would like to increase the timeliness of material at the conference, and comments are welcome on particular topical interests. When ISIF chose not to have a joint meeting, we decided to try to bring in a larger portion of the circuits design (thin film memory folks) crowd to interface with the ISAF people. We also need to improve distribution of information in China and Japan as previously mentioned. Koray Akdogan noted that there is currently a visa issue, and that UFFC must get invitations out three to four months in advance of conferences in order for international participants that need a visa to attend conferences. If we want to get a lot of participation from these areas, we should make sure there is an on-line contact point so participants can get a letter of invitation. These may go out in advance of paper acceptance – some may come without giving a presentation. Jan Brown noted that the IEEE master brand (logo) was not correctly used on the ISAF 2006 documentation and should be fixed.

## 2008 Meeting



Paul Clem

For the '08 meeting, Susan has a proposal from the Sandia National Laboratory group. Santa Fe New Mexico is the proposed location, and while this has not been formally approved by the Ferroelectrics Committee yet, there is a reasonably good chance it will be. Paul Clem and Bruce Tuttle will be the co-general chairs.

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## Ultrasonics Committee

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Clemens Ruppel

Clemens Ruppel, Ultrasonics VP, gave a brief oral report. He introduced the new members of the Ultrasonics Committee, and announced that we still need a new person to run the Rayleigh Award, and will consider candidates at the next AdCom meeting.

## 2003 Symposium

Results of the 2003 Hawaii Symposium were presented at the last meeting, and while the finances are being finalized, nothing has changed. It was a very successful conference even though there were fewer attendees than expected.

## 2005 Symposium



Ton van der Steen

Planning for the '05 Ultrasonics Symposium in Rotterdam, The Netherlands, is going well with Ton van der Steen general chair. Short courses will be September 18, with the meeting September 19-21. The TPC committee meeting will be in June 2005. The conference will take place in a conference center, De Doelen. We have a philosophy of having several hotels, which have prices ranging widely (in Euros, prices include: single room: Hilton - 165, Westin - 195 [both five star hotels], four star hotels - 105-135, and three star hotels - 75-90; plus around 20 euro extra for double rooms). The Westin is attached to the conference center, while the Hilton is about 200m away. A Holiday Inn is nearby but much too expensive. Cees Dekker from the Tech University of Delft, an expert in nanotechnology, will be the plenary speaker. Options being considered for the social event include an art museum or a boat through the harbor. We want a very attractive social event with low cost, especially for students. FASS will handle the technical program, and a local organization (Erasmus Conference Bureau) will handle local arrangements. Ton presented the proposed conference budget, which included a subsidized banquet (\$50 for attendees, \$10 for students), farewell drinks, and \$120,000 in donations to be raised to support the social event. Philips has already committed \$60,000 in support of this event which is anticipated to cost \$90,000. Ton believes this level of support is realistically achievable. A brief discussion of the budget ensued, primarily related to proceedings and book broker income and expenses, with it noted that even if we produce only the electronic version of the proceedings, we still need to do the editing and composition portion of the process, so we would only save on printing and mailing. With IEEE producing the proceedings, the cost is close to \$100 per copy (\$60 labor plus \$35 printing) for hardcopy. We have the option in '05 (even this year) of producing no hard copy, in which case IEEE will produce these copies on demand and the society will be charged (an as yet undetermined amount) to produce them. It is better to keep production of the proceedings under our control for the time being as this will provide us with more control over expenses. In the future, our book broker income would be a fixed amount (say \$10 or so) for each article in the proceedings, independent of how many copies are needed. It was noted that the drastic change in exchange rates between the dollar and the euro (almost 40% since the initial budget was made) results in higher costs in dollars now. This effect may continue to be a bigger problem, and result in a lower surplus than currently estimated (17.6%).

Clemens Ruppel made a motion from the Ultrasonics Committee that passed (18 in favor, 0 opposed): That AdCom approve the proposed budget for the 2005 IUS as presented.



## 2006 Symposium



**John Kosinski**

John Kosinski continued the Ultrasonics Committee report, as Clemens was teaching a short course.

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 hotel).

## 2007 Symposium

For 2007 we plan for the conference to be in New York City. IEEE conference services is reviewing the contract.

## 2008 Symposium



**Jian-yu Lu**

Clemens Ruppel and Jian-yu Lu conducted an extensive site visit to China, and identified one venue which would be outstanding for our needs. Contract negotiations will be started once quotations are obtained from the competing venues.

## Future Symposia



**Mauricio  
Pereira da  
Cunha**



**Victor  
Plessky**

For 2009 two sites are being considered. Reinhard Lerch is evaluating Lisbon, Portugal, with Mauricio P. da Cunha to look into hotels, etc. Victor Plessky is also going to look into Warsaw, Poland. More information on these possible sites will be seen at the next Ultrasonics Committee meeting, and a recommendation will be made. For 2010, we want to bring the conference back to the Americas (though not necessarily to the U.S.). Jackie Hines will look into Costa Rica for the next meeting.

## 2004 Symposium



**Mike Garvey**

Mike Garvey, the General Chair for the 2004 joint conference (which is just starting) reported that we met all of our hotel room blocks (130% and 150% respectively). The pre-registration was slightly over 1000, and we had budgeted registration of 1250. Since we expect about 25% on-site registration, we should be about where we expect. We have encountered some unusual

circumstances, some of which are related to language issues. There will be a very large poster session, and large

parallel sessions (sometimes 9 at a time). We have about 38 exhibits, which is somewhat less than we expected, but OK. We are trying a cyber café in the exhibit hall, where we have put up a wireless network so people can access the internet. Regarding the projected surplus, there are no new projections, but we expect it to be there, and perhaps 10% beyond, as we have not spent beyond the budget. We are providing a very large amount of support for students and invited speakers, but all three technical groups took very different approaches to allocating funds. Foreign and student support totals about 180,000 Canadian Dollars. Getting presentations from speakers ready for presentation is still an issue. Susan Trolier-McKinstry mentioned that we should ensure that next time FASS notifies session chairs (this did not happen for this conference). Also, we failed to publish where the tutorials would be, so we had students and instructors wandering around looking for the rooms. Sorah Rhee also indicated that she received several e-mails saying they did not receive notification of acceptance of papers.

Gerry Blessing thanked Mike Garvey for all his work.



**Gerry Blessing (l) thanking Mike Garvey**

Mike Garvey raised the issue of AdCom matching funds. Several years ago AdCom decided to encourage student and foreign speaker attendance at meetings by providing travel support from the conference, with a dollar for dollar match up to \$15,000 (per conference) from AdCom. Mike suggests that we encourage participation and contribution from industry. For example, Frequency Control currently gets about \$20,000 to \$25,000 in outside support for each conference. Mike would suggest AdCom matching funds for outside support obtained up to some level, and freedom from restrictions on how the matching funds would be used.

