



**IEEE
ULTRASONICS,
FERROELECTRICS,
AND
FREQUENCY CONTROL
SOCIETY
NEWSLETTER**



Number 25: April 1998

Editor: Fred S. Hickernell

ISSN 1060-0264



John R. Vig



Bernhard R. Tittmann

**52nd Annual Symposium on
Frequency Control**

**May 27-29, 1998
Pasadena, California**

**XI International Symposium on
Applications of Ferroelectrics**

**August 24-27, 1998
Montreux, Switzerland**

PRESIDENT'S MESSAGE

I started my two-year term as President on January 1. I am fortunate to have become president of a society that is doing well. The UFFC Society serves its members, and the world, primarily through its publications and meetings. Our symposia have been highly successful, as have our Transactions, Newsletter, and website. Our successes are due to the excellent leadership we have enjoyed at all levels - our past presidents, committee and symposium chairs, editors, AdCom members, etc. (all of whom are volunteers). We are also doing well financially.

I have no grandiose plans for changes (as the cliché goes "If it ain't broke, don't fix it"). I do plan to continue to bring new people into leadership positions, as my predecessor, Don Malocha, and I have already started to do (see elsewhere in this Newsletter for the officers of the Society). I will also continue to place emphasis on the electronic distribution of information. Our Transactions recently became

available on the web. Our website continues to evolve - check it out, especially if you have not yet seen it. Remembering how to reach it is easy: <http://www.ieee.org/uffc>.

We have made good progress towards providing on the website everything anyone would wish to know about the UFFC-Soc. Our fields of interest, constitution, bylaws, policies and procedures, Transactions, awards information, review, tutorial and historical information, etc. can already be found there. We need to do more, especially in the areas of tutorial and review papers, and especially on the ultrasonics and ferroelectrics pages.

Just about all the work in the UFFC-Soc is done by volunteers, so, please feel free to volunteer. I welcome your comments and suggestions. The best way to reach me is by E-mail: J.Vig@ieee.org.

John R. Vig
President, UFFC-S

IEEE UFFC DISTINGUISHED LECTURER

"Turning up the Heat on NDE"

B. R. Tittmann

The Pennsylvania State University, University Park, PA 16802

Abstract: Ultrasonics and acoustic emission are techniques currently being considered by many manufacturers for monitoring materials processes. Before the potential of these techniques can be fully realized, the interaction between ultrasonic waves and materials must be understood and described quantitatively. Many processes take place under conditions other than ambient, and chief among these is high temperature. Exposure to high temperatures causes most materials, and especially composites, to soften. Their viscosity decreases until their behavior approximates that of a viscous fluid. Examples of high temperature industrial processes are resin transfer molding, molten metal infiltration, rheocasting of alloys of composite metals and laser drilling/shaping.

The interaction of waves with viscous fluids is an additional complication adding to an already complicated problem of operating a sensor at high temperature for extended periods of time. This report provides an insight into wave-material interactions, sensor techniques, and the approaches to process monitoring. The presentation is structured around this theme

by reviewing a model of the interaction between the acoustic field and viscous materials. Next a survey of sensor technologies is presented for in-situ high temperature monitoring. Then a review is presented of several selected processes, for which monitoring approaches have been developed and valuable sensor data have been obtained. The Conclusion summarizes the results and points to further needs and opportunities in modeling, sensor development and the evaluation of process sensor data.

Bio-sketch: Bernhard Tittmann is PennState University's Schell Professor of Engineering Science and Mechanics, since 1989. He spent his childhood in Vienna, Austria, became a US Citizen in 1956 and obtained his B.S., Physics, at the George Washington University, Washington D.C. He earned his M.S. and Ph.D. in Physics, at the University of California, Los Angeles in 1965, in part as a Howard Hughes Fellow. Dr. Tittmann has a broad background in Physical Acoustics gained during his tenure of almost a quarter-century at the Science Center of North-American/Rockwell International. He is probably best known for his work in geophysical ultrasonics, NDE and acoustic sensors. He investigated and explained the dramatic reduction of anelastic attenuation of lunar return samples when subjected to lunar environment. His main interest is in material characterization, using surface acoustic wave dispersion, internal friction, ultrasonic attenuation, and diffraction to characterize polymers, ceramics and metal alloys.

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society Newsletter is published two times per year by The Institute of Electrical and Electronics Engineers, Inc., 445 Hoes Lane, Piscataway, NJ 08855.
© 1998 IEEE. Information contained in this newsletter may be copied without permission provided that copies are not made or distributed for direct commercial advantage, and the title of the publication and its date appear on each copy. Printed in the U.S.A.

He is currently engaged in studies of coatings, thin films, and multi-layered media with the aid of acoustic microscopy and the use of acoustic sensors for in-situ monitoring of materials processes. He has been an active member of the IEEE-UFFC since about 1970, and pioneered the first overseas Ultrasonics Symposia as Technical Co-Chairman in Cannes, France and

as General Co-Chairman in Sendai, Japan. He has about 250 publications and is a Fellow of the Institute of Electrical and Electronic Engineers, a member of the Acoustical Society of America, the Materials Research Society, the American Ceramics Society and a Peer Review member of the National Research Council and the National Science Foundation.

Schedule the UFFC-S Distinguished Lecturer Now!

The Administrative Committee of the Ultrasonics Ferroelectrics and Frequency Control Society has announced Dr. Bernhard R. Tittmann as the UFFC-S Distinguished Lecturer for 1998-1999. Dr. Tittmann will be available to speak before UFFC-S chapters, graduate and undergraduate student university seminars, IEEE groups, and other appropriate scientific and engineering associations. His topic is:

Turning up the Heat on NDE

The establishing of the Distinguished Lecturer program and providing a stipend to cover travel expenses by the UFFC-S is indication of the interest of the AdCom in supporting the activities of groups interested in Ultrasonics, Ferroelectrics, and Frequency Control. In addition to present UFFC-S Chapters, groups which are considering chapter formation, university groups, and other IEEE groups which have an interest are encouraged to schedule the dis-

tinguished lecturer at as early a date as practical so that he can organize his talks and schedules to best accommodate the groups' needs. Please feel free to copy or extract from the abstract and biographical information given.

Dr. Tittmann may be reached by mail at:

The Pennsylvania State University
Dept. of Engineering and Mechanics
210 Hallowell Building
University Park, PA 16802

or by the following means:

Telephone: 814 865-7827
Fax: 814 863-7967
E-mail: b.tittmann@ieee.org

Please make arrangements with Dr. Tittmann early so he will be able to plan his schedule well in advance and conserve on transportation costs and time.

1998 IEEE International Frequency Control Symposium

The 1998 IEEE International Frequency Control Symposium and Tutorials will be held from May 26 to May 29, 1998 at the Ritz-Carlton Hotel in Pasadena, California, USA. The tutorials will be on Tuesday, May 26, with the symposium taking place on Wednesday through Friday. At the Technical Program Committee meeting in February, 213 abstracts were considered and 170 papers were accepted for presentation. Special sessions are planned for the topics of cold atom frequency standards (on the ground and in space), high accuracy frequency and time transfer, sensors, and plastic packaging. Gary Johnson (Technical Program Chair), the Group Vice Chairs, the Technical Program Committee members, and all of the other Organizing Committee members are all working very hard to make this years symposium a great success. A guest program is planned and there will be several social events for all attendees.

Pasadena

Pasadena, the home of the Rose Parade, is also noted for attractions such as the Huntington Library, Norton Simon and

Pacific Asia Museums, Tournament House and Wrigley Gardens, and the Rose Bowl. The city is home to the California Institute of Technology and the Jet Propulsion Laboratory, two of the preeminent scientific institutions in the world. Pasadena's strong sense of community comes in large part from its beautiful homes, stately buildings, and tree-lined streets. While Pasadena is home to a variety of architectural styles, it is most noted for its fine collection of Craftsman homes, its Beaux Arts inspired Civic Center, and numerous California Mediterranean style private and public buildings. The charm of turn of the century Pasadena is preserved in a ten square block Old Pasadena which offers premier shopping, dining and entertainment. There's always a good time in Old Pasadena with over 70 restaurants offering a large variety of cuisine's ranging from fine foods to a fanciful variety of international fast fare. Daytime or night time there's always something to treat visitors with shopping, dancing, movies or going for a stroll. Pasadena is located in Los Angeles County and is within easy drive of all Southern California's major attractions such as Disney Land, Universal Studios and Mount Wilson Observatory.

The Ritz-Carlton Hotel

This years symposium will be held at the famed Ritz-Carlton Hotel, 1401 South Oak Knoll Ave., Pasadena, California, 91106, USA (Phone 626-568-3900, FAX 626-792-6613). The hotel, situated on 23 acres in the foothills of the San Gab-

riel Mountains, is located just 15 minutes from downtown Los Angeles.

Additional information is available at the web site <http://www.ieee.org/uffc/fc>

Tom Parker
General Chair

1998 IEEE FREQUENCY CONTROL SYMPOSIUM INVITED SPEAKER LIST

Richard White

ACOUSTIC WAVE SENSORS

Department of Electrical Engineering and
Computer Sciences

Berkeley Sensor and Actuator Center,
University of California at Berkeley
Berkeley, CA, USA

**D. Damjanovic, W. Wolny, H. Engan, M. Lethiecq,
and L. Pardo**

PROPERTIES AND APPLICATIONS OF MODIFIED LEAD TITANATE CERAMICS

Swiss Federal Institute of Technology
Lausanne, Switzerland

W.J. Klepczynski

THE ROLE OF TIME AND FREQUENCY IN THE WIDE AREA AUGMENTATION SYSTEM (WAAS)

Innovative Solutions International, Inc.
Vienna, VA, USA

Robert Kinsman

A HISTORY OF CRYSTAL FILTERS

Naperville, IL, USA

**P. Stockwell, C. McNeilage, J.H. Searls, and
E.N. Ivanov**

REVIEW OF FEEDBACK AND FEEDFORWARD NOISE REDUCTION TECHNIQUES

Poseidon Scientific Instruments Pty Ltd
Fremantle, WA, Australia

Jim Bergquist, D.J. Berkeland, J.D. Miller,

B.C. Young, W.M. Itano, and D.J. Wineland

HIGH-ACCURACY FREQUENCY STANDARDS USING LASER-COOLED HG+ IONS

NIST, Time and Frequency Div.
Boulder, CO, USA

John Dick and Rabi Wang

CRYO-COOLED SAPPHIRE OSCILLATOR WITH ULTRA-HIGH STABILITY

Jet Propulsion Lab., MS 298-100
Pasadena, CA, USA

G. Scholl, F. Schmidt, T. Ostertag, L. Reindl,

O. Sczesny, C. Seisenberger, and U. Wolff

WIRELESS PASSIVE SAW SENSOR SYSTEMS FOR INDUSTRIAL AND DOMESTIC APPLICATIONS

Siemens AG,
Munich, Germany

John Wall and Philip Strudwick

PLASTIC ENCAPSULATED SEMICONDUCTORS FOR SPACE APPLICATION- THE FINAL FRONTIER

Space Components and Standardization, Space Dept.
Defense Evaluation and Research Agency
Farnborough, Hampshire, UK

David Morgan

HISTORY OF SAW DEVICES

Impulse Consulting
Northampton, England

Websites

We now have the following major websites:

www.ieee.org/uffc/main

www.ieee.org/uffc/us ultrasonics

www.ieee.org/uffc/fe ferroelectrics

www.ieee.org/uffc/fc frequency control

www.ieee.org/uffc/sa sensors and actuators

www.ieee.org/uffc/tr transactions

Check them out for the latest information.

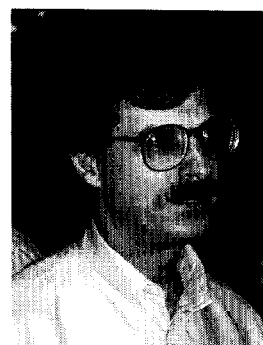
1998 International Frequency Control Symposium Committee



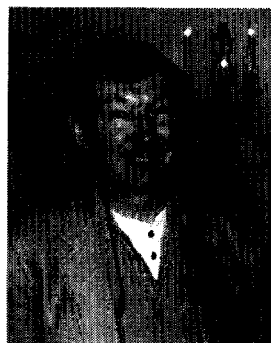
Thomas E. Parker



Gary R. Johnson



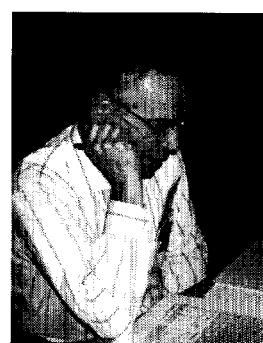
Raymond L. Filler



Roger W. Ward



Lute Malecki



John R. Vig

Thomas E. Parker –General Chair

Thomas E. Parker (M'79, SM'86, F'94) was born in Natrona Heights, Pennsylvania, USA, on September 17, 1945. He received his B.S. in Physics from Allegheny College in 1967. He received his M.S. in 1969 and his Ph.D. in 1973, both in Physics, from Purdue University.

In August 1973, Dr. Parker joined the Professional Staff of the Raytheon Research Division, Lexington Massachusetts, USA. Initially, his work was primarily related to the development of improved temperature stable surface acoustic wave materials. From 1977, Dr. Parker was responsible for the development of high performance surface acoustic wave (SAW) oscillator technology at the Research Division, including the "All Quartz Package" for SAW devices. His primary interest was frequency stability, with an emphasis on $1/f$ noise, vibration sensitivity, and long-term frequency stability. In June of 1994, Dr. Parker joined the Time and Frequency Division of the National Institute of Standards and Technology in Boulder, Colorado, USA. He is the group leader for the Time Scale and Coordination Group and his interests include improved time scales and time transfer technology.

Dr. Parker is a Fellow of the IEEE, and a member of Sigma Xi and Sigma Pi Sigma. He has served as an elected member of the Administrative Committee of the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (1988-1990), and served as Chair of the Frequency Control Standing Committee

of the UFFC-S. He has served on the Technical Program Committees of both the Ultrasonics and the Frequency Control Symposia, and was the Technical Program Chair for the Frequency Control Symposium in 1990 and 1991. Dr. Parker is currently the Associate Editor; for Frequency Control-Acoustics of the UFFC-S Transactions.

Dr. Parker received the 1988 Outstanding Transactions Paper Award from the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society as a co-author of two papers which appeared in the May 1988 and November 1988 issues of the Transactions. Dr. Parker was the recipient of a Thomas L. Phillips "Excellence in Technology Award" from Raytheon in 1992. In 1994, he received the W. G. Cady Award presented by the IEEE International Frequency Control Symposium.

Gary R. Johnson –Technical Program Chair

Gary R. Johnson was born in Gary, IN in 1949. He received the BSEE degree from Purdue University in 1971, specializing in materials. He interrupted his professional career in 1974, earning an MS degree in 1975 also from Purdue University.

Mr. Johnson began his career with CTS Corporation in Elkhart, IN, a manufacturer of electronic, including quartz, components. In 1975 he became product manager for crystal filters, leading a team responsible for engineering and manufacturing. In 1979 he joined Cleveland, OH based Sawyer Re-

search Products, Inc., the largest producer of cultured quartz, as Sales Manager. His first efforts were in international marketing. This required more than fifty visits to Asia and twenty to Europe, especially Japan, Korea, Republic of China, People's Republic of China, Germany, France and Russia. This effort was the beginning of a continuing interest in international relations.

He was named Director of Marketing and Technology in 1981 and in 1983 worked to organize the purchase of Sawyer Research from Brush Wellman, Inc. He was elected Vice President in 1983, becoming President and Chief Operating Officer in 1990 and Chief Executive Officer in 1993.

Mr. Johnson's research contributions are in the areas of solid phase inclusions and dislocations in cultured quartz. Current technical research interests to improve the capability of quartz material include the application of statistically designed experiment and advanced computer control techniques to quartz growth.

He and his wife Brenda Ashley live in Cleveland Heights. They enjoy travel, cooking and music. Johnson plays golf and squash as time permits. Though less frequently now, he enjoys mountaineering, having made several winter climbs in Rocky Mountain National Park and warmer weather climbs around the Midwest.

Raymond L. Filler –Finance Chair

Ray Filler was born in Brooklyn, NY in 1948. He received the B.S. degree in physics from Rensselaer Polytechnic Institute, Troy, NY in 1969 and the Ph.D. degree from Rutgers, New Brunswick, NJ in 1975.

He is currently the leader of the Crystal Oscillator and Resonator Team of the Frequency Control and Timing Branch of the U.S. Army Electronics Technology and Devices Laboratory (LABCOM), Fort Monmouth, NJ. His research interests include techniques to improve the long and short term stability, and shock and acceleration sensitivity of quartz crystal oscillators. His professional credits include five patents and over 30 publications.

Dr. Filler served as Publicity Chairman of the Annual Symposium on Frequency Control from 1986-1990 and as General Chairman in 1991. He is a Senior member of the IEEE and a member of APS.

He is married and spends virtually all of his non-working hours caring for, training, and competing with his and his wife's five horses. The rest of the family consists of 3 dogs, 9 cats, 1 rabbit, and Gus T. Goat.

Roger W. Ward –Awards Chair

Roger W. Ward graduated from McMurry College in Abilene, TX, cum laude in 1967 with a B. A. degree in physics under Dr. Virgil E. Bottom. He earned his M.S. degree in physics from Purdue University in 1969.

From 1969 until 1975 he worked in the quartz crystal R&D group at Hewlett Packard in Palo Alto, CA, where his projects included miniature ovenized precision resonators, laboratory pressure transducers utilizing a quartz sensor, and quartz tuning fork resonators, in addition to designing production x-ray

orientation equipment. From 1975 to 1979 he worked on tuning fork crystals for wrist watches at Litronix, Cupertino, CA, where he was Product Manager, and at Statek, Orange, CA. From 1979 to 1981 Mr. Ward was vice-president of Colorado Crystal Corp. in Loveland, CO where he designed general purpose quartz crystals and precision crystals, including introducing the SC-cut to CCC's product line.

