IEEE ULTRASONICS, FERROELECTRICS, AND FREQUENCY CONTROL SOCIETY NEWSLETTER

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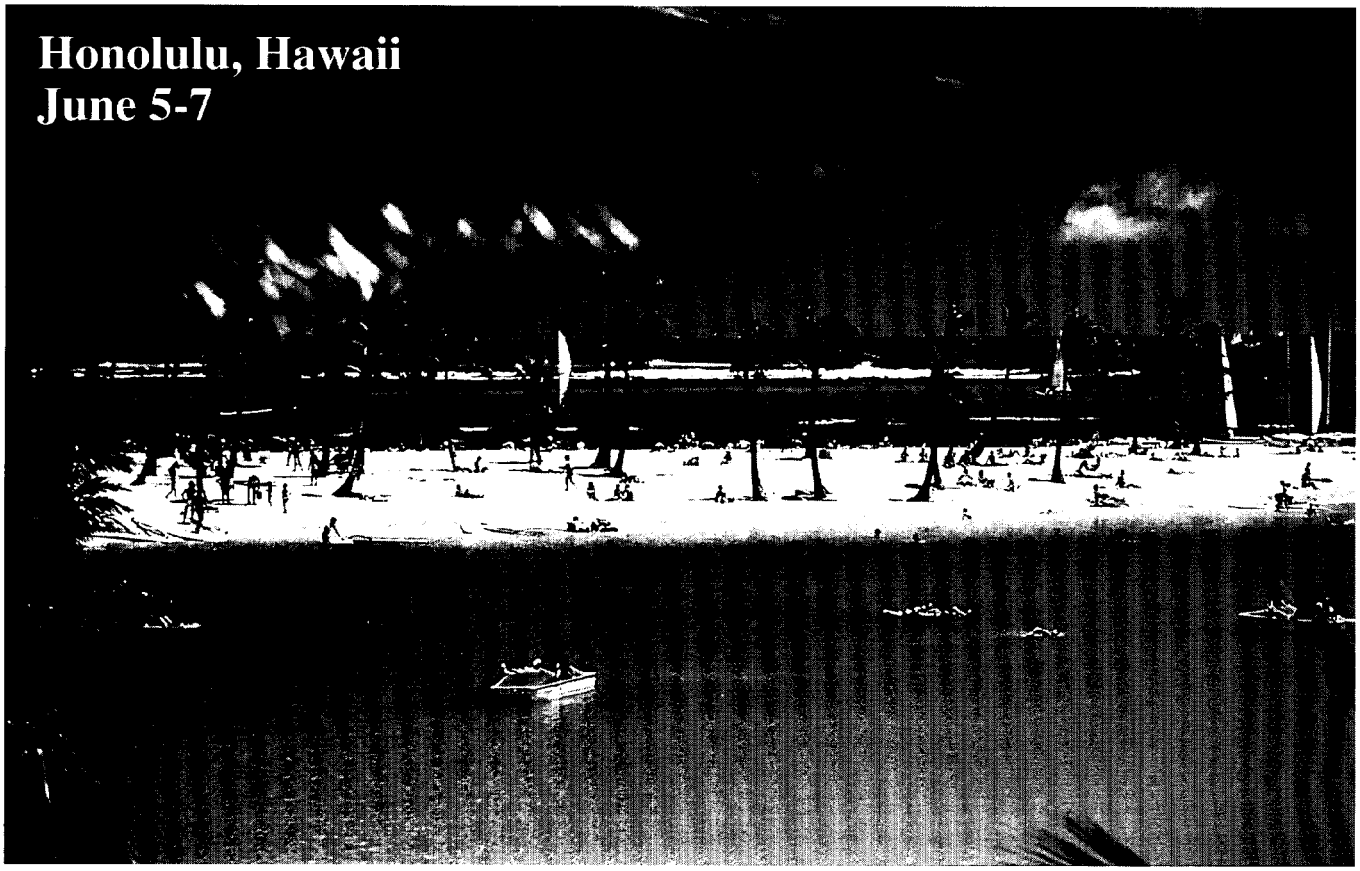

1996 IEEE Frequency Control Symposium 50th Anniversary Meeting

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society

Newly elected President
Dr. Donald C. Malocha
University of Central Florida
Orlando, Florida

Newly elected Vice-President
Dr. John R. Vig
U.S. Army Research Laboratory
Fort Monmouth, New Jersey