Jan Brown made and Lute Maleki seconded a motion: 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.

A discussion ensued, with issues raised relating to the varying difficulty of raising funds in different countries, the desire to encourage raising outside funds without penalizing conferences that are not as successful in this effort (due to circumstances not necessarily within the control of the organizing committee), and what the financial impact of the proposed change would be on Society finances.

Jan Brown made and John Kosinski seconded a motion that passed (18 in favor, 0 opposed): To refer the previous motion to the finance committee for discussion and generation of a recommendation.

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## Frequency Control Committee

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**Lute Maleki**

Lute Maleki, Frequency Control VP, gave a report. The FC committee has not met since the last AdCom meeting. However, we have dissolved our relationship with PDA and needed to find a new exhibits chair. This position was taken by Jack Kusters. We are now working out a Memorandum of Understanding (MOU) with the European Frequency and Time Forum (EFTF). The proposed agreement is rather simple. If the conference is held in Europe (as in 2007), everything to arrange the conference is done by EFTF, (including all finances). When the conference is held in the U.S. (or nearby as in 2005), all aspects are handled by us. No money changes hands.

Lute Maleki made a motion from the Frequency Control Committee that passed (19 in favor 0 opposed): That AdCom approve the MOU with EFTF for the coming years.

## 2003 Symposia

The 2003 meeting in Tampa was joint with EFTF. Technically it was very successful. It was a tough conference from an administrative point of view, and the surplus ended up at \$6,773 or about 3.1%. The Proceedings were published on time. Lute pointed out that Mike Garvey did an outstanding job managing the 'unmanageable' things that happen.

## 2005 Symposium



**Mike Driscoll**

Lute Maleki introduced Mike Driscoll to discuss the 2005 and 2006 meetings. The 2005 meeting is set for Vancouver, and handouts (the preliminary meeting announcement) are available at the booth. The proposed budget which has been approved by the FCS Committee (but not reviewed by the Finance Committee) was introduced. Gerry recommended that the

budget be reviewed by Herman van de Vaart.

Lute Maleki made a motion from the Frequency Control Committee that passed (17 in favor 0 opposed): To approve the budget for the 2005 FCS Symposium as submitted.

## 2006 Symposium

For 2006 the proposed location has been chosen as Miami, FL. It is a very nice venue, with reasonable hotel rates, and is easily accessible. Mike Driscoll is Chair.

## 2007 Symposium

2007 will be in Switzerland joint with EFTF, with all work handled by the European committee the role of the US co-

chair will be primarily ceremonial. Responsibility for technical program is about 50/50.

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## Membership Services

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**Rajesh Panda**

Chair Rajesh Panda gave an oral and written report, focusing on why some of the society members left the society, while staying in IEEE. General results from the IEEE survey and analysis are in, and will be published at the end of August. Current membership is now showing a positive trend after two years of declining membership. The increase in senior members (21 more) is good, and student memberships are also up. One area of concern is UFFC "Gold" members (students who graduated in the last decade), we are open to suggestions on how to retain these members. Another issue is: Which other societies do we have an overlap with (members of our society with other society affiliations). Are people really only using 1 society? No – almost 800 UFFC members have 2-3 society memberships, some have even more. We also see about 50% of our society members still purchasing hardcopy of transactions in this year (over 1100). Rajesh is sending a welcome e-mail to new society members, telling them some of the benefits and giving them a point of contact, and will send "sorry to see you go" messages to those leaving UFFC but staying in IEEE. Rajesh is preparing a welcome for new Sr. Members as well.

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## Standards

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**Art Ballato**

Eva Ferre-Pikal submitted a written report, which was summarized by Art Ballato. Susan Trolier-McKinstry discussed Ferroelectric standards activity, and stated that Stewart Sherrit is working on a number of issues related to losses in electromechanical materials. IEEE 1193 was published in March, and a review of 1139 will start soon. For SAW, Pierre Dufilie is coordinating efforts, while Fabian Josse is coordinating efforts for sensors, and is reconstituting that committee. The other three areas are currently inactive.

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## Fellows

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**Fred Hickernell**

Fred Hickernell reported that six nominations were submitted, which is very good. Nominations were received by the Society committee in mid-May, transitioning from paper to electronic, and the committee came through very nicely and sent scores back to IEEE HQ prior to the June 25 deadline. Now it goes to the IEEE Fellows committee, which will meet this fall.

Recommendations go to the BOD who make the final decision. Results will be published after that meeting. Nominations are due Mar 15 each year. Unsuccessful candidates should resubmit – they do not need the entire package. The IEEE rule is that a limit of about 30-35% of each year's nominees make it, and that they can only elect 1/10 of 1% of its entire membership to Fellow. The UFFC Society has been higher than that, as about 1.5% of our entire membership are fellows.

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## Nominations

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**Bob Potter**



**Dan Stevens**

Bob Potter gave a written and oral report. An election was held somewhat earlier than usual this year, and four new members were elected to AdCom. The newly elected members are: Ruyan Guo, Massimo

Pappalardo, Leonhard Reindl, and Mark Schafer. There were fewer nominees than our bylaws call for from regions 1-6. A change in the bylaws would allow us to balance the requirements, for example: at least 2 from regions 1-7 and at least 2 from regions 8-10. A discussion ensued regarding the distribution of membership from various regions as currently required in the bylaws and prospective changes. A recommendation was made that this be reviewed by the committee on governance and recommendations and be addressed at our next AdCom meeting. Bob thanked all the VPs and Dan Stevens (vice chair) for their help.

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## Historical Committee

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**Fred Hickernell with Susan Toller-McKinstry looking on**

Fred Hickernell commended the technical chairs and VPs for the inclusion of historical papers in the conference – the plenaries and nine other papers are historical in nature. Fred thanked Jan Brown for getting the lapel pins, and a wonderful, lighted crystal that attendees will receive. Fred is interested in whether the AdCom, which is representative of the membership in general, enjoy reading historical articles.

With the help of several people, we have gotten pictures of all but three of our past presidents, and we will ask the audience to provide them if possible, and will go on the web. One special treat is the person who founded our society in 1953 at age 27 - Amor Lane – who was President from 1953-1955, will be at the conference. He pushed very hard to start the IRE Professional Group on Ultrasonics in Engineering, the founding organization of our present-day UFFC Society. We will ask him to give some comments and a welcome. Herman van de Vaart did send his regrets, as one of our past Presidents (who has gotten us out of some tight financial times). In fact, the groups joined and we became UFFC during Herman's presidency. Society reviews require the geographic distribution of conference attendees – we have not been keeping these statistics, and did not submit this information. It is important for historical reasons, and we should have conferences do that as part of their final report. This will help keep track of a part of our society's history about which we have not been too diligent.