Mr. Ward was Engineering Manager at Motorola, Ft. Lauderdale, FL, from 1981 to 1983 for the monolithic crystal filter program for Motorola's next generation pocket pagers.

He joined the group of quartz companies, Quartex-Quartztronics-Quartzdyne, in 1983 to help develop quartz sensors for commercial application, including tuning fork sensors for measuring force, temperature, and pressure, and thickness-shear mode quartz sensors for measuring pressure, especially for down-hole oil and gas wells. He is currently President of Quartzdyne, Inc. Quartzdyne manufactures a line of high performance pressure transducers with customers around the world.

Mr. Ward has 27 publications and 15 U. S. patents, all related to quartz devices. In 1994 he received the C. B. Sawyer Award at the IEEE Frequency Control Symposium and in 1996 he received the "Man of the Year Award" at the EIA Piezoelectric Devices Conference, both for his contributions to the industry. For the past three years he has been the Awards Chair for the IEEE Frequency Control Symposium.

Lute Maleki –Tutorial and Local Arrangements Chair

Lute Maleki is the supervisor of the Time and Frequency Systems Research Group, Communications Systems Research Section, at JPL. Dr. Maleki has been involved in directing and conducting research in a number of areas related to the generation, distribution, and measurement of ultra-stable reference frequencies. The areas of research in Dr. Maleki's group include the development of atomic frequency standards; cryogenic cavity stabilized masers, and other cryogenic oscillators; photonics frequency generation and distribution systems; and investigations of the noise and stability properties of rf and optical frequency sources.

Dr. Maleki's current research include ion confinement and the development of trapped ion frequency sources; development of laser cooled atom traps; the study of various aspects of the physics of frequency standards; laser spectroscopy of free atoms and ions, and ions confined in rf traps; the study of noise properties and stabilization of semiconductor lasers and laser arrays; tests of special relativity using clocks and optical fiber distribution systems.

Dr. Maleki received his B.S. in physics from the University of Alabama in 1969, and his Ph.D. in experimental atomic physics in 1975 from the University of New Orleans (Louisiana State Universities). He is an Adjunct faculty at the Center for Laser Studies, University of Southern California. He is also the Associate Editor in the area of Frequency Control-Atomic and Molecular, of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control.

In his spare time, Lute Maleki studies French and Saxo-

phone, and teaches a course entitled "Physics and Art" at Pasadena Art Center College of Design.

John R. Vig –Editorial Chair

John R. Vig was born in Hungary in 1942. He immigrated to the United States in 1957, received the B.S. degree in physics from the City College of New York in 1964, and the M.S. and Ph.D. degrees from Rutgers - The State University, New Brunswick, NJ in 1966 and 1969, respectively. Since 1969 he has been employed as a research scientist, working primarily on the experimental aspects of quartz crystal devices. As leader of the frequency control activity in the US Army Research Laboratory, Fort Monmouth, NJ, he currently leads a research program aimed at the development of high-stability frequency control devices, clocks, and sensors for future military systems. He has published more than 100 papers and book chapters, and he has been awarded 45 patents.

In 1988, John was elected a Fellow of the IEEE "for contributions to the technology of quartz crystals for precision frequency control and timing." He received the 1990 IEEE Cady Award "for outstanding contributions to the development of improved quartz crystals and processing

techniques . . ." He was UFFC-Society's Distinguished Lecturer for 1992-93, served as the General Chairman of what is now the IEEE Frequency Control Symposium from 1982 to 1988, and again in 1995-96, has been a member of that meeting's Technical Program Committee since 1972, and has been on the Technical Program Committee of the IEEE Ultrasonics Symposium since 1986. He was elected to the IEEE UFFC-Society Administrative Committee for the 1986-89, and 1995-98 terms, and is currently the President-elect. He is chairman of the IEEE Standards Coordinating Committee 27 on Time and Frequency, and is an IEEE representative on the Hoover Medal Board of Award.

John has been an environmentalist most of his life. He has served on his town's Environmental Commission for the past 25 years, is a life member of the Nature Conservancy, and is a member of several other environmental organizations. His wife is an artist specializing in printmaking. John's favorite pastimes are ballroom dancing, classical music, and relaxing in his backyard, where he and his wife have gradually been replacing the grass (which John hates to tend) with numerous varieties of hollies, day-lilies and other ornamental plants.

Members of the Technical Program Committee for the 1998 IEEE Frequency Control



Steve Cantor



Jean-Simon Boulanger



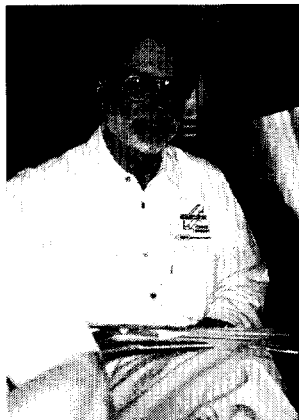
David Briggs



Ewald Benes



Len Cutler



Eerol EerNisse



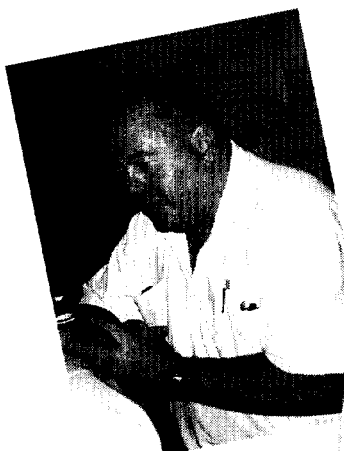
William Hanson



Bernardo Jaduszliwer



Steve Jefferts



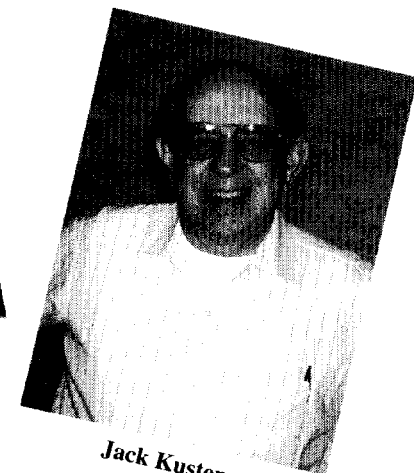
Jack Kay



Alvin Kong



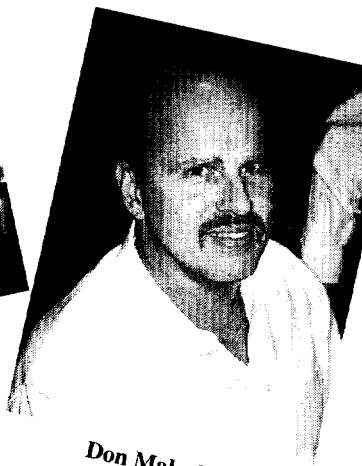
John Kossinski



Jack Kusters



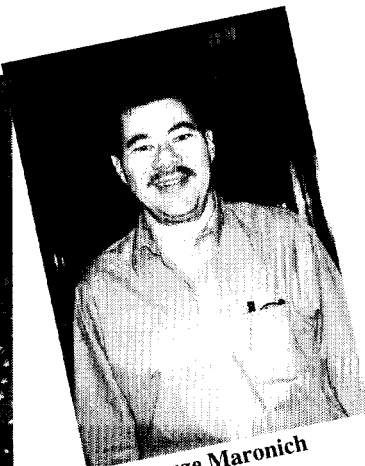
Ryszard Lec



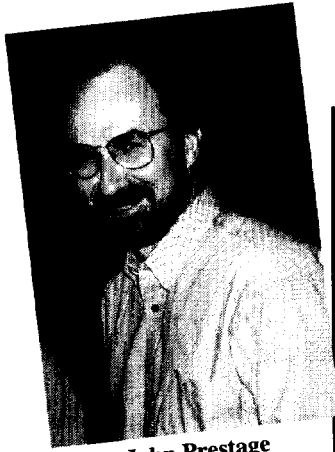
Don Malocha



Steve Martin



George Maronich



John Prestage



Victor Reinhardt



Ulrich Rohde



Clemens Ruppel



Jesse Searls



Sam Stein



Donald Sullivan



Robert Tjoelker



Werner Weidemann



Wendy Ortega
NIST Staff
Keeping Us All Together

ISAF XI - The 11th International Symposium on Applications of Ferroelectrics

ECAPD IV - The 4th European Conference on Applications of Polar Dielectrics

Electroceramics VI - the 6th International Conference on Electroceramics

August 24-27 1998, Montreux, Switzerland

For the first time these three international conferences on electroceramics and thin films, polar and ferroelectric materials and their applications are taking place simultaneously at one location.

The ISAF and the ECAPD conferences cover topics such as: active control, adaptive structures and smart systems, bio-medical applications and ultrasonic imaging, electro-optics, displays and other optical applications, microsensors and microactuators, microsystems, integrated ferroelectrics, ferroelectric thin films for memory applications, high permittivity dielectrics for microwave applications, materials for energy storage and applications, pyroelectrics and thermal imaging, composite materials, high coupling coefficient materials, bulk piezoelectric and electrostrictive materials, liquid crystals, ferroelectric and piezoelectric thin film devices, relaxors and disordered systems.

The ELECTROCERAMICS conference covers topics such as: defects, diffusion, transport phenomena, electric conductivity, devices and applications, electronic packaging, grain boundary controlled processes and devices, ionic and electronic conductors, magnetic materials, devices and applications, superconductors, dielectric materials, ferroelectric, piezoelectric and pyroelectric bulk and thin films, processing and applications, optical ceramics, photonics, multilayer structures, novel manufacturing methods, processing, sintering and microstructure development, size effects and nanomaterials, thin film processing, sol-gel, sputtering, MOCVD.

The following speakers already confirmed their participation in the conferences:

- T.G. Gururaja, HP (USA) Current Status and Future Trends in Ultrasonic Transducers for Medical Imaging Applications
- P. Jänker, Daimler Benz (Germany) Mechatronic Using Piezoelectric Actuators
- T. Shrout, Penn. State Univ. (USA) Relaxor-PT Single Crystal Piezoelectrics for High Performance Actuators & Transducers
- P. Murali, EPFL (Switzerland) Materials Issues in Ferroelectric Thin Films for MEMS
- S. B. Lang, Beer-Sheva Univ. (Israel) Piezo-, Pyro- and Ferroelectricity in Biomaterials: A Review of Recent Results and Some Speculation on their Biological Significance
- N. A. Pertsev, Joffe Inst. (Russia) Equilibrium States and Phase Transitions in Epitaxial Ferroelectric Thin Films
- R. Bohmer, J. Gutenberg Univ. (Germany), Dipolar Glasses
- P. Davies, Univ. of Pennsylvania (USA), Domain Growth in PMN Type Relaxors and Microwave Dielectrics
- Ch. S. Hwang, Samsung (South Korea), Dielectric and Charge Injection Properties of BST Thin Films for Capacitor Application in DRAMS
- R. Ramesh, Univ. Maryland (USA), Growth and Properties of Magnetoresistive Oxide Films: Progress Towards Low Field Magnetoelectronics Optoelectronics and non Linear Optic
- P. Günter, ETHZ (Switzerland) Novel Highly non Linear Optic Organic and Polymer Crystals
- M. Graetzel, EPFL (Switzerland) Optoelectronic Properties of Mesoporous Oxide Films: The Nanocrystalline Injection Solar Cell
- J. C. Dubois, Thomson CSF & Univ. Paris VI (France) Side Chain Polar Polymers - Properties and Applications
- V. Fridkin, Russian Academy (Russia) Ultra Thin Oriented PVDF Films
- A. Kingon, Univ. of N. Carolina (USA) Ferroelectric Memories - Problems and Solutions
- C. Mazuré, Siemens (Germany) Ferroelectric Memory Development in Siemens
- Y. Miyasaka, NEC (Japan) Ferroelectric Capacitor Technology for non-Volatile FeRAMS
- J. F. Scott, Univ. Sydney (Australia) Microstructure and Electronic Properties of SBT/Pt: XPS, EXAFS, RBS, and Interface Models
- R. Waser, RWTH (Germany) Reliability of FRAM Devices - What can we learn from Bulk and Thin Film Ferroelectrics
- J. Maier, Max-Planck Inst., Stuttgart (Germany) Mass and Charge Transport Involving Interfaces
- R.-L. Flükiger, Univ. Geneva (Switzerland) Process Leading to Superconducting Ceramic/Metal Composite Tapes for Industrial Use
- W. Drenckhaan, Siemens (Germany) SOFC in Dispersed Power Generation
- Y.-M. Chiang, MIT (USA) Interfacial Chemistry and Intergranular Films in Electroceramics
- M. Kosec, J. Stefan Inst. (Slovenia) Highly Performant Ferroelectric Thick Films
- D. Payne, Univ. Illinois (USA) Microcontact Patterning of Integrated Ferroelectrics
- M. Ruehle, Max-Planck Inst., Stuttgart (Germany) Atomic

- Structure and Composition of Interfaces in Ceramics
R. Whatmore, Univ. Cranfield (UK) Ferroelectrics and Nanotechnology
S.-J. L. Kang, KAIST (South Korea) Interface Control and Dielectric Property Improvement in SrTiO₃ Based Materials
M. Yoshimura, TIT (Japan) In Situ Fabrication of SrTiO₃-BaTiO₃ Layered Thin Films by Hydrothermal-Electrochemical Technique
Y. Sakabe, Murata (Japan) Ultra-Thin Dielectric Layer Multilayer Ceramic Capacitors

A week prior to the conference will be a 4 day course, Monday 17 August to Thursday 20 August, about the applications of ferroelectric thin films in microsystems. An overview of the problems related to the manufacturing of ferroelectric micro-devices will be presented. "Hands on" experience in the knowledge of manufacturing and testing of these devices will be offered. The target audience includes: materials and process engineers, physicists, chemists, electrical engineers and engineers of micro-technology. The course will be led by P. Murali, and lectures will be given by specialists in the different fields.

A tutorial program covering the basics of ferroelectric and piezoelectric ceramics and thin films will be held from Friday 21 August to Sunday 23 August, 1998 (total 18 hours) at EPFL (Lausanne). The program is intended for engineers and scientists, who are either new to the field or in the need of a refresher course in order to fully benefit from the scientific contributions during the Conference.

The convenient possibility to attend the three conference within one trip and one week assures a wide participation. There fore we hope to fulfill our aim that the Joint Conference will serve as a true international forum for scientists, researchers, engineers and manufacturers to exchange ideas and learn from each other.

FOR FURTHER INFORMATION, PLEASE CONTACT THE CONFERENCE SECRETARIAT:

ECAPD IV - ISAF XI - Electroceramics VI

LC-DMX-EPFL

CH-1015 LAUSANNE

E-Mail: electro@lc.dmx.epfl.ch

Tel.: +41-21-693.2975/5889 Fax: +41-21-693.5810

Information about the conference is also available at:

<http://dmxwww.epfl.ch/lc/electro/home.html>

Nava Setter- General Chair of ISAF



Nava Setter

Nava Setter received the M.Sc. in Civil Engineering from Technion-Israel Institute of Technology in 1976, and the 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 at R&D laboratories in Israel. Since 1989 she is professor of Materials Science and Engineering and Director of the Ceramics Laboratory of EPFL, the Swiss Federal Institute of Technology at Lausanne. Since 1996 she is also an affiliated professor at the Department of Micro Engineering of EPFL, and head of the Materials Science and Engineering Department. Her current scientific interests piezoelectric and related bulk ceramics and ceramic thin films for use as sensors and actuators.

New Society Fellows

Our congratulations to the following members of the UFFC Society who were elected as Fellows of the IEEE effective 1 January 1998.

Dr. James G. Miller –
Washington University, St. Louis, MO

“For contributions to the understanding of properties of normal and diseased hearts using ultrasonics, echocardiography, and myocardial tissue characterization.”

Dr. Denis Conrad Webb –
Naval Research Laboratory, Washington, D. C.

“For leadership in the development and application of microwave ferrite devices.”

Membership

The total membership in the UFFC Society at the end of 1997 was 2,132, essentially unchanged since the end of 1996. Fifty six percent of the membership was from Regions 1-6, with 21% from Region 8 (Europe), and 16% from Region 10 (Asia-Pacific). Regions 7 (Canada) and 9 (South America) accounted for the remaining percentage membership. Encourage your associates to join the IEEE and the UFFC Society.

Conference Announcement

Yakovkin Memorial 4th International Symposium on Surface Waves in Solid and Layered Structures (ISSWAS-4)

and

1998 International Symposium on Acoustoelectronics, Frequency Control and Signal Generation

and

International Conference for Young Researchers on Acoustoelectronic and Acoustooptic Information Processing

7 - 12 June, 1998

St. Petersburg - Kizhi - Vallaam - St. Petersburg (on board a ship)

SPONSORED BY:

- Center "Integration" (Ministry of General and Professional Education of Russia, Russian Academy of Sciences)
- Ministry of General and Professional Education (Russia)
- Russian Foundation for Basic Research (Russia)
- Ministry of Science and Technology (Russia)
- IEEE UFFC - Society (USA)
- Committee of Russian Federation for Standardization, Metrology, and Certification

SYMPOSIA AND CONFERENCE TOPICS

Topics to be considered include, but are not limited to the following areas:

- Acoustic Waves
Acoustic wave propagation in crystals, glasses, spurious media, and periodic structures.
- Acoustic Materials
New acoustic and acoustooptic materials.
- Acoustic Methods
Acoustic methods for studying solid media.
- Acoustoelectronic Signal Processing
Acoustoelectronic signal processing system design and simulation, methods of parameter measurement and control.
- Acoustooptic Signal Processing
Acoustooptic signal processing methods and systems, acoustooptic processors, elementary base.
- Oscillators, Standards and Measurements
- Frequency Synthesizers and Signal Generation

Both invited lectures (30 minutes) and contributed papers (20 minutes) will be given. In addition there will be a poster session, a roundtable discussion, and an exhibition with printed advertising material. Conference language will be English.