Secretary-Treasurer
Dr. Gary K. Montress
Raytheon Company, Research Division
Lexington, Massachusetts

Newly Elected Administrative Committee Members: 1996-1998

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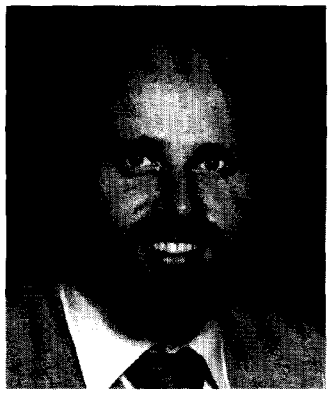
Department of Biomedical Engineering
University of Virginia
Charlottesville, Virginia

Dr. David A. Hutchins
Department of Engineering
University of Warwick
Coventry, Warwickshire, England

Dr. Tom Shoup
Medical Systems Division
Hewlett-Packard Company
Andover, Massachusetts

Dr. Jan G. Smits
College of Engineering
Boston University
Boston, Massachusetts

Presidents Message



I guess this is supposed to be my first state of the society address. The good news is that we are a very healthy society by most measurable indicators. Thats good and we hope to get better over the next year.

First, congratulations to two of our members who were elected to the grade of IEEE Fellow in 1996: Dr. Joseph Crowley for contributions to education and practice in electrostatic processes, and for fundamental contributions to electrohydrodynamics, and to Dr. Satoru Fujishima for the development of piezoelectric ceramic filters, SAW filters for TV and SAW filters for mobile communications.

Our next society symposium will be the International Frequency Control Symposium to be held in Hawaii in June. Cut off your ties, put on your shorts, and join us in Hawaii on what will be a great technical exchange as well as a celebration of the 50th year of this annual symposium. Make your reservations early since timing is everything! (Although location, location, location was also considered.) The 1996 IEEE International Ultrasonics Symposium will be held in San Antonio, Texas in November and the 1996 International Symposium on Applications of Ferroelectrics will be held in East Brunswick, New Jersey in August, so mark your calendars.

I will give you a few highlights of activities within the society:

The society constitution is being rewritten to reflect some proposed reorganizational changes, in particular it is suggested the society have a president-elect and several vice presidents. Jim Greenleaf is leading this activity. Assuming a new constitution is adopted, the bylaws will also be changed to reflect the new organization. Jim Greenleaf is also leading this activity.

The society should have its Home Page on the Ethernet very soon. This should provide the latest information on symposia, issues, etc. Emad Ebbini is working on this activity and inputs should be sent to him. (e.ebbini@ieee.org)

The society is considering moving the transactions from within the IEEE to an outside printer/publisher to lower costs and increase quality. This is still under consideration and should be resolved by June. TheUFFC Transaction will still be an IEEE publication and should be transparent to our members.

The IEEE is beginning the process of a reorganization which will be very extensive and may continue for over a decade. The details have been published in the IEEE Institute over the past several months for those who are interested in the details.

If you would like to be considered for nomination as an UFFC Administrative Committee member, please contact Bernie Tittmann (b.tittmann@ieee.org). There are also a number of IEEE committee positions which are available to UFFC members who wish to serve. If you are interested please contact me for further details. (dcm@ece.engr.ucf.edu or d.malocha@ieee.org).

Finally, don't forget to schedule Tom Parker, the UFFC-S Distinguished Lecturer, for your seminars and Chapter activities. His topic and biography follow this message.

Don Malocha
UFFC President
dcm@ece.engr.ucf.edu

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Cover image courtesy of Hawai'i Visitors Bureau.

UFFC-S Distinguished Lecturer
Thomas E. Parker

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 is currently 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.

The Search for the Perfect Oscillator

Dr. Thomas E. Parker
National Institute of Standards and Technology
Time and Frequency Division
Boulder, CO 80303-3328
USA

Modern electronic systems are becoming increasingly dependent on performance of high Q frequency sources. Applications range from wrist watches and garage door openers (low cost, high volume), to sophisticated navigation systems such as the Global Positioning System, to primary frequency standards (high frequency accuracy and stability). Many applications are pushing the limits of cost and/or performance, and as a result new oscillator technologies are being developed and old technologies are being improved. High performance frequency sources rely on a range of high Q resonator technologies including bulk and surface acoustic wave devices, dielectric resonators, superconducting cavities and atomic resonances.