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## Long Range Planning

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In Honolulu, John Vig discussed nine different areas - each with specific tasks. Many of those are progressing very well. If anyone has any additions that would be useful, or would like to look at this, please let Fred know. The plan is on the web, and we are making progress on the tactics.

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## UFFC-S Representative's Reports

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### Journal of Lightwave Technology



**David Hecht (c) with Kullervo Hynynen (l) and Bob Potter looking on**

David Hecht, one of our representatives to JLT, presented a verbal report on behalf of himself and John Lee. The Journal is doing fine. In the startup of the JLT, Herman van de Vaart was very useful in networking information. It is a routine thing that representatives are appointed by the President for two year terms, although David and John have both been serving for a long time. David wonders if he should be on the lookout for someone interested in optics to transition the position to for continuity and turnover, but would recom-



mend the continuation of the reps for the present time. Gerry said he would welcome input for new reps from JLT, or anyone else.

### Transactions on Medical Imaging



Ahmed Amin

Ahmed Amin submitted a written report, stating that this is a relatively new transactions, but is one of the most highly cited IEEE transactions. It has a new EIC from the Netherlands, and an acceptance rate of about 20%. A brief discussion on the rejection rate ensued. A special issue on wavelets and medical imaging is in the works.

### Education



Koray Akdogan

Koray Akdogan submitted a written report and summarized the report verbally. Now a fully functional educational section of the web site leads to all educational materials for the society. Some new materials are to be posted there mid Sept.

on at the next AdCom. The committee will provide advance notice as required by the Bylaws. John Kosinski noted that bylaws changes require minimal advance notice in order for AdCom to vote, and then we as AdCom would submit our recommendations to IEEE (TAB) for review. A committee at IEEE then makes sure changes are in line with any new changes in law, etc. John Vig noted that if we make any changes after Jan 1, John will have the authority to accept the changes (as President of TAB). The Society's last major bylaws change was led by Jim Greenleaf in 1995. Changes in the Constitution require a more lengthy process, but need to be considered – for instance, the Constitution currently does not include President-elect in its definition of AdCom members. Our Bylaws currently conflict with this, and we would need to either change the bylaws or the Constitution to obtain consistency.

### Ferroelectrics Book

Susan Trolier-McKinstry stated that she has been approached by several people to ask her to broaden the scope of the book, Piezoelectric Single Crystals and Their Applications, recently published to be more attractive to the whole Society. She asked if AdCom would be willing to back this effort if benefits would continue to go to the family. A brief discussion ensued, including the issues of who would be responsible for obtaining an ISBN number, the possibility of putting the book on web sites, and who would be responsible for sales. No decisions were made regarding AdCom support for this effort.

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### Student Report

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Asha Hall

Asha Hall, the Senior Student Representative from the IEEE Rutgers student chapter, said that she recently became a liaison for the IEEE Women in Engineering Committee. They are doing a survey, outreach programs, and writing a book on women in engineering. They are trying to help female faculty in US get support, and have an educational outreach, especially to Africa. The Student breakfast is Thursday from 0630-0800 – all AdCom members are invited to talk with students and network. Wear your new red shirts!! Ahmed noted that there would be a prize for the first 10 students to show up, and Asha noted that it was very positive last year that there was a student contact for student travel support.



Oliver Keitmann-Curdes

### 2005 Appointments



Don Yuhas

Gerry Blessing presented his new presidential appointments for 2005, which are one year appointments, and will be voted on by the elected AdCom members for ratification in January. Gerry intends to appoint Don Yuhas for VP of Publications and to reappoint Susan Trolier-McKinstry for VP of Ferroelectrics, Clemens Ruppel for VP of Ultrasonics, Lute Maleki for VP of Frequency Control, Jackie Hines for Secretary/Treasurer, Reinhard Lerch for Awards Chair, Herman van de Vaart for Finance Chair, Rajesh Panda for Membership Chair, Bob Potter for Nominations Chair, and – Eva Ferre-Pikal for Standards Chair. Gerry mentioned the bylaw requirement for anyone serving over 10 years in one position to be approved, but noted that the only person this would apply to is Herman. He also noted that society representatives and other

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### New Business:

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#### Constitution and Bylaws Review Committee

The present membership of the Constitution and Bylaws Review Committee is Art Ballato, Jan Brown, Gerry Blessing, John Kosinski, John Vig, and Jackie Hines. Art asked Bob Potter to join, and Koray Akdogan volunteered. The committee intends to circulate proposed changes to bylaws and/or constitution for review so they can be voted



Jian-yu Lu



Marj Yuhas

presidential appointments are not voted on, and Gerry intends to reappoint

Jian-Yu Lu as Transactions EIC, and Marj Yuhas as Transactions AEIC.

## Outgoing AdCom Members

On a personal note, Gerry Blessing thanked Jan Brown, who has been VP of Publications since 1996 (after last bylaw review), for completing the last eight years of service. Gerry stated that he would likely not be here if not for her support and encouragement and mentoring. Jan will remain as the newsletter editor, but not as voting member.

Gerry also noted AdCom's appreciation to the four AdCom members who have completed their terms, Mauricio P. daCunha, John Kosinski, Kiyoshi Nakamura, and Bruce Tuttle. Gerry also thanked Asha Hall, the outgoing Senior Student representative, for doing a lot – she pushed us harder than we responded.



**Bruce Tuttle and Gerry Blessing**



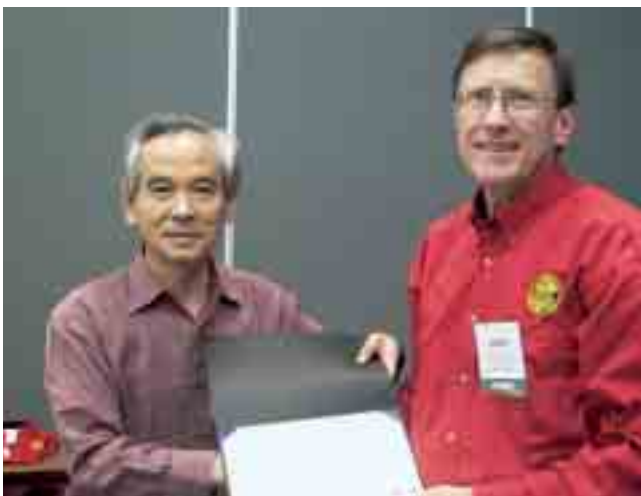
**Mauricio Pereira da Cunha (r) with Gerry Blessing**



**Asha Hall being thanked by Gerry Blessing**



**Gerry Blessing thanking John Kosinski**



**Kiyoshi Nakamura with Gerry Blessing**

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## Adjournment

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**Ahmad Safari**

Art Ballato made and Ahmad Safari seconded a motion for adjournment, that passed (20 in favor, 0 opposed, 0 abstaining). The meeting was adjourned at 4:50 pm, 23 August 2004.