ISSWAS-4 is held in memory of Igor B. Yakovkin a world-renown Russian acoustic scientist and organizer of the first three ISSWAS symposia. The organizers have combined this conference with two other acoustic conferences to present one major acoustic conference in Russia in 1998. The organizers would especially encourage young (under 35 years old) scientists to submit papers.

ARRANGEMENTS

The conference departs by ship from the landing stage "Rechnoi Vokzal" in St. Petersburg on 7 June 1998. The ship will sail along the Neva River to Lake Ladoga, then eastward along the Svir River to Lake Onega in Northern Russia, stopping at Petrozavodsk. The ship will then sail to the island Kizhi where traditional wooden Russian architectural building have been preserved. Walking and sightseeing tours of the architecturally magnificent wooden churches of the 14th and 15th century are included. The ship will then cruise along the Svir River back to Lake Ladoga with a sightseeing stop at the picturesque island of Vallaam. From Lake Ladoga the ship will sail along the Neva River and arrive in St. Petersburg on 12 June. All conference attendees will be housed in cabins on the board the ship and served breakfast, lunch, and dinner meals in the ships' dining hall. A lounge offers evening entertainment.

SYMPOSIA AND CONFERENCE FEES

Western attendees can contact Dennis Pape for information on fees payable in the U.S. by check or credit card.

(Preliminary)

Registration Fee	\$200.00
Lodging and Meals.	\$400.00
Total Fees	\$600.00

For additional information contact:

Professor Sergei V. Kulakov
St. Petersburg State Academy of Aerospace Instrumentation
67 Bolshaya Morskaya Street
St. Petersburg, 190000, Russia
Tel/ FAX: +7 (812) 315-4082 , +7 (812) 108-4204
FAX: +7 (812) 315-7778
E-mail: svk@aanet.ru
bck@softjoys.ru
molotok@softjoys.ru

or

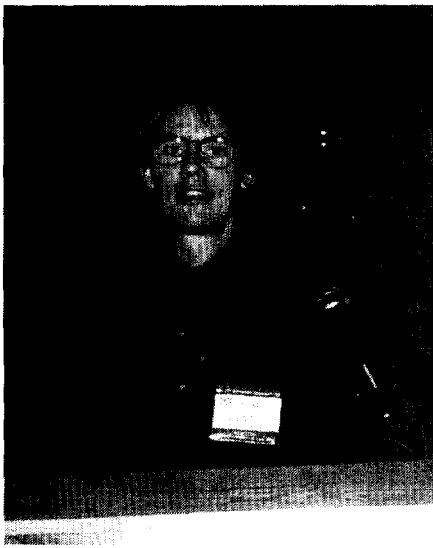
Dr. Dennis Pape
Photonic Systems Incorporated
1800 Penn Street
Suite 6
Melbourne, Florida 32901-2625
Tel: (407) 984-8181
FAX: (407) 952-7748
E-mail: dpape@photon-sys.com

Send post-deadline paper abstracts to professor Kulakov.

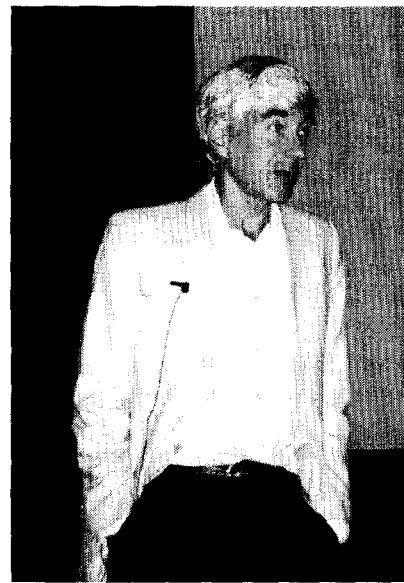
1997 IEEE International Ultrasonics Symposium Reflections

The 1997 IEEE International Ultrasonics Symposium and Short Courses were held October 5th through 8th at the Marriott Hotel in Toronto, Ontario, Canada. The conference more than lived up to the General Chairman's wild promises of superb weather. Attendees were treated to warm sunny days and the beautiful colours of early autumn. With a record attendance of over 800, the 1997 Symposium reaffirmed the growth and continuing vitality of our field. The efforts of all of the volunteers who helped make the conference a success were greatly appreciated.

In 1997, the Short Courses were particularly successful attracting over 360 registrants. The technical sessions began with Prof. Seth Putterman's Plenary Lecture entitled 'Unlocking the Secrets of Sonoluminescence.' Prof. Putterman's lively discussion of one of nature's most interesting acoustic phenomenon set the standard for a wide slate of exciting papers in the areas of medical ultrasound, nondestructive evaluation, industrial applications of ultrasonics, physical acoustics and surface acoustic waves.



**Stuart Foster,
Symposium Chair**



**Dr. Seth Putterman,
Plenary Speaker**

While the technical sessions sharpened our minds, the social program created an atmosphere to stimulate interaction and the development of new friendships. Attendees enjoyed the jazzy welcome reception and an evening of fun at the Ontario Science Centre. The latter event featured spectacular Omnimax movies of the North and a sumptuous feast. Fred Hickernell, the President-Elect of the UFFC easily consolidated his new position by demolishing the competition in the baseball pitching contest.

It was a great pleasure to host the 1997 Ultrasonics Symposium in Toronto. I would once again like to thank my organizing committee consisting of Kathy Ferrara, Tony Sinclair, Peter Smith, Doron Kishoni, Jian-yu Lu, Peter Burns and Susan Schneider for a job well done. I look forward to seeing everyone at the next Symposium in Sendai, Japan.

**Stuart Foster
1997 IEEE Ultrasonics Symposium Chairman**

Awards Presented at the 1997 IEEE International Ultrasonics Symposium

1997 ACHIEVEMENT AWARD - Professor Noriyoshi Chubachi

Professor Noriyoshi Chubachi received the 1997 Achievement Award at the Awards Ceremonies held on October 6, 1997. Professor Kazuhiko Yamanouchi, a colleague of Noriyoshi's at Tohoku University, graciously introduced Prof. Chubachi to the assembly highlighting his many accomplishments in ultrasonics and his patient perseverance in every task he undertakes.

Professor Chubachi was presented with a cash award, a plaque and certificate with the citation: "For his significant contributions in piezoelectric materials, in ultrasonic microscopy, and in materials characterization; and for his dedication to encouraging and guiding young engineers in ultrasonics research."

Professor Yamanouchi remarked on Prof. Chubachi's interest in music and his early years as a student at Tohoku University where he played the violin in the University Orchestra. Prof. Chubachi has maintained his interest in the violin throughout his career, even though his professional research focused on a different area of acoustics — ultrasonic phenomena beyond human hearing. Prof. Chubachi's broad interest manifests itself in many ways, demonstrated, for example, by his perseverance in mastering the Japanese game of GO where he now surpasses those who introduced him to the game.

During his many years at Tohoku University, Professor



**Noriyoshi Chubachi,
UFFC-S Achievement Award**

Chubachi contributed to several aspects of ultrasonics: piezoelectric materials, ultrasonic transducers, acoustic microscopy, SAW devices, medical ultrasonics, among others. In his early work, he investigated ultrasonic amplification in cadmium sulfide, and its dependence on electron drift mobility. In another area of piezoelectric materials he developed methods for depositing zinc oxide films, and applied the material to devices utilizing the interactions of optical and acoustical waves. In the area of acoustic microscopy, Prof. Chubachi has made major contributions, in particular by the use of acoustic line-focus beams and their application to materials characterization. As a co-author of the paper entitled "An Acoustic Micrometer and Its Application to Layer Thickness Measurements," he won the Outstanding Paper Award for this paper published in the 1989 UFFC-S Transactions. His work extends into geothermal research where he developed acoustic emission measurement techniques. Recently, he has worked in medical ultrasonics with particular interest in Doppler techniques to analyze vibrations of the heart wall and the measurement of blood flow.

Professor Chubachi has organized several technical symposia. In IEEE, he was a guest editor of the special issue on "Thin-films for Acoustoelectronics" in the 1995 UFFC Transactions. He has served as Chair of the Tokyo Chapter of the UFFC Society. He also was elected to the AdCom of the UFFC Society serving 1995 through 1997. Currently, he is co-chair of the upcoming IEEE International Ultrasonics Symposium to be held in Sendai, Japan. In other organizations, he co-chaired the 17th International Acoustical Imaging Symposium and the International Symposium on Ultrasonic Microspectroscopy in 1988. More recently, in 1997, he organized the Second World Congress on Ultrasonics in Yokohama. Prof. Chubachi has also served as Vice President of the Acoustical Society of Japan.

Professor Chubachi was awarded the highest rank of the Ministry's Prize of the Agency of Industrial Science and Technology of Japan for his contributions to the development of acoustic microscopy in 1995.

Those who have worked with Prof. Chubachi fondly acknowledge Noryoshi's skill at mentoring and encouraging young engineers and scientists. In addition to directing the research of graduate students, and collaborating with engineers in industry, Prof. Chubachi has organized summer programs to galvanize children's interest in science.

DISTINGUISHED SERVICE AWARD - Professor Gerald W. Farnell

Professor Gerald W. Farnell became the first recipient of the Distinguished Service Award during Awards Ceremonies on October 6, 1997. AdCom instituted the award to recognize individuals who have devoted meritorious service to the operation of the UFFC Society.



**Gerald Farnell - UFFC-S
Distinguished Service Award**

Jerry was introduced to the audience during the Plenary Session by Herman van de Vaart, of VDV Associates and Chair of the UFFC Finance Committee. Herman began his introduction by noting that the UFFC Society was created forty-four years ago by engineers who wanted a forum in which to exchange ideas on ultrasonics. Over the intervening years, the Society has been sustained by the collective talents of many individuals. One person who has influenced the Society in very positive ways over the past twenty years is Jerry Farnell.

Professor Farnell was presented with a cash award, a plaque and certificate with the citation: "In recognition of his long-term dedication to the UFFC Society, and for his gentle, yet determined, nurturing of the Ultrasonics Committee and Ultrasonics Symposium."

In 1976, Jerry Farnell was first elected for a three-year term to the Administrative Committee of the Group on Sonics and Ultrasonics, as the Society was then known. During that period he took over the ex-officio position of Chair of the Publications Committee, and in 1982 was appointed Chair of the Meetings Committee which at that time was primarily concerned with the Ultrasonics Symposium. When the Society formerly integrated the Frequency Control and Ferroelectrics communities into its charter in 1986, Jerry Farnell became Chair of the Ultrasonics Committee to guide that activity in a position he held until 1996.

Jerry was elected Vice President of the Society in 1982 and again in 1983, and most likely would have been elected President the following year if it were not for his planned sabbatical in France. Upon returning to the USA, Jerry was elected again Vice President for 1986 and 1987 and subsequently became

Society President for 1988 and 1989. Throughout all these years, he maintained his position of Chair of the Ultrasonics Committee. One personal characteristic which benefited the whole Society was the calming influence Jerry managed to convey to his committees in making decisions, especially when differences of opinion arose.

As the Ultrasonics Symposium grew rapidly during the 1980's, Jerry guided the Symposium through major changes, including the introduction of poster sessions and increasing the number of parallel sessions. Also, as early as 1982 Jerry proposed having the Symposium in Hawaii, and 1990 his vision prevailed with a very successful Symposium. Since then, Jerry has encouraged international sites, holding the Symposium in Cannes, France in 1994, and planning the Symposium in Sendai, Japan for 1998.

One of the most successful programs that Jerry started in 1980 is the travel support for students who plan to attend and present papers at the Ultrasonics Symposium. Jerry has administered the program from its outset, encouraging and supporting students from many universities and countries.

Concurrent with his support of the Society, Jerry pursued a productive and impressive professional career, teaching and conducting research at McGill University in Montreal, Canada. His technical work centered on surface wave propagation in anisotropic crystals, acoustic waveguides, SAW devices, and acousto-optic interactions. He published more than 100 papers, and served on many scientific Committees both in Canada and in the USA.

Jerry has received other awards. He was elected a Fellow of the IEEE in 1970, received the IEEE Centennial Medal in 1984, received the UFFC Society Achievement Award in 1991, and last year became a Fellow of the Academy of Sciences of the Royal Society of Canada. All told, Jerry was a member of the AdCom for 20 years, was responsible for the Ultrasonics Symposium for 15 years, was Vice President for 4 years, and President for 2 years, truly an exceptional record.

Upon learning that he would be the first recipient of the UFFC Distinguished Service Award, Jerry responded with the reaction:

"I cannot imagine why anyone would be given an Award for having so much fun." Those who worked with Jerry concur that Jerry's refreshing approach made the job "fun" for everyone else too.

1996 Outstanding Paper Award

The Awards Committee was pleased to announce the recipients of the Outstanding Paper Award for papers published in the 1996 UFFC Transactions during the Plenary Session of the International Ultrasonics Symposium on October 6, 1997 in Toronto, Canada. The winning paper is entitled "Estimation of Blood Velocity with High Frequency Ultrasound," which appeared in the Transactions on UFFC, Vol. 43, pp. 149-157, January 1996. Co-authors are

**Katherine W. Ferrara
University of Virginia
Charlottesville, Virginia**

Berhnard G. Zagar
University of Graz
Graz, AUSTRIA

Joan B. Sokil-Melgar
Riverside Research Institute
New York, New York

Ronald H. Silverman
Cornell University Medical College
New York, New York

Ioannis M. Aslanidis
Cornell University Medical College
New York, New York

Each author received a plaque and certificate to commemorate their accomplishment. Kathy Ferrara accepted her award in person, and also graciously accepted the awards for her co-authors who were unable to attend. This event was part of a very busy day for Kathy, who chaired the Technical Program Committee for the Symposium. The fact that these two honors

occurred in the same year is purely coincidental, but undoubtedly attests to Kathy's industrious nature.

The paper was selected because the work summarizes a significant accomplishment in the measurement of blood flow. The authors prove that their approach is based on solid mathematical and experimental principles. They show that blood velocities below 1 mm per second can be reliably mapped, and vessels as small as 40 microns can be distinguished from stationary tissue. The paper clearly states the major technical issues in making these measurements, and demonstrates how limitations can be overcome. The authors are able to extract the desired Doppler signal from a background of much larger Doppler signals (e.g., from vessel wall motion) by utilizing digital filters and a wideband maximum likelihood velocity estimation method. Both in vitro and in vivo results are presented to verify their technique. The research combines careful experimental technique with insightful signal processing. The paper is clearly written; especially noteworthy are the Introduction and Conclusions. The Society congratulates the authors for their significant contribution to the Society, and to the medical ultrasonics literature.



Katherine W. Ferrara (center) Outstanding Paper Award recipient



William D. O'Brien Jr. - 1998-1999 Distinguished Lecturer



Bikash Sinha accepts an award on behalf of Osama Haddadin, as the first software webmaster



Jan Smits, Fellow Award recipient



Roger Tancrell presents plaque in appreciation of service to outgoing president, Don Malocha

Students' Comments on the Toronto Symposium

A group of students from the University of Illinois were asked to comment on the Ultrasonics Symposium. Their comments are published below. An informal reception for all students attending the symposium was hosted by Don Malocha on behalf of the society.

Being new to the field of ultrasonics in biology and medicine, I found the Toronto Symposium an excellent overview of current research, and it gave me a broad sampling of topics from imaging, therapeutics, and physical properties of tissue to sonoluminescence and physical acoustics. I thoroughly enjoyed learning so many new things, and acquiring many ideas for my own research. The 15 minute talks can be quite short and intense, however, and even a little overwhelming when listening to several in a row. I found the invited talks much more enjoyable, mostly from the more relaxed pace in which the speaker could indulge. With so many symposium participants, I know it would be impossible to avoid the shorter time slots—I just would like to encourage as many invited talks as possible! The poster sessions were a very good opportunity to meet and talk with people about their research, but I must say I found the close spacing of the poster boards, and the crowds at those sessions a little “off-putting”. The coffee breaks were a real plus, not just for the refreshments, but for the chance to informally speak with other participants about their work.

Overall, the Symposium was a great experience—I learned a lot of interesting science, learned who was doing it and where, and had the opportunity to discuss the research with the researchers themselves. That’s what I think these meetings should be all about.

Karen Topp
Bioacoustics Research Laboratory
Department of Electrical and Computer Engineering
University of Illinois, Urbana

The Ultrasonics Symposium is a wonderful opportunity to see a wide range of activities in ultrasound research and to talk to the people doing the work. As always, the conference was very intense, and several times I had to choose between talks I wanted to see. Compared to recent symposia, there was a

much stronger emphasis in the medical applications sessions on contrast imaging as opposed to synthetic aperture and array applications. This is the first year I have participated in a short course; I found the course on beamformation to be thorough and interesting. This is also the first year my husband came to the conference with me. We think the idea of a spouse program is excellent. He and my son enjoyed it very much.

Kate Frazier
Bioacoustics Research Laboratory
Department of Electrical and Computer Engineering
University of Illinois, Urbana

For myself, the 1997 Ultrasonics Symposium provided a chance to view the different applications of acoustics, ultrasound and imaging. With my interests in RF hardware design, the conference introduced me to the topic of SAW devices. With the short course and numerous sessions, I was able to gain a tremendous amount of insight on the topic of SAW technology. Overall I felt the conference provided an excellent learning experience.