General approaches to oscillator design are reviewed and a discussion is presented of the parameters used to specify random and systematic frequency variations. Though the performance parameters of various types of oscillators may differ by many orders of magnitude, the underlying sources of frequency instabilities quite often have a common thread. All high Q oscillators exhibit fractional frequency instabilities at some magnitude (ranging from 10-8 to 10-15) and their origins can be surprisingly similar when any particular resonator technology is pushed to its limits. The sources of instabilities in various oscillator components and their impact on frequency stability are discussed. Also the impact of instabilities in the components used to transfer or distribute the output signal of a stable oscillator is considered. Performance characteristics (both observed and predicted) of a number of present and future oscillator technologies are reviewed.

Schedule the UFFC-S Distinguished Lecturer Now!

The Administrative Committee of the Ultrasonics Ferroelectrics and Frequency Control Society has announced Dr. Thomas E. Parker as the UFFC-S Distinguished Lecturer for 1996-1997. Dr. Parker 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:

The Search for the Perfect Oscillator

The establishing of the Distinguished Lecturer program and providing a stipend to cover travel expense 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 distinguished 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. Parker may be reached by mail at:

National Institute of Standards and Technology
Time and Frequency Division
325 Broadway
Boulder, Colorado 80303-3328

or by the following means:

Telephone: 303 497-7881
Fax: 303 497-6461
Email: tparker@bldrdoc.gov

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

1996 IEEE International Frequency Control Symposium
June 5-7, 1996
Hilton Hawaiian Village, Honolulu, Hawaii

As part of the celebration of the 50th anniversary of the Frequency Control Symposium, this years conference will be held at the Hilton Hawaiian Village in Honolulu, from June 5 to 7, 1996, and will be the biggest FCS conference ever. The island of Oahu will enhance the conference by offering many sights, including Pearl Harbor, Diamond Head, and Waikiki beach. Recreational opportunities include snorkeling in water clear enough for an underwater poster session, though none is planned. In keeping with the relaxed island lifestyle, dress code is casual for conference sessions and the traditional Hawaiian Luau banquet on Wednesday evening.

The conference location has made FCS 96 equally accessible to the Pacific Rim colleagues; indeed the conference is co-chaired by Dr. John R.Vig of the Army Research Lab and Prof. Kazuhiko Yamanouchi of Tohoku University, Japan.

The technical content of the FCS is also very exciting this year. The plenary session will review the history of crystal and atomic clocks, including space-based applications, and will be reported by members who have participated in that development. Apart from these reviews, topics of current interest at this years FCS meeting are 1) Time Scale Algorithms for incorporating super clocks; 2) subnanosecond time dissemination, and 3) resonant sensors, micro-resonators, and microwave resonators.

A listing of plenary and invited speakers provides an approximate summary of this conference:

The History of Atomic Frequency Standards; A Trip through 20th Century Physics, A. McCoubrey;

A Historical Review of Atomic Frequency Standards used in Space, N. D. Bhaskar, L. Mallette, T. McClelland, The Aerospace Corp. and J. White, Naval Research Lab;

Fifty Years of Progress in Crystal Frequency Standards, M. E. Frerking, Rockwell International;

A Brief History of the Development of Ultra-Precise Oscillators for Ground and Space Applications, J. Norton, and J. Claron, Johns Hopkins Applied Physics Lab;

The Impact of New Clock Technologies on the Stability and Accuracy of the International Atomic Time TAI, C. Thomas, Bureau International des Poids et Mesures, France;

Technical Trends and Future Evolution of Surface Acoustic Wave Devices, J. Yamada, Hitachi Ltd., Japan

Quartz Microresonator Sensors for Monitoring Thin Film Thickness, H. Kawashima, and K. Sunaga, Seiko Instruments, Japan;

Resonant Sensors by Silicon Micromachining, M. Esashi, Tohoku University, Japan;

CDMA s Dependence on Good Timing and Related Issues, C. Wheatley, Qualcomm Inc.

TUTORIAL SESSIONS

Tutorial Sessions will follow the conference Friday afternoon and Saturday morning.