**THE NEXT UFFC-S AdCom MEETING will be held in conjunction with the next FC TPC committee meeting early in 2005, at a location to be announced.**

The second AdCom meeting of the year will be Sunday Sept. 18th 2005 in Rotterdam in conjunction with the 2005 IEEE International Ultrasonics Symposium.

**Jacqueline H. Hines**  
UFFC-S Secretary/Treasurer



**Peter Smith**



**Tom Shrout**



**Kullervo  
Hynynen**



**Kiyoshi  
Nakamura**

## Asha Hall



Asha Hall (r) receiving certificate from Koray Akdogan

In a special ceremony at Rutgers University, Asha Hall, who has served as the student representative to the UFFC AdCom for the past two years, was presented with a certificate of appreciation on December 15, 2004. On behalf of the AdCom, Koray Akdogan, UFFC Education Committee Chair, thanked Asha for her initiative, ideas, and eager willingness to serve. Asha will be graduating in summer 2005 with a doctorate on electromechanical actuators. We wish her the best of success in her future career.

## UFFC AdCom 2005

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

#### SOCIETY OFFICERS

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

<b>AWARDS</b>	Reinhard Lerch	University of Erlangen
Awards Vice-Chair*	Bernhard R. Tittmann	The Pennsylvania State University
<b>FELLOWS*</b>	Fred S. Hickernell	Motorola (retired)
<b>FINANCE</b>	Herman van de Vaart	Retired
Finance Vice-Chair*	Jacqueline H. Hines	J. H. Hines Consulting
<b>ULTRASONICS</b>	Clemens Ruppel	EPCOS AG
Ultrasonics Vice-Chair*	John Kosinski	U. S. Army CERDEC



**FERROELECTRICS**

Ferroelectrics Vice-Chair\*

**FREQUENCY CONTROL**

Frequency Control Vice-Chair\*

**MEMBERSHIP SERVICES**

Chapters Vice-Chair\*

**NOMINATIONS**

Vice-Chair Nominations\*

**PUBLICATIONS**

Vice-Chair Publications\*

**TRANSACTIONS EIC\***

Trans. Associate EIC\*

**NEWSLETTER EDITOR\***

**WEB EDITOR-in-CHIEF\***

**STANDARDS**

Standards Vice-Chair\*

Susan Trolier-McKinstry

Steve Pilgrim

Lute Maleki

Samuel Stein

Rajesh K. Panda

Elizabeth M. Herrera

Bob Potter

Daniel S. Stevens

Donald Yuhas

TBD

Jian-Yu Lu

Marjorie P. Yuhas

Jan Brown

Sorah Rhee

Susan Trolier-McKinstry (acting)

TBD

The Pennsylvania State University

Alfred University

Jet Propulsion Laboratory

Timing Solutions, Inc.

Philips Medical Systems

Diebold Incorporated

Vectron International - Hudson

Vectron International

Industrial Measurement Systems Inc.

University of Toledo

Industrial Measurement Systems Inc.

JB Consulting

MEGGITT Endeveco

The Pennsylvania State University

**Sr. Past President**

**Jr. Past President**

**Sr. Student Member\***(2004-2005)

**Jr. Student Member\***(2005- 2006)

\*Non-voting position

Fred S. Hickernell

Ahmad Safari

Oliver Keitmann-Curdes

Manny Gottlieb

Motorola (retired)

Rutgers University

Ruhr-University Bochum

University of Southern California

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**AD HOC COMMITTEES**

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**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

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**SUB-COMMITTEE MEMBERS**

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**Standards**

Ferroelectrics

Allen H. Meitzler

AHM Consulting

Ultrasonic ID Tags

Susan Trolier-McKinstry

The Pennsylvania State University

Piezoelectric Crystals

Clinton S. Hartmann

RF SAW, Inc.

Piezomagnetic Technology

Lewis T. Claiborne

RF SAW, Inc.

Sensors, Actuators & Trans.

Bikash K. Sinha

Schlumberger-Doll Research

Surface Acoustic Wave Devices

Robert W. Schwartz

Univ. of Missouri – Rolla

Time & Frequency

Fabien J. Josse

Marquette University

UFFC Stds. Liaison to SCC-27

Pierre Dufilie

Thales Components

Eva Ferre-Pikal

University of Wyoming

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.

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**DISTINGUISHED LECTURERS**

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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

## SYMPOSIUM LEADERSHIP

### Ultrasonics Symposia

2005 Rotterdam, The Netherlands	Clemens C. W. Ruppel –Chair	EPCOS AG
2006 Vancouver, Canada	Ton A. van der Steen	Thorax Centre
2007 New York City, New York USA	Stuart Foster	University of Toronto
2008 Beijing, China	John A. Kosinski	U. S. Army Comm.-Elec. Command
	Jian-yu Lu	University of Toledo

### Ferroelectrics Symposia

2006 Sea Trail, North Carolina USA	Susan Trolier-McKinstry – Chair	The Pennsylvania State University
2008 Santa Fe, New Mexico USA	Jon-Paul Maria	North Carolina State University
	Paul Clem	Sandia National Laboratories
	Bruce Tuttle	Sandia National Laboratories

### Frequency Control Symposia

2005 Vancouver, Canada	Lute Maleki – Chair	Jet Propulsion Laboratory
2006 Miami, Florida USA (joint PTTI)	Michael M. Driscoll	Northrup Grumman Corp.
	Michael M. Driscoll	Northrup Grumman Corp.

## 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
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	TBD	
Committee (PACE)		
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
IEEE General Manager	Dan J. Senese

## Publications

### UFFC Transactions

#### Reviewers Wanted



**Jian-yu Lu,**  
Editor-in-  
Chief

As you know, a high quality TUFFC is of great interest to our research community. A successful peer-review process is a key part of achieving the desired high quality. One of the critically important factors in the peer-review process is the quality of the reviewers - the members of our community who volunteer to review papers for the benefit of the community.

Finding qualified reviewers who are willing and able to review papers in a timely manner has become more and more difficult. Therefore, we ask members of our community to volunteer to help in this important task that will benefit the entire society.

Becoming a reviewer of the IEEE TUFFC is as simple as creating an account in MC. If you don't have an account, please click on the link <http://tuffc-ieee.manuscriptcentral.com/> and then click on the icon "Create a New

Account" to create one. It will take a few minutes to create an account. Please indicate your areas of expertise by entering Key Words in the Account Information screen. Please also enter "REVIEWER" as one of the comma-separated key words. This will allow our Associate Editors to find you. We appreciate your participation and help. The document "Guide for Reviewers" at <http://www.ieee-uffc.org/tr/> has a step-by-step guide for you to review a manuscript for the TUFFC in MC.