Paul Rooney
Bioacoustics Research Laboratory
Department of Electrical and Computer Engineering
University of Illinois, Urbana

The Ultrasonics Symposium is a great opportunity to meet people and I learned a lot myself. I enjoyed some talks, especially the invited talks. And it is also exciting to meet friends in the same field every year and can exchange ideas and useful information. I also think the short courses offered are great. I didn’t attend the short courses in Toronto, but I talked the people who attended and looked at the handed materials and thought they are very helpful if I want to work in that special area.

(1) The place for poster is small. So they are very crowded. A bigger place is expected in the future. I know this depends on the hotel. (2) Most people are leaving in the afternoon and checked out before 12:00 p.m. on the last day of conference. So less people will attend the afternoon’s section. (3) It is a good idea that students can meet and talk to each other and



meet the professors. It is also a good idea to set up a student committee. (4) If the price for student to attend the tour has discounts, I'd like to join the tour. It will be a wonderful and memorable night. (4) The more exhibitions, the better.

Qi Tian
Bioacoustics Research Laboratory
Department of Electrical and
Computer Engineering
University of Illinois, Urbana

I presented a poster in the area of non-destructive evaluation in the symposium, and I am new to this area. I found the Toronto symposium very successful except for some minor details. Honestly, I enjoyed listening to the invited papers more than others because their overview is much more extensive and easier to understand than others. I also enjoyed that the president invited all graduate students to his room, and chatted with everybody. My negative impression about the symposium was the poster session because the space was very limited, and I believe it negatively affected the information exchange among the people; therefore, the members of the symposium organization should take into account this important point.

Ayhan Ozguler
Department of Food Science and Human Nutrition
University of Illinois, Urbana

I really enjoyed attending the UFFC symposium. Many of the presentations were very interesting. I especially enjoyed the plenary speaker's talk on sonoluminescence, which sparked my interest in a field I knew next to nothing about. Toronto was a great setting; it was an interesting place to wander around and it was easy to find food and entertainment at night. The weather during the symposium was perfect, too.

One major frustration, though, was that scheduling three sessions simultaneously meant that there were inevitable conflicts, with two interesting talks going on simultaneously. On the other hand, some of the presentations within a given session seemed repetitive, going over essentially the same topic. Maybe having



less talks per session and more sessions per day might ease the scheduling conflicts.

Another thing was that the poster sessions were held in conditions that were much too crowded. At times, it was simply physically impossible to view a poster, because the limited space in front of it was filled to capacity. Perhaps breaking the poster sessions up into two smaller hour-long sessions that coincided with breaks between technical sessions would have been a good idea. That way, there would be more opportunities to circulate and talk to all of the interesting presenters. Plus, it would give us something to do during the breaks, and make the breaks a little longer, so that we would be more refreshed for the following session.

The student reception was a nice touch. Don Malocha was a gracious host and it was gratifying for the students to feel wanted. Oftentimes, I got the impression that students, lacking the breadth of experience and interest in ultrasonics possessed by the older UFFC members, were somewhat intimidated by the symposium presentations and felt out of place.

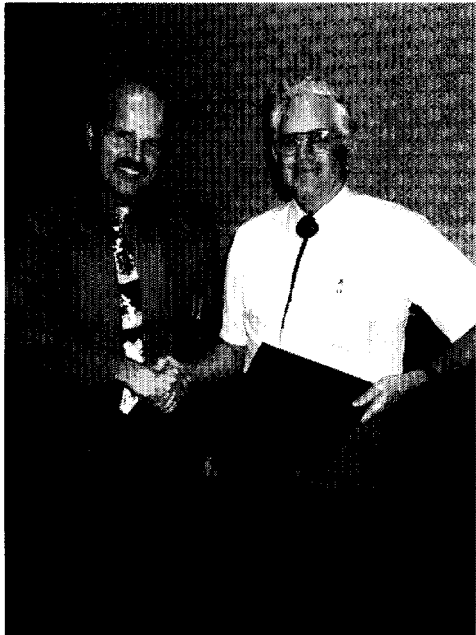
Joe Tan
Bioacoustics Research Laboratory
Department of Electrical and Computer Engineering
University of Illinois, Urbana

Question for our Newsletter Readers

It has been heard in engineering circles that an international unit of measurement called "The Meeker" was introduced in the late 1980's. It was named in honor of one of the outstanding members of our society. I am asking our readers to respond to the following three questions. What is the full name of the member for which

the unit is named? What was the occasion for the introduction of this unit of measurement? What is the definition of "One Meeker"? Please send your responses to the newsletter editor whose addresses may be found in the Editor's Note. The answers will be published in the next newsletter.

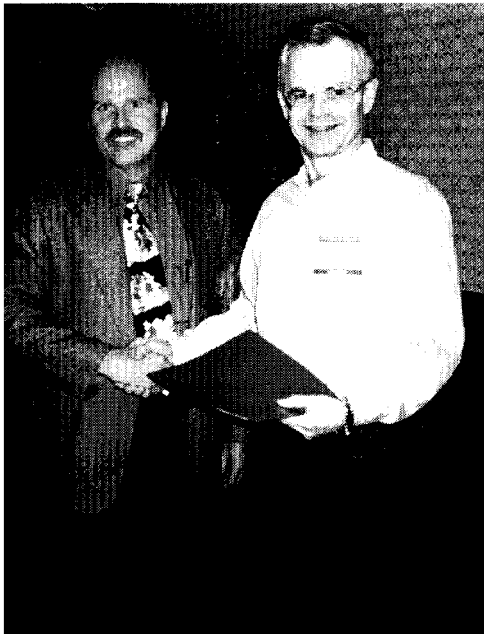
UFFC-S President Don Malocha gives 3 handshakes and 1 hug to elected AdCom members finishing their 3 year term



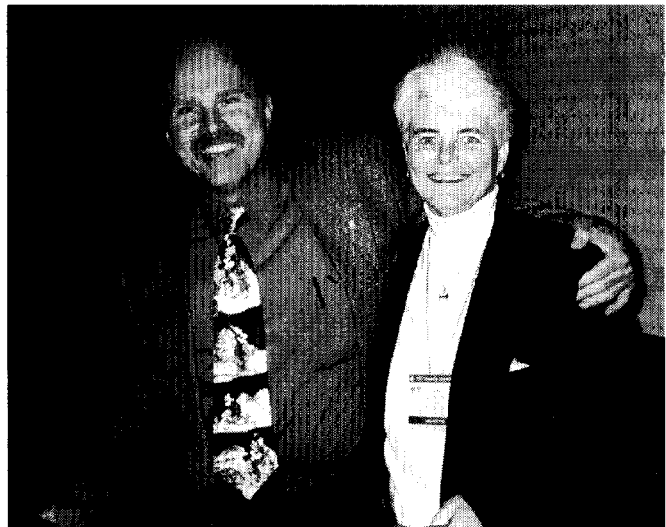
George Alers



Noriyoshi Chubachi

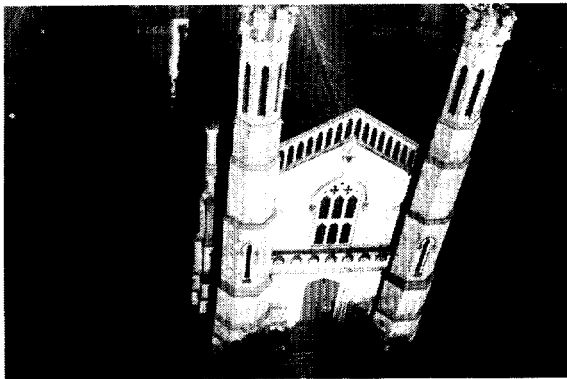


John Vig

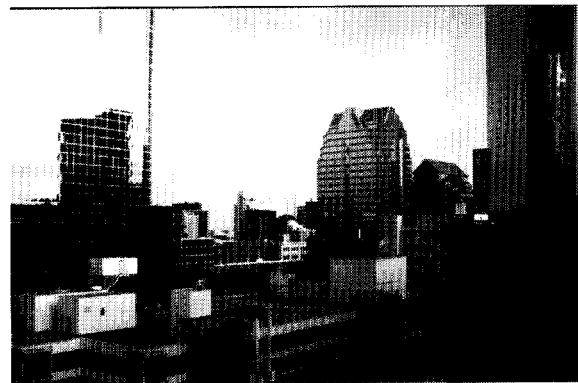


Jan Brown

Scenes from the Toronto Symposium



The Holy Trinity Church, just outside the hotel



Toronto Skyline



Steve Smith, Geoff Lockwood, Stuart Foster, and Dan Turnbull



Professor Noriohshi and Akiko Chubachi



Meeting in high places -
Susan Schneider matches
Don Malocha chair for chair



The Routh Family



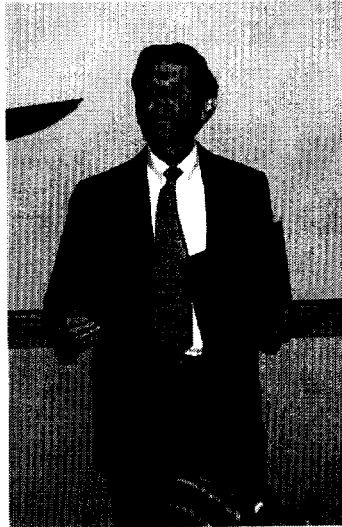
Vig, Proklov, Hickernell, Pape, and Mansfield
discuss ISSWAS '98



Peter Smith (right) pleased with the local arrangements



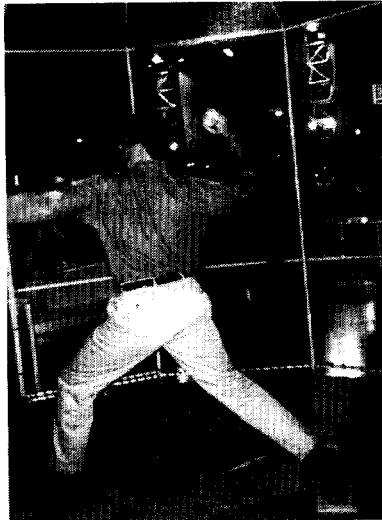
So is Kasia Harasiewicz



Roger Tancrell directs the UFFC-S Choir in "All Hail to Thee, UFFC"



Gerry Blessing - Waiting for the sign from the catcher



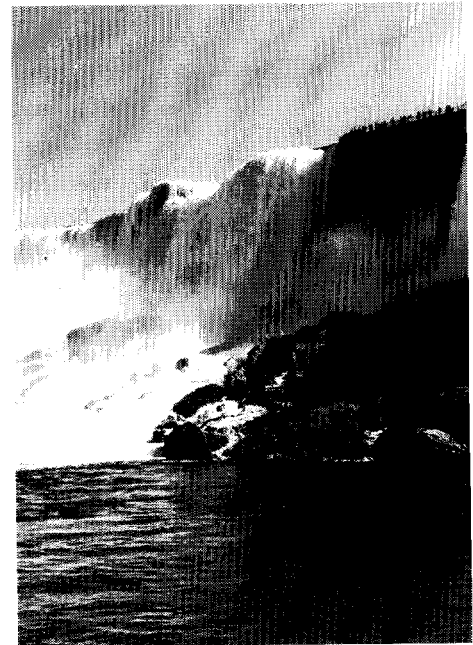
Tom Hickernell lets fly his fastball



Stuart Foster (left) and friends

Scenes from the Guest Program





IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society Administrative Committee

IEEE HEADQUARTERS

Director, Division IX*	E. K. Reedy
Managing Director, TAB*	M. Ward-Callan
General Manager, IEEE*	D. J. Senese

SOCIETY OFFICERS

President	J. R. Vig	<i>U S. Army Communications-Electronics Command, Fort Monmouth</i>
President-Elect	F. S. Hickernell	<i>Motorola, Inc., SSTG</i>
Secretary-Treasurer	G. K. Montress	<i>Raytheon Company, Research Division</i>

ELECTED COMMITTEE MEMBERS

1996-1998	K. W. Ferrara	<i>University of Virginia, Charlottesville</i>
1996-1998	D. A. Hutchins	<i>University of Warwick</i>
1996-1998	J. G. Smits	<i>Boston University</i>
1996-1998	P. V. Wright	<i>Thomson Microsonics</i>
1997-1999	W. D. Hunt	<i>Georgia Institute of Technology</i>
1997-1999	D. R. Pape	<i>Photonic Systems Incorporated</i>
1997-1999	B. R. Potter	<i>Vectron Technologies Incorporated</i>
1997-1999	K. Yamanouchi	<i>Tohoku University</i>
1998-2000	T. R. Gururaja	<i>Hewlett-Packard Company</i>
1998-2000	D. B. Hauden	<i>LPMO-CNRS</i>
1998-2000	A. H. Meitzler	<i>Consultant</i>
1998-2000	K. Uchino	<i>The Pennsylvania State University</i>

EX-OFFICIO COMMITTEE MEMBERS

Awards	R. H. Tancrell	<i>Tancrell Associates</i>
Fellows*	R. M. White	<i>University of California, Berkeley</i>
Vice-President, Ferroelectrics		
Finance	H. van de Vaart	<i>VDV Associates</i>
Vice-President, Frequency Control	J. A. Kusters	<i>Hewlett-Packard Company</i>
Long Range Planning	H. L. Salvo, Jr.	<i>Northrup Grumman Corp., Electronic Sensors & Systems Division</i>
Membership- Chapters	E. S. Furgason	<i>Purdue University</i>
Newsletter*	F. S. Hickernell	<i>Motorola, Inc., SSTG</i>
Nominations	B. R. Tittmann	<i>The Pennsylvania State University</i>
Vice-President, Publications	J. Brown	<i>JB Consultants</i>
Standards	A. Ballato	<i>U S. Army Communications-Electronics Command Fort Monmouth</i>
Transactions*	W. D. O'Brien, Jr.	<i>University of Illinois, Urbana</i>
Vice-President, Ultrasonics	J. F. Greenleaf	<i>Mayo Clinic</i>
Past President (1996 - 1998)	H. L. Salvo, Jr.	<i>Northrup Grumman Corp., Electronic Sensors & Systems Division</i>
Past President (1998 - 2000)	D. C. Malocha	<i>University of Central Florida, Orlando</i>

* Non-Voting Position

Newly Elected Administrative Committee Members



Raj Gururaja

T.R. (Raj) Gururaja is a native of Bangalore, India, educated at the University of Mysore and the Indian Institute of Technology in Kanpur, and transplanted to Pennsylvania where he studied at the Penn State University to receive a Ph.D. degree in Solid State Science in 1984. He

continued to work as a research associate until 1987 and then joined the Imaging System Division of Hewlett-Packard Company in Andover, MA as a transducer design engineer. Raj is currently a Principal Scientist/Product Manager sharing his time between R&D and product marketing. He is involved with exploring new materials and novel designs for the development of next generation ultrasonic transducers. He is also a product marketing manager for HP's echo information management solution. Raj lives in Andover, MA, is married and has two children. In his leisure time he enjoys playing tennis and roller blading.



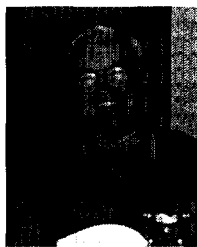
Daniel Hauden

Daniel Hauden, 52, was born in Montebeliard, France. He obtained his Ph.D. at Besancon University, France, in 1979, in the field of non-linear properties of SAW devices for high stable oscillator and sensor applications. His research still continues in that field on new materials and new

types of waves for high speed and high frequency resonators and filters for wireless communications. Simultaneously, he developed the field of new microfabrications in micromechanics and microacoustics in the Besancon area.

He is Director of the LPMO-CNRS laboratory, and since last year he has been in charge of the French National Research Programme of MEMS and Microsystems sponsored by the Ministry of Research and the CNRS.

His family activities are in nature discovery, travelling around the world, hiking and skiing in the Alps, and in culture and arts with jazz festival auditions, passion for the cinema and theatre, and visits to art exhibits.



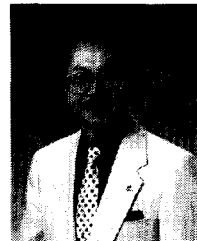
Allen H. Meitzler

Allen H. Meitzler received his B. S. degree in physics from Muhlenberg College, Allentown, PA, in 1951, his M. S. degree in physics from Lehigh University in Bethlehem, PA, in 1953, and his Ph.D. in physics from Lehigh University in 1955. In October 1955, he joined Bell

Telephone Laboratories at the Whippany, NJ, Laboratory in a department concerned with the development of quartz resonators, ultrasonic delay lines, and ferroelectric memory devices. In November 1972 he joined the Research Laboratory of Ford Motor Company in Dearborn, MI, working on sensors and

systems related to automotive emission controls. He retired from Ford on 1 January 1996 and has since been engaged in running a consulting business and serving as an Adjunct Professor doing part-time teaching in the Electrical and Computer Engineering Department of the University of Michigan – Dearborn. Since retiring from Ford, he has made ultrasonics his primary area of interest and continuing professional activity. He has had a long record of service to the IEEE and the UFFC Society since joining the IEEE in 1956. He became a Life Fellow in 1994.

Allen Meitzler is married. He and his wife have three grown sons. One is a Ph.D. electrical engineer working as a civilian scientist for the U. S. Army; one is a writer, executive assistant in a law firm, and an entrepreneur attempting to start a pedicab business; and the third has a M. S. in communications technology and is training to become a professional pilot.



Kenji Uchino

Kenji Uchino, one of the pioneers in piezoelectric actuators, is the Director of the International Center for Actuators and Transducers and Professor of Electrical Engineering at The Pennsylvania State University.