Friday, 2:00 pm

A. The Mathematics of Quartz,
Dr. Jack Kusters, Hewlett-Packard;

B. Intro. Atomic Frequency Standards,
Dr. Robert E. Drullinger, NIST;

C. Intro. SAW Oscillators, Design and Performance (Part 1), Dr. Thomas E. Parker, NIST and Dr. Gary K. Montress, Raytheon Research Division;

Friday, 4:00 pm

A. Resonator Fabrication-Panel Discussion,
Chaired by Dr. John R. Vig, Army Research Lab;

B. Time and Frequency Transfer-Panel Discussion,
Chaired by Dr. Thomas E. Parker;

C. Intro. SAW Oscillators, Design and Performance (Part 2), Dr. Thomas E. Parker and Dr. Gary K. Montress;

Saturday, 8:30 am

A. Development of Quartz as a Material and New Material Investigations, Dr. Gary Johnson, Sawyer Research Products;

B. Phase Noise Measurements: Fundamentals, Definitions and Error Analysis, Ms. Eva Ferre-Pikal and Mr. Franklin Ascarrunz, NIST;

C. Time Domain Instability Measures in Time and Frequency and Telecommunications,
Mr. David W. Allan, Allans Time;

Saturday, 10:30 am

A. Design and Applications of STW Resonant Devices in Stable Microwave Oscillators and Communication Systems, Dr. Ivan D. Avramov, Bulgarian Academy of Sciences;

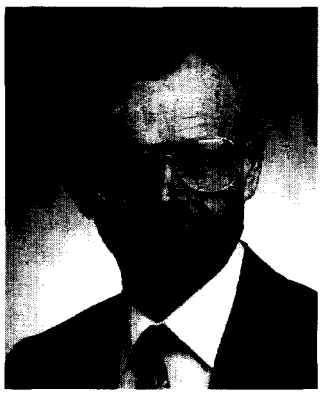
B. Phase Noise and AM State-of-the-Art Measurements,
Mr. Craig Nelson, NIST;

C. New Time and Frequency Opportunities using GPS,
Mr. David Allan.

Reservations can be made by calling the Hilton Hawaiian Village, Honolulu, Hawaii at 808-947-7840. Speak to Lisa Chang and ask for the IEEE Frequency Control Symposium, "Code FCS" rates. Further information on this Symposium can be found on the UFFC-Soc home page — see the article on page 32.

John Prestage
Publicity Chairman

Kazuhiko Yamanouchi
General Co-Chairman



John R. Vig
General Co-Chairman

Fred L. Walls
Technical Program Chairman

General Co-Chairman — Kazuhiko Yamanouchi

Kazuhiko Yamanouchi received the B. S. and Ph.D. degrees in communication engineering from Tohoku University, Sendai, Japan, in 1959, and 1965, in Double Ridge Traveling Wave Peniotron (Microwave Electronic Tube), respectfully. In 1965, he joined the Research Institute of Electrical Communication, Tohoku University, where he was an Associate Professor from 1968 to 1979. Since 1979 he has been a Professor in the division of elastic wave circuits at the Research Institute of Electrical Communication, Tohoku University. From 1979 to 1980 he was a Visiting Professor of Theoretical and Applied Mechanics Engineering at Cornell University, Ithica, NY.

Since 1965, Dr. Yamanouchi has worked on surface acoustic wave (SAW) transducer (inter-digital-transducer, IDT, named Sudarejou Denkyoku in Japanese), propagation characteristics of SAW, and various kinds of SAW devices. He also studied the propagation characteristics of leaky surface waves (41° Y-X, 64° Y-X $LiNbO_3$) and a new cut of $LiNbO_3$ (128° Y-X LiNbO3). He invented a group-type unidirectional transducer (UDT) and floating electrode type single phase UDT.

In 1986, he determined nonlinear elastic, Piezoelectric, dielectric, and electrostrictive constants of LiNbO3. He has also worked on submicron fabrication techniques using electron beam exposure and electro-chemical effects and obtained 20 GHz-range SAW filters.

He developed TE-TM mode converter by interaction between an elastic surface wave and a laser beam on an optical surface wave guide and discovered new leaky surface wave in an anisotropic metal diffused optical wave guide.

In 1995, Kazuhiko was elected a Fellow of the IEEE "for research and development in surface acoustic waves and surface optical waves." He received the Invention Award from Invention Association of Japan in 1979 and Ichimua Contri-

bution Award from Ichimura Association in 1984. He received the Achievement Award from IEICE of Japan for "Research and Development of Surface Acoustic Wave Filters" in 1995.