If you already have an account, please update your information whenever your email address and other personal information is changed. If you have not entered the word "REVIEWER" as one of your key words, please add it. Please login to the TUFFC MC and then click on "Edit Your Information". If you forget your User ID and/or Password, please click on the icon "Check for Existing Account" and you will receive your account information via email.

**Volunteer to be a reviewer now!**

**Jian-yu Lu**  
Editor-in-Chief

## Other Conferences

### The 26th Symposium on Ultrasonic Electronics

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: 29 July 2005  
Deadline for submission of proceedings paper: 26 August 2005  
<http://www.use-jp.org/>

### Precision Oscillations in Electronics and Optics (POEO): Theory and Applications

Location: Yalta, Crimea, Ukraine  
Dates: 15 – 17 September 2005

#### Welcome from the Chair

Dear Colleagues,

The International Conference on "Precision Oscillations in Electronics and Optics (POEO): Theory and Applications" will be held this year in Yalta, Crimea, Ukraine, Sept 15-17. The Meeting will be united with the CAOL-2005 and LFNM-2005. The 1st Call for papers is now available at [http://www.spie.org.ua/PDF/CAOL2005\\_announce.pdf](http://www.spie.org.ua/PDF/CAOL2005_announce.pdf)

Those are strongly encouraged to join us who deal with precision vibrations, oscillations, resonators (electrical, mechanical, optical, quantum, crystal), oscillators of all types, their

physical studies, noise studies, performance measurements and practical implementations: signal generation, transmitting, and receiving; signal processing (deterministic and stochastic); time dissemination with GPS, GLONASS, GALILEO; sensing; signals in electronic and wireless (radio electronic) systems, etc.

The Proceedings of the Conference will be included in the IEEE and SPIE Libraries with the citations available. The selected papers will be published in the special issue of the Proceedings of SPIE.

**Professor Yuriy Shmaliy**  
General Chairman



## VIII International Conference For Young Researchers Wave Electronics and its Applications in Information and Telecommunication Systems St. Petersburg, Russia

The first conference of this series took place in 1998. Since that time it has become a pleasant tradition to hold the conference every year. The organizers make every attempt to present to our guests all the beauty of St. Petersburg and

the magnificent Russian North.

Watch for the 2005 call for papers and other conference information at [www.home.ru/weconf](http://www.home.ru/weconf).

## The First Symposium on Piezoelectricity, Acoustic Waves, and Device Applications (SPAWDA 2004) Held in Ningbo University, China

### Conference Report

The largest gathering of people working on piezoelectricity, acoustic waves, and device applications, which are main subjects of the IEEE UFFC, in China was held in December 14-18, 2004 at Ningbo University, Ningbo, Zhejiang as The First Symposium on Piezoelectricity, Acoustic Waves, and Device Applications (SPAWDA). The technical conference was sponsored by the Chinese Institute of Electronics, Chinese Association of Theoretical and Applied Mechanics, and the IEEE Beijing Section with financial support from Ningbo University, City of Ningbo, and major companies in the frequency control industry in China: Zhejiang East Crystal, Huaying Electronics, Hiking, and the 26th Institute.

There were 142 registered participants with about 20 from overseas. Most international participants are keynote speakers with talks on technical, products, and industry issues concerning the frequency control products such as quartz crystals, SAW, and ceramic products. This unique forum has brought people from universities, laboratories, and industries together to exchange research results, technical issues, and industrial challenges concerning piezoelectric devices.

Most of the participants are from universities working on piezoelectric structures without much knowledge about the piezoelectric device industry, which is significant in worldwide market in these days. As a result, there were intensive interactions between device engineers and people in acoustic wave theory on the device design and development issues. Technical exchanges between these groups are rare in China, while the industry is struggling to improve its technical capability to compete in the worldwide market. This conference is especially important in bridging the gap between acoustic waves and frequency control device development. Many overseas companies with plants in China are particularly interested in this conference because they need to have an occasion similar to the IEEE UFFC symposia to meet academic researchers and talents for their engineering centers. We were surprised by the participation of US companies with China presence.

Invited speakers known in the UFFC community are Professor Peter CY Lee of Princeton, Professor Ken-ya Hashimoto of Chiba University, Dr Thor Thorvaldsson, Mr. Masanobu Okazaki of NDK, Professor Yong'an Shui of Nanjing University, Dr. CS Lam of TXC, Dr. Janpu Hou of FOCI Communications, among others. There were also some well-known researchers from Mechanics.



Opening Session at Ningbo University



Opening remarks by Professor Yi-Hsing Pao

In the opening remarks, Professor Yi-Hsing Pao, known in the UFFC for many years, talked about the applications of piezoelectricity and acoustic waves in the major breakthroughs of technology in last century. He is optimistic about research work in these fields with the fast growing of electronic industry in China and worldwide.

The conference general chair is Professor Haojiang Ding of Zhejiang University, a well-known expert on piezoelectric structures. The organizing committee chairs are Professors Ji Wang of Ningbo University and Weiqiu Chen of Zhejiang University.

There were about 100 technical talks in two parallel sessions in the conference. These papers will be published in proceedings with selected papers in English to be published in a special issue of Zhejiang University Journal Science Edition (ZUJS).

The conference language is Chinese with most invited talks given in English.

Based on the comments and feedback of the participants, next symposium will be held at Zhejiang University, Hangzhou, in 2006. It is expected that the Piezoelectric Crystal Association of China will be a co-sponsor of the Symposium in 2006.

It is also urged to work with the IEEE UFFC to have a



Conference Reception

joint Frequency Control Symposium in China to facilitate the participation of the IEEE UFFC activities by Chinese researchers and engineers.

The IEEE UFFC Beijing Chapter helped the organization of this Symposium.

**Ji Wang**  
[wangji@nbu.edu.cn](mailto:wangji@nbu.edu.cn)



Conference Reception



Conference Reception

## Historical Note

### Piezoelectricity – The 125th Anniversary A Historical Note

The fact that piezoelectricity plays a prominent role in society today is undeniable. It is the silent partner in a number of technologies. Our own IEEE Ultrasonics, Ferroelectrics, and Frequency Control Societies bear witness at their conferences to its essential role in modern day life. This year, 2005, will be the 125th anniversary of the discovery of the piezoelectric effect by the Curie brothers, Pierre and Jacques, in 1880. We can recall a few of the events that led

to its discovery and some subsequent uses. But first be reminded of the definition of piezoelectricity.