After being awarded his Ph. D. degree from Tokyo Institute of Technology, Japan, Uchino became Research Associate in the physical electronics department at that university. Then, he joined the Sophia University, Japan as an Associate Professor in physics in 1985. He then moved to Penn State in 1991. He was also involved with Space Shuttle Utilizing Committee in NASDA, Japan during 1986-88, and was the Vice President of NF Electronic Instruments, USA, during 1992-94. He is the Chairman of Smart Actuator/Sensor Study Committee sponsored by Japanese MITI. He is also the executive associate editor for the Journal of Advanced Performance Materials (Kluwer Academic) and the associate editor of the J. Intelligent Materials Systems and Structures (Technomic) and of the Japanese Journal of Applied Physics.

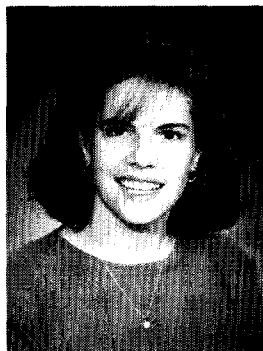
His research interests are in solid state physics, especially ferroelectrics and piezoelectrics, including basic research on materials, device designing and fabrication processes, as well as development of solid state actuators for precision positioners, ultrasonic motors, etc. He has authored 240 papers, 31 books and 16 patents in the ceramic actuator area.

He is a recipient of the Outstanding Research Award from Penn State Engineering Society (1996), Academic Scholarship from Nissan Motors Scientific Foundation (1990), Best Movie Memorial Award at Japan Scientific Movie Festival (1989), and the Best Paper Award from Japanese Society of Oil/Air Pressure Control (1987). He is also a Fellow of American Ceramic Society.

Uchino is a frequent traveler, keeping a 100 K-mile status in the United Airline.

Student Administrative Committee Member

A student member position (non-voting) was approved by the UFFC-S AdCom. The student member is to be appointed annually by the UFFC-S president. Nominations were solicited and Catherine (Kate) Frazier was appointed by President Vig as our first student AdCom member. A photo and biography of Kate follows. We welcome Kate's voice as a representative of our student membership.



Catherine Frazier

Catherine (Kate) Frazier was born on August 16, 1972, in Bethesda, MD. She received the B.S.E.E. from the University of Maryland at College Park in 1994, and the M.S. in electrical engineering from the University of Illinois at Urbana-Champaign in 1996. For her master's thesis she in-

vestigated the use of a virtual source in synthetic aperture imaging algorithms. She is currently working on the Ph.D. in electrical engineering at the University of Illinois, where she is a student of Professor William D. O'Brien. Her current research focuses on developing a subsurface imaging system which operates in the acoustical frequency range.

Ms. Frazier was awarded the National Science Foundation Fellowship from 1994 to 1997, and the Koehler Fellowship for the 1994-1995 academic year. In April 1997 she was presented the Robert T. Chien Memorial Award for outstanding research in electrical engineering. She has presented papers at the 1996 Ultrasonics Symposium in San Antonio, TX and at the 1997 Ultrasonics Symposium in Toronto, ON. She also has a paper published in the January 1998 issue of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control.

Her research interests are in acoustical image formation and image processing.

New Society Officers

John Vig's Personal Biography

I have written and updated my professional biography on many occasions, but never before have I been asked to write a personal biography. Writing such a biography is a daunting task for me because, probably more than most, my family has experienced the worst and the best that humanity has to offer. I will confine this bio to a few of the most important (and least boring) events in my life.

The early years - "man's inhumanity to man." I was born in 1942 in Budapest, Hungary, during one of the ugliest periods in European history. During the third year of my life, my father was taken to a concentration camp in Germany, as were many other relatives. My father survived, barely, but fourteen other relatives did not. I survived only because of my mother's ingenuity. One day, a group of Hungarian Nazis ("Arrow Cross") told everyone in our apartment house to line up in the courtyard. Instead of leaving the apartment, my mother quickly put me on the potty. When the Nazis swept through the building, they found us and started yelling at my mother. She told them that I was sick and pleaded with them to allow me to finish. One of the Nazis finally said "Oh, the hell with them; we'll get them later," and they left. Fortunately, they did not return. Those who lined up were taken to a ghetto, and eventually ended up in concentration camps. Many of them, especially the children, perished. Had it not been for my mother's ingenuity, I would not be writ-



ing these words. The next day, my mother procured false identification papers, and we went into hiding. Our name was Molnar for the rest of the war.

The years under Communism. After WW II, the Communists came to power in Hungary. My father, who had owned a small business, was called a "capitalist"; he was jailed for 1 1/2 years, his business and our apartment were confiscated, and the family was deported to a small town that we were not allowed to leave for a period of two years. Not only did this town have no running water and toilets, they didn't even have outhouses. My father was the first person in town to have built an outhouse. One day, a teacher invited my class to join the Pioneers (a Communist youth organization, somewhat like the boy and girl scouts). Everyone was invited except me. The teacher explained that I couldn't join because my father had been a capitalist, which made me "an enemy of the people." I was nine years old at the time. I felt bad then, but, years later, shortly after entering the USA, I was filling out an application on which one of the questions was "Have you ever been a member of a Communist organization?" I smiled, as I truthfully checked "No".

Coming to the USA. In 1956, a revolution took place in Hungary during which my family escaped to Austria (together with about 200,000 others out of a population of 10 million). After two months in Austria, we received permission to enter the USA, which we did in January 1957. I was 14 years old at

the time, and did not speak English. The first day we were in the USA, my father insisted that everyone in the family attend English class, and that we carry index cards in our pocket for the purpose of writing down words we did not understand. To this day, I still carry index cards in my shirt pocket, just in case I need to make note of something.

School years. I went to high school in New York City, where I met my future wife, Arianna. We both attended the City College of New York (CCNY) where I majored in physics and she in elementary education. I also joined the Reserve Officers' Training Corps (ROTC), which meant an obligation to serve (as an officer) in the Army after graduation. I was able to obtain a deferment in order to attend graduate school, and I received my Ph.D. in physics in 1969 from Rutgers University. My thesis research was in experimental low temperature solid state physics.

A lesson in freedom. One day while at CCNY, upon seeing an announcement that a leader of the US Communist Party was going to speak on campus, I expressed to a group of friends my strong objections to allowing such a person to speak publicly. Having experienced oppression under Communism just a few years earlier, I argued that those who want to do away with our freedoms, and who have a history of using evil means to reach their goals, ought not be allowed to speak freely. One of my fellow ROTC cadets, Kenny Rosenberg, called me aside and eloquently and logically presented me with a different point of view, i.e., that bad speech must be fought with good speech; banning bad speech was not the answer. That little lesson made a profound impression on me (so much so that I eventually joined the American Civil Liberties Union). After graduation, I lost touch with Kenny. I owed him a great "thank you," but I never got a chance to thank him. A few years ago I was devastated to learn that Kenny was among the last Americans killed in Vietnam.

My hobbies. I enjoy ballroom dancing because it is highly challenging, both physically and mentally; it is a great form of exercise, and the music is beautiful. Listening to classical music is one of the pleasures in my life; my car has a 12 CD

changer that is always loaded with classical music CDs, and my wife and I go to the opera several times a year. I enjoy gardening, relaxing in my backyard, and hiking in the mountains - and I am addicted to reading The New York Times. A few years ago I learned of the power and possibilities of the World Wide Web. The web is rapidly changing the world - for the better. Today, I derive great satisfaction from being in charge of two websites, the UFFC Society's and my home town's (www.colts-neck.nj.us).

How I got into frequency control. While I was completing my graduate studies, I had made contact with researchers at Fort Monmouth, NJ who were kind enough to request that the Army assign me to the Electronic Components Laboratory at Fort Monmouth. After receiving my Ph.D., I was fortunate to be able to spend most of my military career developing a superconductive tunable filter, working side by side with civilian scientists. Towards the end of my military service, I was unable to find a suitable position as a low temperature physicist, so I asked the then Laboratory Director, Dr. Ed Gerber, if there were any openings in the Lab for civilian scientists. He referred me to the Frequency Control Branch, where I was offered a position even though I knew virtually nothing about frequency control at the time. Initially, I looked upon this job as a temporary one, until I would find a low temperature physics position. Soon, however, I was immersed in challenging research problems and learned that frequency control was even more interesting than low temperature physics. So, here I am, 26 years later, still working in frequency control, and still finding the research immensely interesting and challenging.

(Editor's Note: I asked our new society president, John Vig, to write a personal biography since most of us have seen his professional bio many times. He was initially reticent to do so. I am glad he finally agreed. We all know that our journey through life is not just made up of degrees, publications, titles, and offices. We all have a story to tell and John has shared his personal history with us. I trust others will add more personal notes to their biographical sketches to be used in the newsletter in the future.)

New AdCom Officers

Fred S. Hickernell, President-Elect, and Gary Montress, Secretary-Treasurer joined President John R. Vig as the officers for the Ultrasonics, Ferroelectrics, and Frequency Control Society in 1998. Your officers can be reached by e-mail through following addresses:

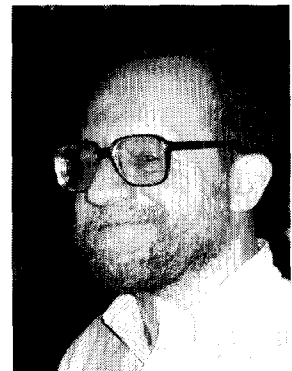
John R. Vig: j.vig@ieee.org

Fred S. Hickernell: f.hickernell@ieee.org

Gary K. Montress: Gary_K_Montress@ccmail.eo.ray.com



Fred Hickernell



Gary Montress

ADCOM BRIEFS

The Administrative Committee (AdCom) meeting of the *Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S)* was called to order at 9:08 A.M., October 5th, 1997, by D. C. Malocha, *UFFC-S* AdCom President, at the Marriott Hotel - Eaton Centre, Toronto, Ontario, Canada. Introductions of attending members were conducted.

D. C. Malocha, *UFFC-S* AdCom President, introduced the four recently elected *UFFC-S* AdCom members, whose terms begin on January 1st, 1998: T. R. Gururaja, D. B. Hauden, A. H. Meitzler, and K. Uchino. A. H. Meitzler was able to attend today's *UFFC-S* AdCom meeting prior to the start of his elected term in office.

G. K. Montress, *UFFC-S* Secretary/Treasurer, moved to approve the minutes of the May 31st, 1997 *UFFC-S* AdCom meeting. The motion was seconded by R. H. Tancrell. The motion passed.

G. K. Montress, *UFFC-S* Secretary/Treasurer, reported that no e-mail/FAX ballots had been conducted during the time period from 1st June 1997 to 4th October 1997.

D. C. Malocha, *UFFC-S* AdCom President, reported that the IEEE's Book Broker program has altered the way in which it reimburses conferences for their proceedings. These changes will be fully implemented for 1998.

D. C. Malocha, *UFFC-S* AdCom President, reported that the IEEE has introduced a new magazine called *Today's Engineer*. IEEE-USA is coordinating the introduction.

J. Brown, *UFFC-S* Publications Board Chair, moved that the *UFFC-S* AdCom recommend that IEEE handle all *UFFC-S* conference proceedings, including CD-ROMs. The motion was seconded by J. F. Greenleaf. The motion passed.

J. Brown, *UFFC-S* Publications Board Chair, will conduct a survey to determine *UFFC-S* membership preferences related to the various electronic media options available.

W. D. O'Brien, Jr., *UFFC-S* Transactions Editor-in-Chief, presented oral and written reports. The American Dairy Science Association's (ADSA's) handling of the editing and

printing operations for the *UFFC-S* Transactions continues to go very well. A contract for 1998 has been arranged.

W. D. O'Brien, Jr., *UFFC-S* Transactions Editor-in-Chief, reported that the *UFFC-S* Transactions should be available on-line soon, beginning with the January 1998 issue.

W. D. O'Brien, Jr., *UFFC-S* Transactions Editor-in-Chief, reported that the *UFFC-S* Transactions will change format, starting with the January 1998 issue. Namely, the Table of Contents will start inside, with a new variable image appearing on the front cover page.

F. S. Hickernell, *UFFC-S* Newsletter Editor-in-Chief, presented an oral report. The deadline for submission of material for the April 1998 (Spring) issue of the *UFFC-S* Newsletter is February 15th, 1998. This earlier than usual deadline is due to the fact that the Ultrasonics Symposium is scheduled for 5th - 8th October 1998, and the *UFFC-S* Newsletter will contain preliminary information describing the Ultrasonics Symposium. This deadline will allow the 1998 IEEE International Frequency Control Symposium to publicize their meeting in the Spring Newsletter issue as well.

J. R. Vig, *UFFC-S* WebSite WebMaster, indicated that the *UFFC-S*'s WebSite will be relocated from the University of Michigan to the University of Illinois. A secondary support site will be located at the University of Maine (Orono).

H. van de Vaart, *UFFC-S* Finance & Operations Committee Chair, presented oral and written reports. The *UFFC-S* remains in good financial shape, with a reserve of approximately \$579k as of 31st August 1997.

T. E. Parker, *UFFC-S* Frequency Control Standing Committee Chair, was unable to attend the *UFFC-S* AdCom meeting. A written report was submitted, and J. R. Vig presented an oral report.

J. R. Vig indicated that the 2000 IEEE International Frequency Control Symposium will be held in Kansas City. D. B. Sullivan will serve as General Chair for the symposium.

J. R. Vig indicated that the Memorandum-of-





Understanding between the Electronic Industries Association (EIA) and the *UFF-S* has been fully approved. The Piezoelectric Devices Conference & Exhibition will be combined with the *UFFC-S's* Frequency Control symposium, with the first joint meeting scheduled for 2000.

H. van de Vaart, *UFFC-S* Finance & Operations Committee Chair, moved to approve the budget for the 1998 IEEE International Frequency Control Symposium. The motion was seconded by J. Brown. The motion passed. The 1998 IEEE International Frequency Control Symposium will be held on 27-30 May 1998, in Pasadena, California.

J. R. Vig indicated that the 1999 IEEE International Frequency Control Symposium will be held in Besancon, France, as a joint meeting with the European Frequency & Time Forum meeting. The meeting will likely be scheduled for April 1999. D. B. Sullivan will serve as General Chair for the symposium.

J. F. Greenleaf, *UFFC-S* Ultrasonics Standing Committee Chair, presented an oral report. Nashville, Tennessee is under consideration as the venue for the 2001 IEEE International Ultrasonics Symposium. The dates for the 1998 IEEE International Ultrasonics Symposium are the 5th - 8th October 1998, in Sendai, Miyagi, Japan.

F. S. Foster, General Program Chair, reported that arrangements for the 1997 IEEE International Ultrasonics Symposium (Toronto, Ontario, Canada) are still going nicely. The Hotel is the Marriott - Eaton Centre. K. W. Ferrara is serving as Technical Program Chair. Almost 300 attendees registered

in advance for the symposium, and more than 300 attendees have signed-up to take short courses.

H. van de Vaart, *UFFC-S* Finance & Operations Committee Chair, moved to approve the budget for the 1998 IEEE International Ultrasonics Symposium. The motion was seconded by J. Brown. The motion passed. The 1998 IEEE International Ultrasonics Symposium will be held on 5 - 8 October 1998, in Sendai, Miyagi, Japan.

J. F. Greenleaf, *UFFC-S* Ultrasonics Standing Committee Chair, indicated that the 1999 IEEE International Ultrasonics Symposium will be held in Lake Tahoe, Nevada; the 2000 IEEE International Ultrasonics Symposium will be held in San Juan, Puerto Rico; and the 2002 IEEE International Ultrasonics Symposium will be held in Munich, Germany.

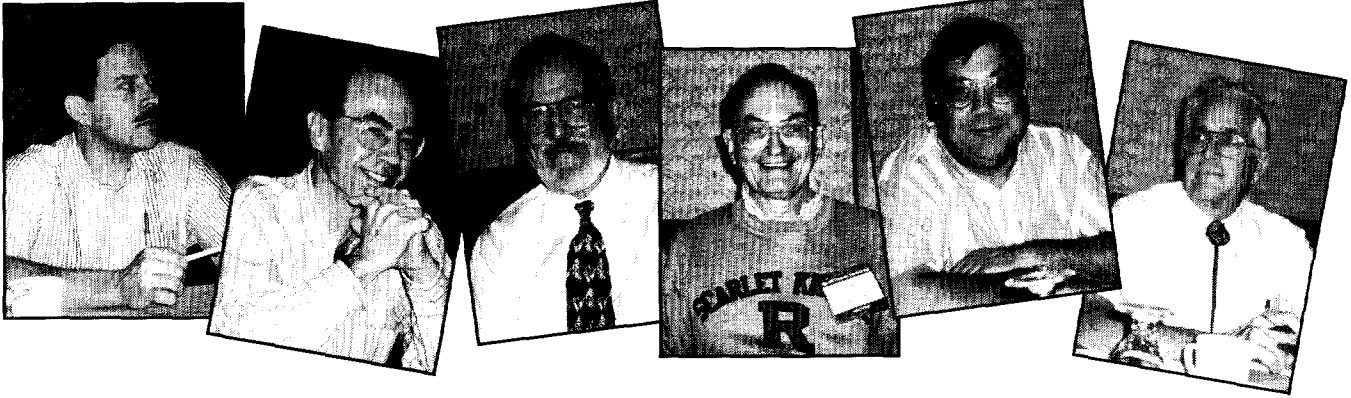
J. F. Greenleaf, *UFFC-S* Ultrasonics Standing Committee Chair, indicated that Nashville, Tennessee, is under consideration as the venue for the 2001 IEEE International Ultrasonics Symposium.

R. H. Tancrell, *UFFC-S* Awards Committee Chair, presented oral and written reports. B. R. Tittmann was approved as the *UFFC-S* Distinguished Lecturer for 1998/1999. The title of his presentation is: "Turning Up the Heat on NDE".