He was Chairman, Tokyo Chapter of IEEE Society of UFFC (1991-1993) and Program Committee member of Ultrasonics Symposium in IEEE Society of UFFC (1991-present). He was a Co-Chairman of the International Symposium on SAW Devices for Mobile Communication held in Sendai in 1992. He has been a Chairman of 150th Committee of Elastic Wave Devices on JSPS since 1993.

Yamanouchi is a member of the Acoustical Society of Japan, the Institute of Electronics and Communication Engineers of Japan, the Institute of Electrical Engineers of Japan, and the Society of Japanese Applied Physics.

General Co-Chairman — John R. Vig

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 41 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, 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 24 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 back yard, where he and his wife have gradually been replacing the grass (which John hates to tend) with numerous varieties of hollies, daylilies and other ornamental plants.

Technical Program Chairman — Fred L. Walls

Fred L. Walls was born in Portland, OR, on October 29, 1940. He received the B.S., M.S., and Ph.D. degrees in physics from the University of Washington, Seattle, in 1962, 1964, and 1970, respectively. His Ph.D. thesis was on the development of long-term storage and nondestructive detection techniques for electrons stored in Penning traps and the first measurements of the anomalous magnetic (g-2) moment of low energy electrons.

From 1970 to 1973 he was a Postdoctoral Fellow at the Joint Institute for Laboratory Astrophysics in Boulder, CO. This work focused on developing techniques for long-term storage and nondestructive detection of fragile atomic ions stored in Penning traps for low energy collision studies. Since 1973 he has been a Staff Member of the Time and Frequency Division of the National Institute of Standards and Technology, formerly the National Bureau of Standards, in Boulder. He is presently Leader of the Phase Noise Measurement Group and is engaged in research and development of Ultra-stable clocks, crystal-controlled oscillators with improved short- and long-term stability, low-noise microwave oscillators, frequency synthesis from RF to infrared, low-noise frequency stability measurement systems, and accurate phase and amplitude noise metrology. He has published more than 110 scientific papers and holds 5 patents.

He received the 1995 European "Time and Frequency" award from the Societe Francaise des Microtechniques et de Chromometrie "for outstanding work in ion storage physics, design and development of passive hydrogen masers, measurements of phase noise in passive resonators, very low noise electronics and phase noise metrology." He is the recipient of the 1995 IEEE Rabi award for "major contributions to the characterization of noise and other instabilities of local oscillators and their effects on atomic frequency standards." He has also received two silver medals from the US Department of Commerce for fundamental advances in high resolution spectroscopy and frequency standards, and the development of passive hydrogen masers. Dr. Walls is a member of the American Physical Society, a senior member of the IEEE, a member of the Technical Program Committee of the IEEE Frequency Control Symposium and also a member of the Scientific Committee of the European Time and Frequency Forum.

1996 IEEE International Symposium on the Applications of Ferroelectrics ISAF '96

August 18 - 21, 1996
Rutgers University
To Be Held At Brunswick Hilton and Towers, East Brunswick, NJ

This biennial meeting will address recent issues pertaining to the applications of ferroelectric, piezoelectric, dielectric and electro-optic materials in the form of single crystal, bulk ceramics and thick and thin films. Papers will describe original work in the field of application of ferroelectrics and related materials listed below. Poster and oral presentation formats will be used at the symposium.

Technical Topics

1. ***Wireless Communications*** — microwave resonators, HF capacitors, SAW devices, phase shifters, thin film resonators and microstrip filters.

2. ***Memory Applications*** — DRAM, FRAM holographic storage and integrated capacitors.

3. ***Ultrasonic Imaging*** — biomedical imaging, NDE, acoustic microscopy, underwater imaging and hydrophones.

4. ***Electro-Optic Devices*** — modulators, Bragg reflectors, frequency doublers, photorefractive crystals and holographic storage.

5. ***Electro-Mechanical Control*** — sensors, actuators, MIM's motors, piezoelectric printing technology and photostrictors.

6. ***Energy Storage*** - thick and thin films, MLC's and integrated capacitors.

7. ***Infrared Imaging*** - pyroelectrics, uncooled IR detectors and novel IR detectors.

8. ***Displays*** - ferroelectric liquid crystals, piezoelectric transformers and flat-panel displays.

9. ***Sensors*** - PTC thermistors, chemical sensors, chemistry on chips and varistors.

10. ***Novel Manufacturing Concepts***.