Piezoelectricity is the well-known ability of crystals with certain symmetries to produce a voltage when subjected to mechanical stress. The word is derived from the Greek word *piezein*, which means to squeeze or press. The effect is reversible; piezoelectric crystals, subject to an externally applied voltage, will deform or expand by a small amount on

the order of nanometers. A related property known as pyroelectricity, the ability of certain crystals to generate electrical charge when heated, was known of as early as the 18th century, and was named by David Brewster in 1824. The pyroelectric effect was known to the Curies and assisted them in their choice of crystals to experimentally demonstrate piezoelectricity.

It was an 1880, in their first scientific collaboration and publication, that the brothers Curie, Pierre (21) and Jacques (24) predicted and demonstrated piezoelectricity. These results were a credit to the Curies' imagination and perseverance, considering that they were obtained with nothing more than tinfoil, glue, wire, magnets and a jeweler's saw. They showed that crystals of tourmaline, quartz,

topaz, cane sugar, and Rochelle salt generate electrical polarization from mechanical stress. Quartz and Rochelle salt exhibited the most piezoelectricity. They used this effect to build a piezoelectric quartz electrometer to measure small electric currents, which Marie Curie with her husband Pierre used some 20 years later in their experimental work on radioactivity. The piezoelectric quartz balance was the subject of Jacques's doctoral dissertation in 1889.

The Curie brothers did not, however, predict that crystals exhibiting the "direct effect" (electricity from applied stress) would also exhibit the converse piezoelectric effect (stress in response to applied electric field). This property was mathematically deduced from fundamental thermodynamic principles by Lippmann in 1881. The Curies immediately confirmed the existence of the "converse effect," and continued on to obtain quantitative proof of the complete reversibility of electro-elasto-mechanical deformations in piezoelectric crystals. Recognizing the connection between the two phenomena helped them to develop pioneering ideas about the fundamental role of symmetry in the laws of physics.

After two years of interactive work following the Curie's discoveries, the core of piezoelectric applications science was established: the identification of piezoelectric crystals on the basis of asymmetric crystal structure, the reversible exchange of electrical and mechanical energy, and the usefulness of thermodynamics in quantifying complex relationships among mechanical, thermal and electrical variables.

In the following 25 years much more work was done to make this core grow into a versatile and complete framework which defined completely the 20 natural crystal classes in which piezoelectric effects occur, and defined all 18 possible macroscopic piezoelectric coefficients accompanying a rigorous thermodynamic treatment of crystal solids using appropriate tensorial analysis. In 1910 Voigt's "Lerbuch der Kristallphysik" was published, and it became the standard reference work embodying the understanding which had been reached.

During the 25 years that it took to reach Voigt's benchmark, however, the world was not holding its breath for piezoelectricity. A science of such subtlety as to require tensorial analysis just to define relevant measurable quantities paled by comparison to electro-magnetism, which at the time

was maturing from a science to a technology, producing highly visible and amazing machines. Piezoelectricity was obscure even among crystallographers; the mathematics required to understand it was complicated; and no publicly visible applications had been found for any of the piezoelectric crystals.

The first serious applications work on piezoelectric devices took place during World War I. In 1917; P. Langevin and French co-workers began to perfect an ultrasonic submarine detector. Their transducer was a mosaic of thin quartz crystals glued between two steel plates (the composite having a resonant frequency of about 50 KHz), mounted in a housing suitable for submersion. Working on past the end of the war, they did achieve their goal of emitting a high frequency "chirp"

underwater and measuring depth by timing the return echo. The strategic importance of their achievement was not overlooked by any industrial nation, however, and since that time the development of sonar transducers, circuits, systems, and materials has never ceased.

The success of sonar stimulated interest in the development of a number of useful piezoelectric devices. Quartz resonators were developed for stabilizing vacuum tube oscillators and were put to use by amateur radio enthusiasts. Material testing methods were developed based on the propagation of ultrasonic waves. These included the elastic and absorption properties of gases, liquids and solids. Ultrasonic flaw and leak detection became an important quality control tool. During World War II (WW II) the need for quartz crystals for communication had a priority second only to the development of the atomic bomb. By 1943 about 130 manufacturers were engaged in the production of crystal units. Also during WW II piezoelectric ceramics were developed by research groups working in the U. S., Japan, and the Soviet Union. The 1950's work on medical ultrasound using piezoelectric transducers has emerged today as a very important technology for imaging, diagnosis, therapeutic and surgical applications. Surface acoustic wave devices, piezoelectric plates with metallic interdigital patterns for activating ultrasonic waves, are built in the hundreds of millions each year for military, commercial, and consumer products.

The list of applications using the piezoelectric effect today is numberless. They affect every aspect of our life. I wonder what the Curie brothers would say about the use of their discovery of piezoelectricity if they could witness its innovative uses today?



**The Curie's Electrometer**

**Fred S. Hickernell**



## UFFC History

### Amor L. Lane, UFFC Founder Symposium Address



**Amor L. Lane**

On the Occasion of the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control (UFFC) Joint 50th Anniversary Conference, August 2004, Montréal, Canada, Amor L. Lane, the founder of UFFC, delighted us all with an address to the Symposium.

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#### Remarks by Amor L. Lane

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First of all, it is a distinct honor to have been invited to the 50th anniversary of the formation of the UFFC. It is a great pleasure to see all of you, to realize the broad base of participants, and to have gotten up to date on so many aspects concerning the expansion of the society since its birth in 1953. First, I'm deeply impressed to see the lengths to which you have gone to record the history of our Group, which was originally known as the PGUE (Professional Group on Ultrasonics Engineering). With this in mind, I would like to focus now on some aspects concerning the early days of the UFFC which you may find of interest.

Before coming to the conference, I looked up some of the documents in my own files. The first was the 2-page PGUE Newsletter #1, dated May 15, 1953, listing the names of the first Administrative Committee. I noted that there were only six people on this first committee.

The second document is a copy of an editorial which I was asked to write about the importance of Ultrasonics Engineering and why the IEEE (originally known as the IRE) should form a group centered on this subject. The IEEE Headquarters accorded us national publicity by publishing the editorial in the frontispiece section of the "Proceedings of the IRE" in August 1953. They even had a photo of a focusing ultrasonics transducer on the front cover of the journal.

The third document was the first issue of our Transactions, PGUE-1, June 1954. This contained the Group Chairman's first report to the Group members, entitled "History, Plans and Policies of the PGUE." The report mentioned a joint meeting between the IRE, PGUE and the Acoustical Society of America in October 1953 on



"Industrial Ultrasonics": two sessions including a round table discussion and audience Q and A. The collaboration between the IRE and the Acoustical Society was the first of its kind between these two societies.