R. H. Tancrell, *UFFC-S* Awards Committee Chair, moved to approve a *UFFC-S* Distinguished Service Award, to recognize sustained service to the *UFFC-S* over an extended period of time. The motion was seconded by B. R. Tittmann. The motion passed.

R. H. Tancrell, *UFFC-S* Awards Committee Chair, will





formulate a plan for a uniform set of *UFFC-S* sponsored awards which spans the three primary technical areas of focus to the *UFFC-S*.

E. S. Furgason, *UFFC-S* Chapter/Membership Services Committee Chair, presented oral and written reports. The *UFFC-S* continues to attract new members through its Membership Outreach Program.

E. S. Furgason, *UFFC-S* Chapter/Membership Services Committee Chair, will prepare an updated *UFFC-S* membership brochure since the current one is now outdated.

A. Ballato, *UFFC-S* Standards Committee Chair, presented oral and written reports. The *UFFC-S* Standards Committee is currently responsible for nine items: eight standards and one project. A. Ballato indicates that he is still actively working to reactivate/reconstitute several Standards subcommittees.

R. M. White, *UFFC-S* Fellows Committee Chair, was unable to attend the *UFFC-S AdCom meeting*. A written report was submitted. For the IEEE's 1998 class of Fellow candidates, three *UFFC-S* members have been nominated for review by the *UFFC-S* Fellows Committee. Those members elevated to the rank of Fellow will be announced in January 1998.

B. R. Tittmann, *UFFC-S* Nominations Committee Chair, presented oral and written reports. The election for new *UFFC-S AdCom* members was held during the Summer (1997), with their three year terms in office starting on 1st January 1998. The three elected candidates from IEEE Regions 1 - 7 are: T. R. Gururaja, A. H. Meitzler, and K. Uchino.

The elected candidate from IEEE Regions 8 - 10 is: D. B. Hauden. A slate of candidates for the 1998 *UFFC-S AdCom* election will be presented for *UFFC-S AdCom* approval at the next meeting.

J. Brown moved that the *UFFC-S AdCom* approve a Student Member position (non-voting) on the *UFFC-S AdCom*, to be appointed annually by the *UFFC-S* President. The motion was seconded by W. D. O'Brien, Jr. The motion passed.

J. Brown moved that the *UFFC-S* President encourage each of the *UFFC-S* Symposium Standing Committees to have student receptions at their respective symposia. The motion was seconded by W. D. Hunt. The motion passed.

J. R. Vig, *UFFC-S* WebSite WebMaster, moved to approve \$3k for the purchase of a PC-based computer system to support the *UFFC-S's* WebMaster WebSite at the University of Maine (Orono). The motion was seconded by A. Ballato. The motion passed.

The revised *UFFC-S* Bylaws and Constitution will become effective on 1 January 1998.

J. R. Vig was elected *UFFC-S AdCom* President for 1998.

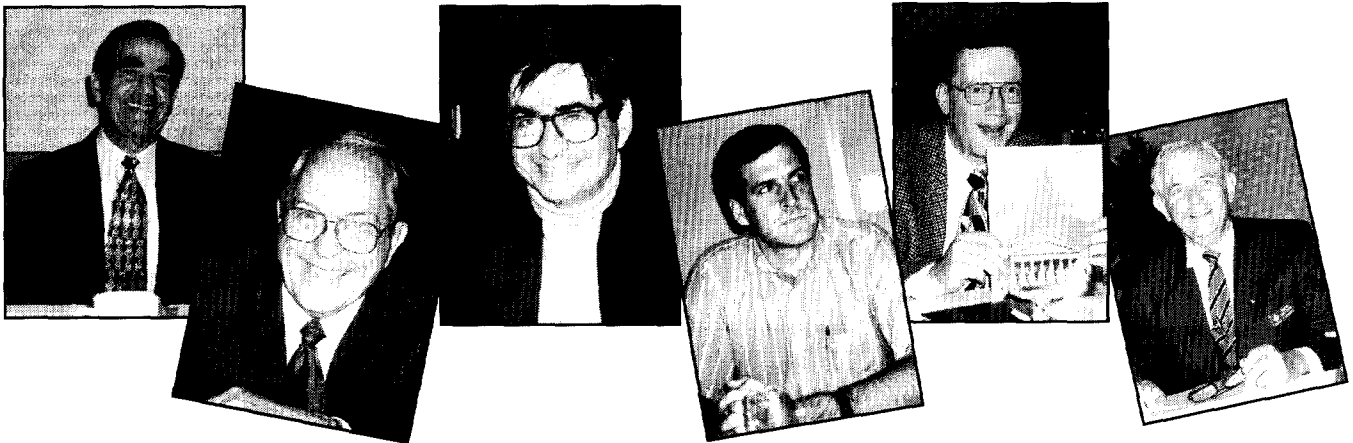
F. S. Hickernell was elected *UFFC-S AdCom* President-Elect for 1998.

The next *UFFC-S AdCom* meeting will be held on June 12, 1998 in Chicago in conjunction with the Technical Program Committee meeting for the 1998 Ultrasonic Symposium.

The *UFFC-S AdCom* meeting adjourned at 4:54 P.M.

Gary K. Montress

UFFC-S AdCom Secretary/Treasurer, 1997/1998



Implementation of the IEEE-UFFC Transactions On-Line

The IEEE-UFFC Transactions are now available on-line to all active members via the World Wide Web (WWW). The Transactions homepage is located at:

<http://www.IEEE.org/uffc/tr>

The UFFC Transactions server is currently structured from the Table of Contents page. Abstracts can be seen via standard HTML (Hypertext Markup Language) by selecting the page number of the desired paper. Abstracts are available to all visitors to the WWW site.

Papers are selected by clicking on the PDF symbol that precedes the paper of interest. The papers are formatted using the Adobe Acrobat program. The reader for this file format is available free from Adobe at:

<http://www.adobe.com/prodindex/acrobat/readstep.html>

and is available for most computer operating systems. Please read all introductory documentation associated to the features of the reader, especially search, viewing and printing functions. These aid in the viewing of the transactions.

The full-length papers are available only to members via individual password access. User Name and Passwords were sent via postal mail to all active members of UFFC. In case that an active UFFC member did not receive password information, please contact IEEE-UFFC Transactions Networking Services at IEEE-UFFC@assochq. The Transactions server is case sensitive, so it is important to enter the User Name and Passwords as they are given. Please refer to the server for further help and announcements as events warrant.

UFFC Financial Report

The UFFC Society continues to be in excellent financial shape. As can be seen from the accompanying year-end financial statement, for 1997 we posted a surplus of \$85.3K versus a budgeted surplus of \$16K. Please bear in mind that the numbers shown on the statement are pre-closing and pre-audit, and are thus still subject to change.

As a result of the healthy stock market in 1997, our interest/capital gains income was \$66.8K, more than twice the budgeted amount. The long term investment at year-end was \$328.9K, up 20% for the year and up 64.4% since we invested \$200K during 1993 and 1994.

The Transactions income was somewhat lower than budgeted. The number of individual non-member subscribers continues to decline, and also the voluntary and overlength page charges were lower than last year. The Transactions expense was considerably higher than budgeted. This was expected, since AdCom approved an increase in the number of pages from 1128 to 1400 at mid-year to accommodate the large number of submitted papers. Increasing the number of pages above those budgeted incurs an increased cost without offsetting income. The exit fee of \$34K is an IEEE charge for taking the Transactions out of IEEE Publishing, as we did at the beginning of this year. This fee will decrease to zero in 2000.

The budgeted and actual income and expense for the Symposia always show large discrepancies as a result of not knowing in advance when the Final Reports will be completed and submitted to IEEE and when the surplus will be credited to the UFFC account. For instance, the 1995 IUS which was budgeted for 1996, still has not closed the books, even though the bulk of the surplus (\$40K) was sent to IEEE and credited to our account. Similarly for the 1996 IUS; the bulk of the surplus

(\$59K) was credited to our account, but the final report is awaiting the audit. In contrast, the 1996 IFCS ran ahead of schedule; their surplus which was budgeted for 1997 was already credited to our account in 1996 (\$31.8K). The 1996 ISAF still has not closed its books, but they expect a surplus of \$22K. Finally, the \$33K loan reversal is the result of an accounting procedure. If a conference loan is not repaid within a year, the IEEE considers it a bad loan, and an immediate expense equal to the loan is debited to our account. When the loan is finally repaid, the procedure is reversed. I hope this serves as a gentle reminder to all present and future symposia treasurers: Pay off the loan immediately after the Symposium! (My hat off to Tony Sinclair, who did just that for the Toronto 1997 IUS). In summary, all our Symposia have been financial successes, in addition to being technical successes.

The AdCom/Other expenses were \$61.2K, considerably below budget.

Of the \$50K budgeted for foreign speaker and student travel, only \$22.2K was used. Also, \$15K was budgeted for a membership directory; but the benefit of such a directory is still being debated. Finally, \$9.8K was credited to our account from the surplus of the Transactions on Medical Imaging of which UFFC is a co-sponsor.

With the surplus of \$85.3K, the UFFC reserves at the end of 1997 were \$561.5K, within the guidelines set by IEEE for a Society our size.

Herman van de Vaart
Chair, Finance and Operations Committee
January 28, 1998

UFFC OPERATING FINANCIAL STATEMENT 12/31/97

UFFC	INCOME		EXPENSE		NET	
	BUDGET	ACTUAL	BUDGET	ACTUAL	BUDGET	ACTUAL
INTEREST/CAPITAL GAINS	31.9	66.8	0.0	0.0	31.9	66.8
TRANSACTIONS	267.4	248.2	214.7	264.4	52.7	-16.2
NEWSLETTER	0.0	0.0	11.1	12.7	-11.1	-12.7
NON-PERIODICALS	1.6	1.0	1.3	1.5	0.3	-0.5
SYMPOSIA	540.3	269.7	463.1	137.7	77.2	132.0
HQ ADMINISTRATION	10.9	0.0	33.9	23.0	-23.0	-23.0
ADCOM / OTHER	0.0	0.1	112.0	61.2	-112.0	-61.1
TOTAL	852.1	585.8	836.1	500.5	16.0	85.3

TRANSACTIONS	INCOME		EXPENSE		NET	
	BUDGET	ACTUAL	BUDGET	ACTUAL	BUDGET	ACTUAL
MEMBERSHIP FEES	27.5	26.4	0.0	0.0	27.5	26.4
INDIVIDUAL NM SUBS.	69.9	61.2	0.0	0.0	69.9	61.2
ALL TRANS. PACKAGE	108.1	104.1	0.0	0.0	108.1	104.1
AIRFREIGHT	4.6	0.0	0.0	0.0	4.6	0.0
VOLUNTARY PAGE CHARGES	32.3	26.0	7.0	0.9	25.3	25.1
OVERLENGTH PAGE CHARGES	25.0	21.6	2.5	0.2	22.5	21.4
EDITING/COMP/PRINTING	0.0	0.0	112.5	170.6	-112.5	-170.6
UFFC EDITOR	0.0	0.0	37.5	40.3	-37.5	-40.3
ADMINISTRATION	0.0	0.0	11.4	11.5	-11.4	-11.5
REPRINTS/INDEXING/MISC	0.0	8.9	9.8	6.9	-9.8	2.0
EXIT FEE	0.0	0.0	34.0	34.0	-34.0	-34.0
TOTAL	267.4	248.2	214.7	264.4	52.7	-16.2

SYMPOSIA	INCOME		EXPENSE		NET	
	BUDGET	ACTUAL	BUDGET	ACTUAL	BUDGET	ACTUAL
1995 IUS	0.0	40.0	0.0	0.0	0.0	40.0
1996 IUS	234.0	59.0	202.8	0.0	31.2	59.0
1996 IFCS	158.0	170.7	135.0	170.7	23.0	0.0
1996 ISAF	148.3	0.0	125.3	0.0	23.0	0.0
LOAN REVERSAL	0.0	0.0	0.0	-33.0	0.0	33.0
TOTAL	540.3	269.7	463.1	137.7	77.2	132.0

ADCOM	BUDGET		ACTUAL		OUTSTANDING LOANS	
PRESIDENT'S OFFICE	6.0	5.5			1998 IUS	25.0
ADCOM EXPENSES	65.0	28.8			1997 IFCS	8.0
CHAPTERS/DIST. LECT.	15.0	10.4			TOTAL	33.0
TECHN/MEMB/AWARDS	20.0	2.5			RESERVES 1/1/97	476.2
IEEE HQ EXPENSE	6.0	8.6			SURPLUS/DEFICIT	85.3
LEGAL	0.0	5.4			RESERVES 12/31/97	561.5
TOTAL	112.0	61.2				

LONG TERM INVESTMENT **328.9 +64.5%**

WELCOME NEW UFFC-S MEMBERS

We welcome the following new members to the IEEE UFFC Society through December 1997.

Gamble, Kevin J.	AL	Vich, Gustavo A.	Argentina
Koppang, Paul A.	AL	Parker, Steven D.	Australia
Buck, Michael C.	AR	Benes, Ewald J.	Austria
Audet, Sarah	AZ	Schimetta, Germot	Austria
Battel, Steven J.	AZ	De Carvalho, Ricardo J.	Brazil
Davis, Neal L.	AZ	Trizashi, Gosha	Canada
Allison, John W.	CA	Dong, Vizhong	China
Carnett, Stephen Cleo	CA	Jiao, Bingli	China
Chu, Peter	CA	Ullathorne, David P.	England
Clarke, Brooke	CA	Zai, Marvin H.	England
Desmet, Greg L.	CA	Bourquin, Roger	France
Hitch, Benjamin F.	CA	Costa, Francois M.	France
Hudson, Kevin	CA	Graffeuil, Jacques	France
Lu, Felix P.	CA	Le Moigne, Philippe	France
Reising, Steven C.	CA	Buettgenbach, Stephanus	Germany
Schlueter, Ross D	CA	Kahl, Lutz	Germany
Yeh, Morris S.	CA	Schimpe, Robert	Germany
Seymour, Michael	CO	Schmidhammer, Edgar	Germany
Conant, James R.	CT	Leung, William Lo Wei	Hong Kong
Pruehsner, William R.	CT	Or, Siu Wing	Hong Kong
Testa, Jr., Louis D.	CT	Chaudhary, Ranjit S.	India
Cook, Harold	FL	Sannabhadti, Liladhar S.	India
Myers, Peter J.	FL	Peyvandi, Hosseim	Iran
Kite, Kenneth B.	GA	Rajae-e-Sani, Ali	Iran
Steiner, Mike D.	ID	Stern, Avindam	Israel
Happoldt, P. Greig	IL	Yoran, Eshel	Israel
Hawkes, Malcolm	IL	Zomet, Simon	Israel
Li, Valen Xiu Wei	IL	Franco, Di Paolo	Italy
Miyayama, Takashi	IL	Ishii, Osamu	Japan
Moyers, Kevin S.	IL	Moriya, Takashi	Japan
Steenis, John M	IN	Tsuji, Mikio	Japan
Abenaim, Daniel	MA	Yamaguchi, Yoshiaki	Japan
Bomdaryk, Joseph E.	MA	Yoshida, Toshifumi	Japan
Crosby, Richard S.	MA	Chedl, Park K.	Korea
Downing, Stephen	MA	Jae, Lee Kwang	Korea
Farkas, Jr., Alexander	MA	Kwon, Junsik	Korea
Magnan, Christopher R.	MA	Lee, Tiang Huang	Malaysia
Ekstrom, Christopher R.	MD	Alvarez, Fernando Juarez	Mexico
Wheeler, David E.	MD	Aspelund, Audun	Norway
Kluiwstra, Jan-Ulco A.	MI	Hansen, Rolf K.	Norway
McGee, Robert M.	MI	Lervik, John M.	Norway
Smid, Gert E.	MI	Zhgoon, Sergei	Russia
Cernosek, Richard W.	MN	Erlandson, Bjorn-Erik	Sweden
Holmes, Joseph	NC	Chang, Chung C.	Taiwan
Stoner, Brian R.	NC	Lin, Yu-Hong	Taiwan
Wynands, Henry	NC	Yalcin, Mustak E.	Turkey

Lopez, Eduardo J.	NJ	Ferguson, Michael S.	TX
Butterman, Jay A.	NY	Gratton, Patrick S.	TX
Kharin, Nikolay A.	OH	Lee, Jack C.	TX
Kirk, J. Anthony	OH	Lorenz, Paul A.	TX
Anthony, Aaron L.	PA	Quintero, Rose Marie	TX
Gingrich, Mark A	PA	Smith, Clay Chip	TX
Miklich, Andrew	PA	Snyder, David R.	TX
Nelson, Regina K.	PA	Hiller, John	VA
Pai, Neelesh G.	PA	Keith, F. Joseph	VA
Pinus, Alexander B.	PA	Bedi, Ram L.	WA
Yimnirun, Rattikorn	PA	Curra, Francesco P.	WA
Ballato, John	SC	Jong, Jing Ming	WA
Kelley, James A.	TN	Kaczkowski, Peter	WA
Muller, Rick	TN	Slawiatynsky, Marion M.	WA
Cooper, Lynn E.	TX	King, Todd L.	WI
Dyche, George L.	TX	Patel, Ropa M.	WI

UFFC-S Distinguished Lecturer Spans the Globe

What an opportunity - travel to meet friends and colleagues. My travels started in late October - early November with two one-day visits, Drexel University in Philadelphia (host: Peter Lewin) and Washington DC (host: DC ASNT Chapter). Then I was off for a wonderful two-week visit to Japan where I gave a total of 7 talks at Aloka, Ultrasonics Electronics 97 at Chiba University, Tohoku University in Sendai, Toshiba, Japan Society of Ultrasonid in Medicine in Tokyo, and Hitachi. My Japanese hosts included the UFFC Tokyo Chapter (President: Masatsune Yamaguchi from Chiba University), and Jun-ichi Kushibiki, Tohoku University, Sendai. After the holidays I was off to a two-week great-food trip to France where I gave a total of 9 talks at Centrale Lille in Villeneuve d'Ascq Cedex (host: Bogdan Piwakowski), Universite PARIS 6 in Paris (host: Genevieve Berger), Universite PARIS 7 in Paris (host: Mathias Fink), CREATIS in Lyon (hosts:



Dinner with the UFFC Tokyo Chapter officers and guests who hosted Bill O'Brien's Distinguished Lecture visit in Japan.