Tentative Plenary/Invited Speakers (Partial Listing):

- **Troy Barbee**, *High Energy Density Thin Film Capacitors*, Lawrence Livermore Lab., U.S.A.
- **John Bernstein**, (*title to be announced*), Draper Lab., U.S.A.
- **Ian Burns**, *High Performance Capacitor Dielectrics From Chemically Prepared Powders*, Degussa Corporation, U.S.A.
- **Ihsub Chung**, *Integration of Ferroelectric Capacitors Using Multi-layered Electrodes*, Samsun, Korea
- **Noel Clark**, *Electrooptic Applications of Ferroelectric Liquid Crystals*, University of Colorado, U.S.A.
- **Dragan Damjanovic**, *Practical Consequences of Extrinsic Contributions to Piezoelectric Sensors*, EPFL, Switzerland
- **Steve Danforth**, *Solid Freeform Fabrication: Novel Manufacturing Opportunities for Electronic Ceramics*, Rutgers University, U.S.A.
- **Takamitsu Fujiu**, *PZT Thin Film Actuator/Sensor for Atomic Force Microscope*, Nikon Corp., Japan
- **Steve Garrett**, *Thermo-Acoustic Devices*, The Pennsylvania State University, U.S.A.
- **Daniel Guyomar**, (*title to be announced*), Lyon University, France
- **Paul H. Holloway**, *Overview of Flat Panel Display Technologies*, University of Florida, U.S.A.
- **Umesh Kumar, A. Ritter, and B. Rawal**, *Multi-layer Actuators for Surface Mount Applications*, AVX Corp., U.S.A.
- **Paul Muralt**, *Microsystems Based on Ferroelectric Thin Films*, EPFL, Switzerland
- **Takeshi Nomura**, *Multilayer Ceramic Capacitors–Recent Trends, Issues*, TDK Corporation, Japan
- **J. Patel**, *Liquid Crystalline Structures-from Molecules to Devices*, The Pennsylvania State University, U.S.A.
- **Gil Rosenman**, *Ferroelectric Electron Emission*, Tel Aviv University, Israel
- **T. Shiosaki**, *MOCVD Growth and Characterization of Pb-based Ferroelectric Thin Films*, Kyoto University, Japan
- **Gregory Salamo**, *Trapping Laser Beams in Ferroelectric Crystals*, University of Arkansas, U.S.A.
- **Steve Smith**, *Two-Dimensional Transducer Arrays for Medical Ultrasound*, Duke University, U.S.A.
- **Bruce Tuttle**, *Structure Property Relations in Thin Film Microsensors*, Sandia National Laboratories, U.S.A.
- **Barry A. Wechsler**, *Holographic Storage Applications*, Hughes, U.S.A.
- **John Yamashita**, *Comparison of Piezoelectric Relaxors and PZT*, Toshiba, Japan
- **Vladimir Ya.Shur**, *Switching Kinetics in Normal and Relaxor Ferroelectric*, Ural State University, Russia

Organization

Symposium registration and a reception will occur concurrently on Sunday evening, August 18. The technical sessions will begin Monday Morning, August 19, and will end Wednesday, August 21. The symposium will include plenary papers together with invited and contributed papers in parallel sessions. The poster session will be held on Monday and Tuesday afternoons. An outdoor picnic is planned for Tuesday evening, August 20 and the Symposium dinner will be Monday, August 19. A program consisting of selected sight seeing trips and shows, such as a Broadway show and a trip to see the Statue of Liberty in New York City, sightseeing and shopping in the Princeton area, will be available for companions during the Symposium.

ISAF '96

Location

East Brunswick, New Jersey is located approximately 45 miles (70 km) south of New York City, along the northeast corridor connecting New York City, Philadelphia, and Washington D. C. The East Brunswick Hilton and Towers Hotel are conveniently close to Exit 9 of the New Jersey Turnpike. East Brunswick is in central New Jersey, adjacent to Rutgers University and within 30 miles (50 km) of prime New Jersey beaches. International and domestic flights are available into Newark International Airport which is located 20 miles (30 km) north of East Brunswick. Transportation to and from Newark Airport is easy, so if possible, arrange your trip from there. JFK Airport in New York City is located 60 miles (100 km) from the Hilton Hotel. Amtrak and New Jersey Transit rail lines also serve the East Brunswick area.

Accommodations

First class rooms have been reserved at the Hilton; phone (908) 828-2000 and FAX (908) 828-2056. The Hilton will serve as the conference headquarters. Also, they offer an in-room FAX, word processing and a variety of recreational resources for your relaxation, including an indoor pool, whirlpool, sauna and complete exercise room.