The fourth document, the IRE Student Quarterly, February 1955, contained an article on "Ultrasonics" by Walter Cady. This was an article which the new PGUE had solicited from Dr. Cady to write about the "new science of Ultrasonics" for the students' readership. Highlights of this article included the following:

- The production of ultrasound, focusing on piezoelectric crystals and barium titanate
- What ultrasound can do
- Types of preparation recommended for those students who may wish to pursue a career in this field

From my own personal notes, the PGUE was officially approved unanimously by the IRE Professional Group Committee on March 25, 1953. I had the pleasure of being there during the discussions and debates. On the next day about 50 people showed up as an informal group at the annual IRE convention in New York City. They came to express their interest in forming this new Group. This included people from Bell Labs, Brush Development Company, General Electric, General Motors, Mayo Clinic, Raytheon, etc. Within a year, the PGUE had about 500 members including those from nine different foreign countries. I think this was pretty good, taking into account the fact that the IEEE had only about 30,000 members, as compared to about 360,000 today.

In life, one often does not have the benefit of seeing how an old dream over 50 years ago has turned true. I consider myself lucky to be able to witness the very successful forward movement of this group (UFFC). I'm sure that this achievement was mainly due to the continuing demonstration of need and a lot of hard work and wisdom in your leadership, thereby assuring that the group would respond so well to meet these needs.

**Amor L. lane**

## Amor Lane Founder and First Chairman of the IRE PGUE in 1953

At our 50th Anniversary celebration of the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society in Montreal, we were especially honored to have several of our past-presidents at the opening session on August 24, 2004. It is rare after 50 years to have the founder and first Chairman (1953-1955) in attendance at our 50th celebration and bring special greetings. After founding the society Amor moved on to other duties, and a distinguished career in industry and government. Since many of our society members are not aware of Amor Lane, the following information is by way of re-introducing him to our society. The information included here has been gleaned from other newsletters and available documents.

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### Brief Biography

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First some biographical information. Prior to 1956, Amor was Section Chief, Ultrasonic Transducers, Naval Ordnance Laboratory. It was during this time that he promoted an independent group on ultrasonics in the then Institute of Radio Engineers (IRE) and became its first chairman in 1953. From 1956 to 1971 he was Director of Corporate Planning for all Ocean Related Activities for the American Machine and Foundry Company. During this time Amor served as Chairman of the Executive Committee of the National Security Industrial Association (NSIA) Ocean Science and Technology Advisory Committee (OSTAC). The association was established at the request of the first Secretary of Defense, James Forrestal. He was also a consultant to presidents Nixon and Johnson, appointed to Commissions and Task Forces on Oceanography. From 1971 to March 1991 Amor was Director of two offices in NOAA, Department of Commerce: National Ocean Pollution Research Office and Ocean Mining Office. Also during this time period he was Executive Director of White House/Congressionally Appointed National Advisory Committee on Oceans and Atmosphere under President Reagan. After retiring, from 1991 to 1995 he served as a consultant to the Environmental Protection Agency (EPA) and a consortium of universities involved in ocean and coastal research. Amor holds a B.S. in Electrical Engineering (1949) and an M.S. in Electrical Engineering (1962) both from the University of Pennsylvania. He has received several government and industrial awards for his service. Since retiring full time he has led an active life traveling, volunteering, and serving as an officer and member of the Board of Directors of his condominium association of 180 units.

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### UFFC Beginnings

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Now some of his work in founding our society. The need for a professional organization to service a growing population of workers in the field of ultrasonics was promoted by a group of

engineers and scientists whose dedication can be compared to that of a 19th century missionary movement. Amor L. Lane, the first Chairman of the Professional Group on Ultrasonics (PGUE), is credited with getting the group started within the Institute of Radio Engineers (IRE). As early as October, 1952, Amor was in discussions with leaders of the Acoustical Society of America (ASA) regarding the formation of this proposed new IRE group. There were strong reservations expressed by two leaders of the ASA that having a new group would splinter those in the field of ultrasonics. Amor tried to argue persuasively that most of the new members would not be members of the ASA. This was later borne out when after the first year 80% of the PGUE members were not members of any other professional society. This certainly attested to the need for representation of ultrasonics in the professional community. By becoming an IRE group, there was a potential audience of 30,000 IRE members to promote ultrasonic capabilities through IRE publications. The two concerned ASA leaders later became members of the PGUE. The early issues of the Transactions of the PGUE, starting in 1954, contained engineering articles for the membership in subject areas that had previously been scattered or not published.

It was in March, 1953, during the IRE convention that those interested in ultrasonics affirmed the need to go ahead with group formation. A petition was sent to the IRE and on May 6, 1953, the first administrative committee (AdCom) meeting of the newly formed PGUE was held in Washington D. C. It was the 20th such technical group to be formed under the auspices of the IRE. Amor Lane of the Naval Ordnance Laboratory was selected as the first chairman and the following distinguished engineers and scientists served on the first administrative committee (AdCom); Walter G. Cady - California Institute of Technology, Morton D. Fagen - Bell Telephone Laboratories, William J. Fry - University of Illinois, Joseph Hunter - John Carroll University, Frank Massa - Massa Laboratories, Oskar Mattiat - Clevite-Brush Development Co., W. J. Mayo-Wells - John Hopkins University, and Paul L. Smith - Naval Research Laboratory. Also listed as AdCom members were Morris Kenny, Secretary and Julius Bernstein, Treasurer. Each AdCom member served as the chairman of a committee tasked with promoting various aspects of the PGUE.

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### Early References

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Finally some references to his reports on the UFFC Society. The first Chairman's report "History, Plans, and Policies of the PGUE," was published in the first issue of the Transactions in celebration of the first anniversary of the IRE PGUE. The second Chairman's report was carried in the November 1954 issue of the Transactions. Both are available on the digital archive of the UFFC Society. There are also interesting articles by Amor as Chairman of the PGUE which are in the newsletters covering the period 1953 to 1955 also in the digital archive. I recommend them to those interested in our early history.

We are deeply indebted to Amor Lane for his foresight in starting what is now our IEEE UFFC Society.

**Fred S. Hickernell**

## Editor's Comments

### Student Column



New to this issue is the Student Column. Emanuel Gottlieb and Oliver Keitmann-Curdes, the student representatives to the UFFC Administrative Committee (AdCom), will be writing a regular column for the Newsletter, as well as, maintaining a student web page at [www.ieee-uffc.org](http://www.ieee-uffc.org). Emanuel recently set up a UFFC Student Chapter at the University of Southern California. If you would like to do the same at your university he would be happy to

help you get started. If you would like to give them a hand or offer suggestions or words of encouragement please do so at: [o.keitmann@ieee.org](mailto:o.keitmann@ieee.org) and [egottlie@usc.edu](mailto:egottlie@usc.edu).