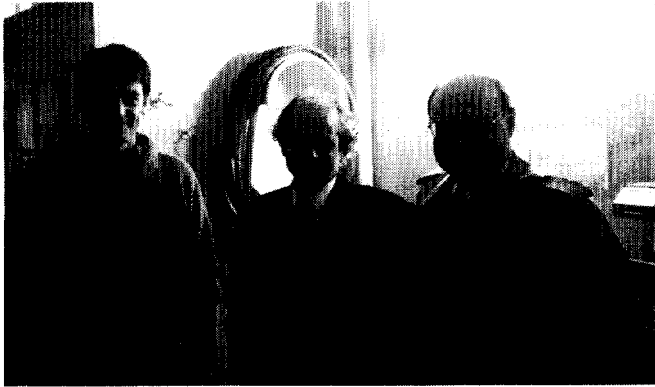
Front row (left to right): Masa Yamaguchi, President, Bill O'Brien, UFFC Distinguished Lecturer, Noriyoshi Chubachi, General Chair, 1998 IEEE Ultrasonics Symposium. Back row (left to right): Jun-ichi Kushibiki, Vice President, Ken-ya Hashimoto, Treasurer, Keiji Sakai, Secretary



1996-1998 UFFC-S President Don Malocha (right) and UFFC Transactions' Editor-in-Chief Bill O'Brien (left), both alums of the University of Illinois, prior to enjoying a University of Illinois football game.



Lunch in Paris with (clockwise): Bill O'Brien, Lori Bridal, Bernard Pellaunil, Genevieve Berger, Gerard Quentin, Amena Saied



Visiting CREATIS (Center on Image and Signal Processing) in Lyon with (left to right): Olivier Basset, Gerard Gimenez, Bill O'Brien



After lunch in Toronto with (left to right): Kasia Harasiewicz, Jean-Michel Correas, Stuart Foster, Bill O'Brien, John Hunt, Richard Cobbold



Visiting Thomson Microsonics in Sophia-Antipolis with (left to right): Bill O'Brien, Jean-Francois Gelly

Olivier Basset and Gerard Gimenez), INSERM in Lyon (host: Jean-Yves Chapelon), and Thomson Microsonics in Sophia-Antipolis (host: Jean-Francois Gelly). The end of January found me in Toronto for a three-day visit to the Department of Medical Biophysics, University of Toronto (host: Stuart Foster). By the time you read this, I will have presented the Distinguished Lecture talk in Phoenix, Houston, San Antonio, Seattle,

Pullman, Charlottesville, Durham, Florence and Genova (Italy), Atlanta, Boston, Aarhus and Lyngby (Denmark), University Park, Alfred, Rochester, Bochum (Germany), and Rotterdam (The Netherlands). Please feel free to contact me for a presentation at wdo@uiuc.edu.

William D. O'Brien, Jr.
1997-1998 UFFC Distinguished Lecturer

Chapter Activities

Boston UFFC-S Chapter

The Boston Chapter has embarked upon another successful season (1997 - 1998) with seven presentations scheduled. Attendance at each meeting ranges from fifteen to thirty-five or forty. Meetings are usually scheduled for the second or third Wednesday in the month, and holiday/school vacation weeks are avoided also. Meetings start at 5:30PM with refreshments (coffee and doughnuts) and informal discussions, the talk is usually scheduled for an hour from 6:00 to 7:00 PM, with an informal Chinese buffet dinner with the speaker afterwards at a local restaurant. Meetings are held at Raytheon's Lexington Laboratory (formerly the Raytheon Research Division). The following is a listing of talks and speakers planned for this season:

- 1) November 19th, 1997: "Marine Applications of PVDF Polymer Transducers"
R. H. Tanerrell & D. Huang,
Airmar Technology Corp.
- 2) January 21st, 1998: "Smart Composites"
N. W. Hagood, MIT
- 3) February 18th, 1998: "The Usefulness of Focused

- 4) March 11th, 1998: "Ultrasound in Therapy"
K Hynynen, Harvard Medical School
- 5) April 8th, 1998: "Ultrasound Waves Generated by Laser Irradiation of Particles"
G. J. Diebold, Brown University
- 6) May 13th, 1998: "Modern Diagnostic Ultrasound Imaging - Assessing the Risks"
W. D. O'Brien, Jr., University of Illinois,
UFFC-S Distinguished Lecturer,
1997-1998
- 7) June 10th, 1998: To Be Determined
- 8) June 10th, 1998: "Recent Developments in Seismic Exploration and Reservoir Characterization"
J. Ullo, Schlumberger-Doll Research

Chapter officers for the year are Gary Montress (Chairman), Bob Potter (Vice-Chairman), and Norm Benoit (Secretary-Treasurer).

Gary Montress
1997-1998 Chapter Chairman
Boston UFFC-S Chapter

Report from the German UFFC Chapter

1) Chapter Meetings

In 1997 the German Chapter organized 3 meetings. Here are the details:

Meeting Date: April 21, 1997
 Organized in cooperation with: The German IEEE MTT Chapter
 Topic: Commercial Radio Sensors and Communication Techniques
 Place: Sindelfingen, Germany
 Attendance-IEEE members: 30
 Guests: 30
 Total: 60
 UFFC Organizer: Robert Weigel, Linz, Austria

Meeting Date: June 14, 1997
 Organized in cooperation with: University of Bochum et al.
 Topic: Intravascular Ultrasound
 Place: Bochum, Germany
 Attendance-IEEE members: 10
 Guests: 50
 Total: 60
 UFFC Organizer: Helmut Ermert, Bochum, Germany

Meeting Date: Sept 29 - Oct 1, 1997
 Organized in cooperation with: The German Society of Acoustics
 Topic: Acoustic Microscopy
 Place: Bad Honnef, Germany
 Attendance-IEEE members: 5
 Guests: 40
 Total: 50
 UFFC Organizer: Walter Arnold, Saarbruecken, Germany

For 1998 the following meetings are planned:

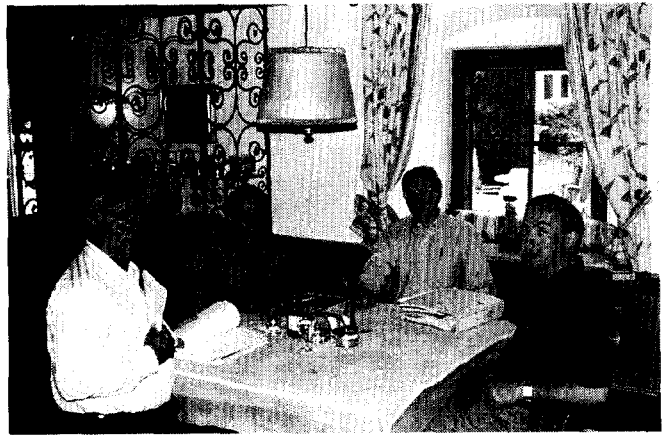
Meeting Date: March 19-21, 1998
 Organized in cooperation with: University of Halle (Saale), Germany et al.
 Topic: Quantitative Sonography
 Place: Halle (Saale), Germany
 UFFC Organizer: Helmut Ermert, Bochum, Germany

Meeting Date: September 18, 1998
 Organized in cooperation with: IEEE MTT/AP, DGON, and ITG
 Topic: Radio Sensor and Communications Workshop
 Place: Munich, Germany
 UFFC Organizer: Robert Weigel, Linz, Austria

For further information on upcoming conferences contact Helmut Ermert, E-mail: he@hf.ruhr-uni-bochum.de and/or Robert Weigel, E-mail: weigel@mechatronik.uni-linz.ac.at.

2) IEEE Ultrasonics Symposium Planning

In 1996 the Administrative Committee of the UFFC-Society decided to plan the Ultrasonics Symposium for Munich, Germany in 2002. Since that time Reinhard Lerch (Linz,



Austria), Robert Weigel (Linz, Austria), and Helmut Ermert (Bochum, Germany) are involved in the planning activities. In July 1997, during a sabbatical visit of Bernie Tittmann at the University of Linz (Austria), a first meeting was held in Strobl/Austria which is located at the Wolfgangsee, a small lake near Salzburg, in order to start detailed planning activities. The enclosed photography shows (from left to right) Bernie, Helmut, Robert, and Reinhard during their discussions regarding hotel and conference facilities in Munich and a suitable date for the symposium in the fall of 2002 which does not coincide with larger meetings and fares in Munich at the same time. On the Ultrasonics Symposium in Toronto in 1997 Helmut Ermert gave a report to the Administrative Committee which accepted the proposed date (October 8-11, 2002) for the symposium. This date has no collision with the Oktoberfest (September 21 - October 6, 2002), but it offers a chance to visit this event about one week earlier for those attendants, who like to do so. During the Oktoberfest it is usually hard to get hotel rooms and low reasonable room rates. At the moment our planning considers the Symposium to be held in the so-called "Gasteig" which is very close to the City Hilton Hotel and the Forum Hotel. Preliminary reservations have been made. The organization will be carried out by the German Association of Electrical Engineers (VDE), which is a non-profit organization and something like the German equivalent of the IEEE. The VDE is hosting the office of the German Section of the IEEE in Frankfurt/Germany.

Helmut Ermert
February 1, 1998

Tokyo Chapter

The Tokyo Chapter held 11 technical meetings in 1997, in conjunction with the Technical Group on Ultrasonics of the Institute of Electronics, Information and Communications Engineers of Japan:

Date	Papers	Place
1) January 23-24, 1997	18	Osaka
2) February 28, 1997	8	Chiba
3) April 25, 1997	10	Tokyo
4) May 23, 1997	6	Tokyo
5) June 24, 1997	7	Chiba
6) July 4, 1997	12	Tokyo

7) August 29, 1997	8	Numazu
8) September 25-26, 1997	16	Yonezawa
9) October 23, 1997	12	Tokyo
10) November 21, 1997	7	Hamamatsu
11) December 16, 1997	5	Yokohama

18th Symposium on Ultrasonic Electronics

The Tokyo Chapter sponsored the 18th Symposium on Ultrasonic Electronics (USE '97) on November 12-14, 1997, at the Chiba University in Chiba prefecture, attended by more than 300 participants. Three invited talks and 126 contributed papers were presented. The papers will be published in the May 1998 issue of the Japanese Journal of Applied Physics.

UFFC-S 1997-1998 Distinguished Lecturer Program

Dr. William D. O' Brien, Jr. of Bioacoustics Research Laboratory, Department of Electrical & Computer Engineering, University of Illinois, the UFFC-S 1997-1998 Distinguished Lecturer, was invited to Japan and he was there from November 10 to November 20. He favored us with impressive and instructive talks on the topics, "Modern Diagnostics Ultrasound Imaging — Assessing the Risks" at the USE '97 in Chiba and at 150th Committee of Japan Society for the Promotion of Science. He was invited to two companies in Tokyo and Nasu.

1998 Officers

The officers of the Tokyo Chapter for 1998 are:

Chairman: Professor Masatsune Yamaguchi, Faculty of



Dr. William D. O' Brien, Jr. with the members of the IEEE-UFFC-Tokyo Chapter at the USE '97 welcome party held in Chiba

Engineering, Chiba University, Yayoi, Inage-ku, Chiba 263-0022

Vice Chairman: Professor Jun-ichi Kushibiki, Faculty of Engineering, Tohoku University, Aoba, Aramaki, Aoba-ku, Sendai 980-8579

Secretary: Associate Professor Keiji Sakai, Institute of Industrial Science, University of Tokyo, Roppongi 7-22-1, Minato-ku, Tokyo 106-0032

Treasurer: Associate Professor Kenya Hashimoto, Faculty of Engineering, Chiba University, Yayoi, Inage-ku, Chiba 263-0022

Jun-ichi Kushibiki
Vice Chairman,
UFFC-S Tokyo Chapter

FUTURE UFFC-S SPONSORED SYMPOSIA

ULTRASONICS SYMPOSIA

1998 IEEE International Ultrasonics Symposium

Sendai, Miyagi, Japan - 5 - 8 October 1998

For information contact:

Noriyoshi Chubachi, *General Co-Chair*

Tohoku Gakuin University

Faculty of Engineering

Tagajo, Miyagi 985

JAPAN

(81) 22-368-1115 (Phone)

(81) 22-263-9230 (FAX)

chubachi@tjcc.tohoku-gakuin.ac.jp (e-mail)

or

Bernhard R. Tittmann, *General Co-Chair*

The Pennsylvania State University

Department of Engineering & Mechanics

210 Hammond Building

University Park, Pennsylvania 16802

USA

(814) 865-7827 (Phone)

(814) 863-7967 (FAX)

brt4@psu.edu (e-mail)

Kazuhiko Yamanouchi, *Technical Program Co-Chair*

Tohoku University

Research Institute of Electrical Communication

Katahira, Aoba-ku

Sendai 980-77

JAPAN

(81) 22-217-5 526 (Phone)

(81) 22-217-5526 (FAX)

yamasaw@riec.tohoku.ac.jp (e-mail)

James F. Greenleaf, *Technical Program Co-Chair*

Mayo Clinic

Ultrasound Research

200 First Street SW

Rochester, Minnesota 55905

USA

(507) 284-8496 (Phone)

(507) 284-1632 (FAX)

jfg@mayo.edu (e-mail)

1999 IEEE International Ultrasonics Symposium

Lake Tahoe, Nevada

For information contact:

Pierre B. T. Khuri-Yakub, *General Chair*

Stanford University

Department of Electrical Engineering

E. L. Ginzton Laboratory

Room 11

Stanford, California 94305-4085

USA

(415) 723-0718 (Phone)

(415) 725-7509 (FAX)

khuri-ya@ee.stanford.edu

Gary R. Johnson, *Technical Program Chair*

Sawyer Research Products Inc.

35400 Lakeland Boulevard

Eastlake, Ohio 44095

USA

(216) 951-8770 (Phone)

(216) 951-1480 (FAX)

g.johnson@ieee.org (e-mail)

2000 IEEE International Ultrasonics Symposium

San Juan, Puerto Rico

For information contact:

Madjid A. Belkerdid, *General Chair*

University of Central Florida

Department of Electrical & Computer Engineering

Orlando, Florida 32816-2450

USA

(407) 823-5793 (Phone)

(407) 823-5835 (FAX)

mab@enr.ucf.edu (e-mail)

2001 IEEE International Ultrasonics Symposium

Location, dates, and contacts not approved yet

2002 IEEE International Ultrasonics Symposium

Munich, Germany, October 8-11

For information contact:

Reinhard Lerch, *General Chair*

University of Linz

Institute fuer Elektrische Messtechnik

Altenberger Strasse 69

A-4040 Linz

AUSTRIA

(43) 732-2468-9209 (Phone)

(43) 732-2468-822 (FAX)

r.lerch@jk.uni-linz.ac.at (e-mail)

1999 IEEE International Frequency Control Symposium

Besancon, France, April 12-16

For information contact:

Donald B. Sullivan, *General Co-Chair*

National Institute of Standards & Technology

Time & Frequency Division

Division 847

325 Broadway

Boulder, Colorado 80303

USA

(303) 497-3772 (Phone)

(303) 497-6461 (FAX)

or

Raymond J. Besson, *General Co-Chair*

LCEP-ENSM

Ja Bouloie - route de Gray

25030 Besancon Cedex

FRANCE

(31) 81-66-66-32 (Phone)

(31) 81-88-57-14 (FAX)

Frederick L. Walls, *Technical Program Chair*

National Institute of Standards & Technology

Time & Frequency Division

Division 847

325 Broadway

Boulder, Colorado 80303

USA

(303) 497-3207 (Phone)

(303) 497-6461 (FAX)

FREQUENCY CONTROL SYMPOSIA

1998 IEEE International Frequency Control Symposium

Pasadena, California, May 27-29

For information contact:

Thomas E. Parker, *General Chair*

National Institute of Standards & Technology

Time & Frequency Division

Division 847

325 Broadway

Boulder, Colorado 80303

USA

(303) 497-7881 (Phone)

(303) 497-6461 (FAX)

tparker@bldrdoc.gov (e-mail)

FERROELECTRICS SYMPOSIA

1998 IEEE International Symposium on Applications of Ferroelectrics

Montreux, Switzerland, August 24-27

For information contact:

Nava Setter, *General Chair*

Ecole Polytechnique Federale de Lausanne (EPFL)

Laboratoire de Ceramique

MX-D Ecublens

CH-1015 Lausanne

SWITZERLAND

(41) 21-693-2961 (Phone)

(41) 21-693-5810 (FAX)

nava.setter@lc.dmx.epfl.ch (e-mail)

INVITATION TO SENDAI — 1998 IEEE International Ultrasonics Symposium

It is a great pleasure and privilege to welcome you to the 1998 IEEE International Ultrasonics Symposium to be held from October 5 to 8 in Sendai, Japan. In our society of UFFC, this is the second time the symposium is held outside the North American continent after 1994 Cannes, France and it is the first time in Asia. We are grateful to the members of AdCom, who always give their kind suggestions and advice to our local committee.

Our local committee is making special efforts in the preparation for the Sendai symposium and hope that the planned program will satisfy all participants. In order to attract as many participants as possible from abroad, our local committee is preparing many pleasant events.

Here we should like to inform you of two special events. The first is a new program of "Presentations and Tours" which was kindly arranged by three research teams of Tohoku University where ultrasound investigations in Japan originated. We hope you will find and feel the active research atmosphere of Tohoku University, directly. Details will be described in this newsletter.

The second is a special noble and elegant "Noh" performance that will be given by Mr. Rejiro Tsumura, the famous "Noh" actor and his musical team. "Noh" is a classical Japanese stage art or play which combines elements of dance, drama, music and poetry into one highly aesthetic stage art. Before their performance Mr. Tsumura will make a presentation on "Noh" in English. You will be able to look at gorgeous "Noh" costumes and classical Japanese instruments, such as the bamboo flute and special drums - very closely. We are also planning a pleasant Japanese style dinner and joyful guest tours during the symposium week.

We hope and wish that this Sendai symposium will promote mutual understanding of asian and western cultures, so that our society may contribute to the peace of the world as well as human welfare worldwide through science and technology.

Noriyoshi Chubachi and Bernhard Tittmann
General co-Chairs

Presentations and Tours

This is a new program especially arranged for Sendai Symposium.

Background of this special program:

It can be said that ultrasound investigations in Japan originated at Tohoku University in Sendai. In the history of the Department of Electrical Engineering, Tohoku University, Professor Heiichi Nukiyama studied on electroacoustic transducers with Professor A. E. Kennelly at Harvard University in Boston from 1917 to 1919. After he returned to Tohoku (then Imperial) University in Sendai, he raised many active researchers and engineers of acoustics to spread them to all parts of Japan. In 1936, Professor Nukiyama was awarded the highest prize on science and technology in Japan, which is known as the "Asahi Prize", on the development of underwater telephony and magnetostriction ultrasonic transducers. Professors Y. Kikuchi and K. Shibayama of Tohoku University, and Professor J. Saneyoshi of Tokyo Institute of Technology - all students of Professor Nukiyama - cultivated ultrasonics in such fields as under-water ultrasonics, non-destructive testing, ultrasonics in medicine and biology, SAW devices, etc., so that many engineers working in ultrasonics industries today have continued their good relationships with Tohoku University. To visit Tohoku University is a must for ultrasonics engineers.

On this occasion of the Ultrasonics Symposium held in Sendai, the local committee members have arranged the following program to return our sincere thanks to all friends in the

world who for a long time have been encouraging the ultrasonics groups of Tohoku University.

Presentations and Tours

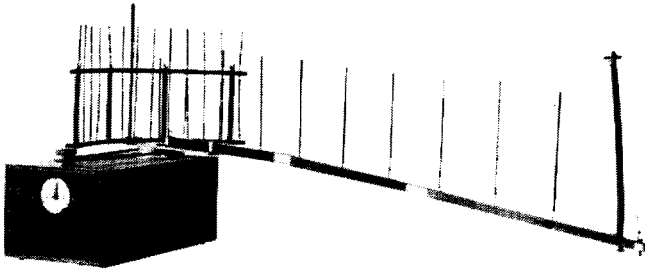
The following three tours are planned on Monday, October 5, 1998. Please join us in this program and discussion.

Tour 1. "SAW Devices and Fabrication"- Katahira Campus

Presenters: Professors K. Yamanouchi and K. Tsubouchi

Research activities on novel SAW materials, SAW devices, and their applications to GHz wireless multimedia communication in Research Institute of Electrical Communication are presented.

- (1) KNbO_3 single crystals and thin films with extremely high electromechanical coupling coefficients for SAW devices.
- (2) New type of SAW convolvers using InSb semiconductor thin film fabricated by MBE method.
- (3) Submicron fabrication technology and its application to GHz-Range SAW-filters
- (4) Scanning nonlinear dielectric microscopy for evaluation of ferroelectric domains and its application to ferroelectric memory.
- (5) ZnO/Si SAW convolver and highly reliable 2.4 GHz spread spectrum (SS) wireless modem utilizing the con-



SAW structure reminds us of Yagi-Uda antenna invented at Tohoku University.

volver as a corrector. This modem is the first authorized one for 2.4 GHz SS band in Japan. .

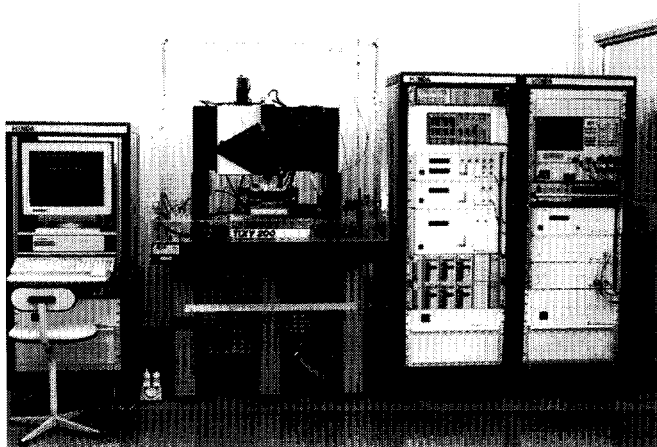
- (6) 2.4 GHz front-end AlN/Al₂O₃ SAW matched filter with the zero-temperature-coefficient-of-delay characteristics and the ultra low-power (28mW) card-size SS wireless modem.
- (7) Indoor SS/CDMA system utilizing the approximately synchronous CDMA code. Facilities of Yamanouchi Laboratory and Tsubouchi Laboratory as well as the Superclean Room of the Laboratory for Electronic Intelligent Systems will be opened and guided.

Tour 2. "Ultrasonic Micro-Spectroscopy"- Aoba-yama Campus.

Presenters: Professors J. Kushibiki and K. Yamanaka

"Ultrasonic-Microspectroscopy (UMS)" as a new technology for material analysis has been intensively studied at Tohoku University. The UMS technology consists of the following new ultrasonic systems and methods:

- (1) acoustic microscopy with imaging and quantitative measurements,
- (2) bulk-wave ultrasonic spectroscopy, operating in the VHF and UHF ranges,
- (3) laser ultrasound system including the phase velocity scanning of interference fringes, and



Ultrasonic spectroscopy (UMS) system.

- (4) ultrasonic atomic force microscopy with super high resolution at the nanometer scale.

UMS has been applied to a wide variety of scientific and industrial materials problems, including various mechanical solid materials. After presentation, the UMS Research Center of Kusibiki Laboratory and Yamanaka Laboratory will be opened and guided.

Tour 3. "Medical Ultrasonics" - Seiryō Campus.

Presenters: Professors S.Nitta (MD), Y. Koiwa(MD), Y. Saijo(MD), and H. Kanai.

At Tohoku University, medical doctors and engineers have collaborated to cultivate medical ultrasonics since the late Professor Y. Kikuchi initiated it in the 1950's. In the presentation, two quantitative evaluation systems are demonstrated, which have been recently developed for medical diagnosis and tissue characterization.

- (1) A novel Doppler system for clinical cardiovascular diseases has been developed at the Electrical Engineering Department. A small displacement on the heart wall or arterial wall is measured in the frequency range up to 200 MHz for each of multiple layers preset across the ventricular wall. From the displacement, the changing view in myocardial thickening during the cardiac cycle at each layer is graphically described. We also present the usefulness of this system in evaluating the instability of the atheromatous lesion of carotid artery, which is one of the main clinical targets today.
- (2) A mechanically scanning acoustic microscope (SAM) system, operating in the frequency range 100-200 MHz, has been specially developed for medicine and biology at the Research Institute of Cancer and Chest Diseases. The system has been applied to various kinds of diseased tissues, and the research of tissue characterization using two-dimensional images and quantitative data of velocity and attenuation has been conducted.



New ultrasonic diagnostic equipment invented at Tohoku University.

SENDAI

How wonderful it is that the 1998 Ultrasonics Symposium is going to be held in Sendai! We appreciate AdCom members who always give their kind suggestions and advice to our local committee. Our local committee is planning to offer you pleasant events. We are always thankful for the efforts of our local committee members as well. In this homepage, we are happy to tell you how proud we are of the Sendai and Tohoku District. We hope you have a joyful stay in Sendai.

Sendai's Historical Background

First, I would like to tell you about a golden shrine in Hiraizumi. In 1271, Marco Polo set out on his journey from the court of the Mongol Emperor Kublai Khan. It is said that his dream was to visit Japan where a golden culture was blooming in the Tohoku District. In the 12th century, the Fujiwara family became powerful and succeeded in developing a remarkably refined culture in their administrative capital, Hiraizumi, that is located about 60 km north of Sendai. They built Chusonji Temple in Hiraizumi, using an abundant amount of gold in 1124. This is about 260 years before the famous Kinkakuji in Kyoto was built in 1397. We think the golden culture, which Marco Polo sought, was not Kyoto but our Tohoku District.

In 1600, Feudal Lord, Duke Date Masamune started the construction of his town in association with his castle and temples in Sendai. The castle, which burned in the beginning of the Meiji era, had been situated on the hill named Aoba-yama Mountain, in the western edge of the downtown. A campus of the Faculty of Engineering, Tohoku University, is now located on the same mountain area behind the Aoba Castle. It was Masamune who first sent his envoy, Tsunenaga Hasekura, from Japan to Rome. He had an audience with Pope Paul V and returned with the certificate of citizenship of Rome. However, the Tokugawa government, during his journey to Europe, prohibited Christianity. Thus, Masamune couldn't realize his dream of establishing diplomatic relations with countries abroad. During the Edo period, the Tokugawa Shogunate was peaceful and cultivated its special beauty of life style.

Academic background

The ban of Christianity continued until the year of 1873, the early Meiji period. In 1886, Mr. Osikawa, Japanese pastor, and Mr. Hoy, American missionary, began to offer some basic instructions in theology to six or seven young men in a small rented house, which became Tohoku Gakuin University. Mr. Schneider, the second president of Tohoku Gakuin University, promoted international good will. Tohoku Imperial University, the present Tohoku University, was established in 1907. It is one of the most prestigious national universities in Japan. It is the first university in Japan to introduce co-education and begin conferring degrees on foreign students. The Electrical Engineering Department and Faculty was established in 1919. The late Professor Hidetsugu Yagi, one of the department's founders, is very famous for the Yagi-Uda antenna.

Sendai Today

The population of Sendai is approximately one million. Sendai plays a vital role within the Tohoku District as the academic, commercial and administrative center. Despite the rapid and remarkable development of the city environment, the natural beauty of the area has been well preserved. The Hirose River flows through the center of the city. The streets are lined with a variety of trees. Around Sendai, the forested hills and the natural coastline have also been well preserved. The volcanic lake, Okama, is famous for its changing colors in the Zao Mountain. In Matsushima Bay, you can see about 230 islands, which are clad with pine trees. Matsu means pine trees, and shima means islands. They are typical beauty spots in Japan. Japan is a volcanic land with numerous hot spring resorts. In and around Sendai, there are many hot springs, with hot water including various kinds of natural minerals. It is said to be good for the treatment of chronic disease, rheumatism, respiratory diseases, neuralgia, gastroenteric disorders, and so on. Japanese people enjoy natural spas, particularly open-air baths in natural surroundings. Let's enjoy staying one night in natural spas after the symposium. The downtown is small enough so you can enjoy visiting many historic places and shopping on foot. Please enjoy the taste and products of the Sendai area.

Akiko Chubachi

EXPRESS YOUR VIEWS.

Your ideas are valuable!

Nominations for UFFC-S ACHIEVEMENT AWARD

The Achievement Award is the highest Society-wide award presented to a member in special recognition of outstanding technical achievements. Take a moment to identify members whom you think deserve to be honored. The award is granted for significant technical publications in the field of ultrasonics, ferroelectrics, or frequency control; for presentation of lectures; and/or for service to the Society.

The award embraces all technical fields in the society, and includes both technical and organizational achievements. Each nomination receives serious consideration by the Officers and the Awards Committee. Nominations may be submitted at any time during the year.

Photocopy this section and send via FAX or mail:
(You may submit more than one if you wish.)

Here is my nomination for **Achievement Award**:

Nominee's Name & Main Contributions: _____

Your Name/Address: _____

Send at anytime to: Roger H. Tancrell
Chair, UFFC-S Awards Committee
7 Valyn Lane
Wilmington, MA 01887-1147
Tel/FAX: (978) 657-9748
e-mail: r. tancrell@ieee.org

Nominations for UFFC-S DISTINGUISHED SERVICE AWARD

The Distinguished Service Award is a new award created by AdCom to recognize long-term support of the Society's activities. The first Award was presented in 1997. 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. Nominations may be submitted at any time. Who is the person you would like to honor in this way?

Photocopy this section and send via FAX or mail:
(You may submit more than one if you wish.)

Suggestions for the next **Distinguished Service Award**:

Your Name/Address: _____

Send at anytime to: Roger H. Tancrell
Chair, UFFC-S Awards Committee
7 Valyn Lane
Wilmington, MA 01887-1147
Tel/FAX: (978) 657-9748
e-mail: r. tancrell@ieee.org

Nominations for DISTINGUISHED LECTURER AND/OR TOPIC

The UFFC-S Distinguished Lecturer is welcomed by organizations around the world to present an up-to-date review of new developments in ultrasonics, ferroelectrics, or frequency control. The Distinguished Lecturer represents the Society to the larger technical community, and stimulates interest in the Society's professional areas. Recent lecturers have spoken to local chapters, universities and companies throughout North America, Japan, Europe, China, and South America.

Which topics would you like to hear? Which member would give a stimulating lecture? Fresh ideas are always welcome. Nominations may be submitted at any time. Be heard by filling out the attached form.

Photocopy this section and send via FAX or mail:
(You may submit more than one if you wish.)

Suggestions for the next **Distinguished Lecturer and/or Topic**:

Your Name/Address: _____

Send at anytime to:

Prof. Mack A. Breazeale
Chair, UFFC-S Distinguished Lecturer
Subcommittee
The National Center for Physical Acoustics
University of Mississippi
University, MS 38677
Tel: (601) 232-7490
FAX: (601) 232-7494

Presidential Loyalty

There were ten former society presidents attending the Toronto Symposium. Did you spot George Alers, Jan Brown, Gerry Farnell, Jim Greenleaf, Larry Kessler, Allen Meitzler, Bruce McAvoy, Bill O'Brien, Harry Salvo Jr., and Herman van de Vaart? Harry had surgery shortly after the symposium and continues to recover. We wish Harry and his family well as he continues to gain strength and returns to work.

Editor's Note

The first article in this spring issue is a message from our newly elected president, John Vig, who will be guiding our society for the next two years. We wish John the very best and need to support him in his new leadership role. A personal biography of John appears elsewhere in the newsletter. Rounding out the society officers are Fred Hickernell, President-Elect, and Gary Montress, Secretary-Treasurer.

Bernie Tittmann will be our new Distinguished Lecturer. His abstract and bio are just inside the front cover. Bernie tells me that he already has been invited to give some lectures. Be sure and contact him early so he can make travel convenient arrangements.

There are some exciting symposia coming up in 1998 starting with the Frequency Control Symposium in Pasadena, California, the end of May. Jan Brown supplied close-up photos of the Technical Program Committee members. El Niño will have subsided and you will have 170 papers and several

tutorials to choose from. In June a UFFC-S supported symposium is planned in Russia. A wonderful opportunity to experience the beauty and culture of the region near St. Petersburg while hearing the latest technical paper presentations. In August, ISAF IX is joining with two other international conferences in Montreux, Switzerland, to cover the latest in electroceramics, thin films, polar and ferroelectric materials, and their applications. Finally, it is not too early to be thinking about the Ultrasonics Symposium in Sendai, Japan. Details about these symposia can be accessed through the UFFC Web Site. A listing of future symposia also appears.

Reflections from the Toronto Ultrasonics Symposium is captured in word and picture. Jan Brown, Stuart Foster, Thresa Hickernell, and Elke Lerch supplied the photos. This is followed by society business. We welcome our newly elected AdCom members and a newly appointed student member of the AdCom. A summary of the minutes of the

AdCom meeting in Toronto will keep you informed of the official business of the society. The van de Vaart report on finances shows we are a fiscally fit society. Congratulations to Jim Miller and Denis Webb as our two newest Fellows of the IEEE. Welcome to our newest members as of the end of 1997. Bill O'Brien has let us in on his world adventures as Distinguished Lecturer. Our most active chapters have reported in. The Awards' Committee continues to need membership input for our major awards. Finally, take note of the websites that are available for you to keep up with society activities.

I was proud, but also humbled, to be elected President-Elect of the UFFC-Society. We have the very best membership of any society in the IEEE, and I look forward to working with the AdCom, special committees, and the members, in continuing to strengthen our society in its service to the membership and the technical community. As such, I feel it is time for me to turn over the reigns of the newsletter editorship. If you have a desire or interest in becoming the next Newsletter Editor-in Chief and bringing some new thoughts and ideas to

the pages, please let me know soon, and I will tell you what is involved. We get very good support from the IEEE magazines editorial staff in final layout and printing. It is the main job of the editor to solicit the articles and photos.

I trust you will enjoy this issue of the newsletter. Special thanks go to Robin Edwards and her coworkers at IEEE Magazines/Newsletters for final assembly of this newsletter edition. The invitation is always there to any of our members to submit articles, photographs, and information which will be of interest to our readership. The next deadline falls early, 6 July 1998, for the fall newsletter. The easiest way to communicate is by E-mail if you have it available. My address is f.hickernell@ieee.org. I have a fax- (602) 441-7714, a phone- (602) 441-2923, and an address-Motorola SSTG, MS-H1330, 8201 E. McDowell, Scottsdale, AZ 85252. I look forward to hearing from you.

Fred Hickernell
Newsletter Editor



The INSTITUTE OF ELECTRICAL & ELECTRONICS ENGINEERS, Inc.
445 Hoes Lane, P.O. Box 1331 • Piscataway, NJ 08855-1331, USA

Non Profit Org.
U.S. Postage
PAID
IEEE
Permit #52