### 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](mailto:loleksak@imsysinc.com).

### 50th Anniversary

This issue is replete with remembrances, highlights, summaries, remarks, and photos of our 50th Anniversary celebration at the 2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control 50th Anniversary Joint Conference in Montréal, Canada, 23 - 27 August 2004. Many thanks are due to the huge number of people who made the conference and celebration possible, not the least of which were the conference attendees. An extra special thanks goes to Mike Garvey, the conference General Chair, who has an extraordinary gift for keeping track of a giga-

details, many individuals, and his sanity. Another special thanks also goes to Fred Hickernell for gathering the Past Presidents of the Society and keeping us all focused on history as we move forward. His remembrances and the historical note on the 125th anniversary of the discovery of piezoelectricity are valued additions to this newsletter.

### 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 reviewers. Please see the Publications column for information on how to sign up to be a reviewer. 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, Tom English, Valeriy Proklov, Bernie Tittmann, Walter Arnold, Nava Setter, Steve Jefferts, I. P. I. Photography, John Reagan, Ken-ya Hashimoto, Helmut Ermert, Minoru K. Kurosawa, Susan Trolier-McKinstry, Koray Akdogan, Saku Lehtonen, Victor Plessky, Bob Potter, Jack Kuster, Bob Newnham, and Jan Brown. 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 Fall newsletter.

**Jan Brown**  
UFFC-S Newsletter Editor  
[Jan.brown@ieee.org](mailto:Jan.brown@ieee.org)

## 2005 Greetings to UFFC

UFFC is represented on the IEEE Board of Directors by the Division IX, Signals and Applications, Director, John Reagan. John also sits with UFFC President, Gerry Blessing, on the IEEE Technical Activities Board (TAB) representing our Society's interests with the 40 or so other society Presidents and their Division Directors.

### Message

As I begin my second and final year as IEEE Division IX Director and Board of Directors (BoD) member, I want to take the opportunity to pass on some thoughts and observations about 2004 and what we can look forward to in 2005. Before





**John Reagan, Director  
Division IX**

launching into this, I want to first say it has been a pleasure working with UFFC President Gerry Blessing and the other Division IX Presidents this past year, who have all done an excellent job in representing the interests of their respective societies while working for the common good of IEEE. I also want to note that I will be working with our new Division IX Director-Elect, Rich Cox, to maintain and enhance communications with Division

Societies. Either Rich or I, or both of us, will be attempting to visit at least one AdCom/BoG (Board of Governors) of each society, schedules permitting.

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## Finances

Finances remain an important concern for IEEE, although we appear to be well past the great crisis we faced three to four years ago. Measures have been put in place to insure that we don't overly count on investment returns on reserves to finance IEEE service and business enterprises (here I should note that your previous Division IX Director, John Vig, is to be credited for great leadership in helping establish these new reserve spending and earning measures). Of course expenses for business/service enterprises that IEEE is committed to must be met, and, in the absence of overly optimistic earnings/further drawing down reserves, this has necessitated implementing the "infrastructure charge" which I know has been a somewhat contentious issue with societies. I fully support getting the true cost of doing business out in the open and detailing/allocating costs to the greatest extent possible; how else can you make informed decisions about spending commitments? Algorithms defining and allocating both direct and indirect infrastructure costs to societies (which TAB has endorsed) are transitioning to their final form (as implemented for 2005 budgeting), and there have been some bumps along the way in this evolving process. After many society presidents expressed concerns over how to meet present/ future budgets, TAB VP Ralph Wyndrum issued his "Tipping Point" communication stressing the need to reduce the financial burden being shouldered by TAB. Measures are

being implemented/considered which should make infrastructure costs more bearable as we go forward.

As a BoD member, I remain committed to supporting the strategic goals of IEEE, recognizing that financial obligations are required to achieve these goals, but also recognizing that resources are limited, requiring prioritization and deferring/rejection of the many "good works" spending propositions that come to the Board - we can't afford everything, so choices must be made. An example of this was the "outreach" proposal involving a Disney project which was debated in various forms throughout last year. Contrary to what some in TAB may have perceived, the BoD did listen to what TAB and RAB gave as inputs, as well as giving fair hearing to other inputs and advocacy positions, and, in the end, did not commit to the spending originally proposed, or any amount - the outreach initiative question is still open as to exactly what may be best thing to do and what is a cost IEEE can afford. This to me was a good example of thoughtful BoD deliberation and action, and there were many other such examples through the course of 2004.

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## 2005 Outlook

For 2005 we can look forward to continuing initiatives addressing the three areas of strategic concern that the BoD focused on last year - Membership, Products & Publications, and Meetings & Services. If IEEE is to sustain, let alone advance, its professional leadership position, continuing to best serve its members and the profession, changes are needed in all three of these areas to keep pace with the rapidly evolving technological world in which we now live and work. We know that membership must be opened on new technological fronts (e.g., bio, geo & nano -sciences, etc), that the open access publication threat must be properly understood and addressed, that conferences must evolve to increase IEEE presence in new technologies and to better serve the interests of members/non-member customers. And all of this must be done in a cost effective manner that produces the revenues needed to continue IEEE's many valued activities. So we have many issues to address in 2005. I look forward to working with the Division IX Societies, TAB and the BoD to address these challenges as we continue our quest of making IEEE the best it can be.

**John Reagan  
Division IX Director**

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## Future UFFC Symposia

### IEEE International Ultrasonics Symposia

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#### 2005 IEEE Ultrasonics Symposium

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

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#### 2006 IEEE Ultrasonics Symposium

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

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### **2007 IEEE Ultrasonics Symposium**

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

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### **2008 IEEE Ultrasonics Symposium**

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General Chair: Jian-yu Lu  
Jilu@eng.utoledo.edu  
Beijing, China  
October 2008

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### **2009 IEEE Ultrasonics Symposium**

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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](mailto:c.c.ruppel@ieee.org).

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## **IEEE Frequency Control Symposia**

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### **2005 IEEE Frequency Control Symposium**

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General Chair: Michael Driscoll  
[Michael.driscoll@ngc.com](mailto:Michael.driscoll@ngc.com)  
Vancouver, Canada  
28 – 31 August 2005

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### **2006 IEEE Frequency Control Symposium**

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General Chair: Michael Driscoll  
[Michael.driscoll@ngc.com](mailto:Michael.driscoll@ngc.com)  
Miami, Florida USA  
4 - 7 June 2006

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### **2007 IEEE Frequency Control Symposium**

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2007 will be the joint conference with EFTF and is to be held in Europe.

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## **IEEE International Symposia on Applications of Ferroelectrics**

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### **2006 IEEE ISAF**

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General Chair: Jon-Paul Maria  
[Jpmaria@ncsu.edu](mailto:Jpmaria@ncsu.edu)  
Sunset Beach, North Carolina, USA  
30 July – 2 August 2006

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### **2008 IEEE ISAF**

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Co-Chairs: Paul Clem and Bruce Tuttle  
[pgclem@sandia.gov](mailto:pgclem@sandia.gov)  
Sante Fe, New Mexico, USA  
March 2008 (Proposed)


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