Airline Information

Continental Airlines, with the largest numbers of connecting flights into and out of Newark International Airport, is offering a 5% discount off of their reduced fare for meeting attendees. To obtain this special discount, call Continental Airline at (800) 468-7022, and state that you will be attending the **IEEE ISAF '96** meeting.

William Wilber
Publicity Chairman

ISAF '96 Committee Members

General Chairman — Dr. Ahmad Safari

Dr. Ahmad Safari is a professor of Ceramic Science and Engineering and a member of the Center for Ceramic Research at Rutgers University, Piscataway, New Jersey. Dr. Safari received his B.S. and M.S. degrees in Physics from Tabriz University, Iran, and his Ph.D. in solid solid state science from Pennsylvania State University. After working as a research associate at the Materials Research Laboratory at Penn State, he joined Rutgers as an assistant professor in 1986. His principle field of interest is the processing and characterization of electroceramic materials for dielectric, piezoelectric and ferroelectric applications, including ferroelectric thin films for non-volatile memories, electroceramics and ceramic-polymer composites for transducers, sensors, thermistors and actuators, and superconducting ceramics and thin films.

Dr. Safari has advised and mentored more than 10 graduate students, 15 post-doctoral fellows/visiting scientists and 30 undergraduate students. He has published more than 130 papers, holds 8 patents and has twice served as co-editor for the IEEE proceedings of the International Symposium on the Applications of Ferroelectrics. Dr. Safari is a Fellow of the American Ceramic Society and a member of the Electronic and Basic Science Division. He was the U.S. chair for the 1995 US-Japan Meeting on Ferroelectric and Dielectric Materials.

For symposium information Dr Safari may be contacted as follows: Prof. Ahmad Safari, Department of Ceramic Engineering, Center for Ceramic Research, Rutgers University, P.O. Box 909, Piscataway, NJ 08855-0909; Phone: (908) 445-4367; Fax: (908) 445-5577 or (908)-445-3258; e-mail safari@safari.rutgers.edu

Thomas Shrout — Technical Program Co-Chair

Thomas R. Shrout is Professor of Materials and Associate Director, Center for Dielectric Studies at the Pennsylvania State University. He received a B.S. and Ph.D. in Ceramic Science from Penn State in 1976 and 1981, respectively. Prior to joining the faculty at Penn State, Dr. Shrout was with Sprague Electric Co. and AVX Co. He holds 5 patents and has co-authored more than 100 papers in the area of electronic ceramics with an emphasis on processing property relationship.

1995 IEEE International Ultrasonics Symposium Reflections

The 1995 IEEE International Ultrasonics Symposium and Short Courses were held November 7-10 at the Westin Hotel in Seattle, Washington. The Symposium was quite successful, experiencing a record attendance of nearly 700, with forty percent of the registrants from outside the United States. The Symposium Organizing Committee is to be commended, and they in turn appreciate the support and participation of all.

On the first day and prior to the technical sessions, a series of five short courses were offered from morning to evening, covering the areas of medical ultrasound, transducer materials, and SAW devices. On the second day, the technical program opened with a plenary talk entitled "Breast Ultrasound" by A. Thomas Stavros, M. D. The remainder of the program included some 330 papers presented in four parallel oral sessions, and three separate poster sessions. The technical sessions covered the subject areas of medical ultrasound, NDE and industrial applications, physical acoustics, and surface acoustic waves. The *1995 IEEE Ultrasonics Symposium Proceedings*, edited by M. Levy, S. C. Schneider, and B. R. McAvoy, will be published as a two-volume set in the annual series available from the IEEE in Piscataway, New Jersey.

We note that the next annual IEEE International Ultrasonics Symposium and Short Courses will be held in San Antonio, Texas, November 1-4, 1996. Updated information for this symposium is available on the Internet home page **http://macro.stanford.edu/groups/uffc**. The General Chair is Jeffrey S. Schoenwald, phone 805-499-8305, email j.schoenwald@ieee.org. The Technical Program Chair is B. T. (Pierre) Khuri-Yakub, phone 415-723-0718, email khuri-ya@ee.stanford.edu.

Gerry Blessing
General Chairman
1995 Ultrasonics Symposium

Awards at the 1995 IEEE Ultrasonics Symposium

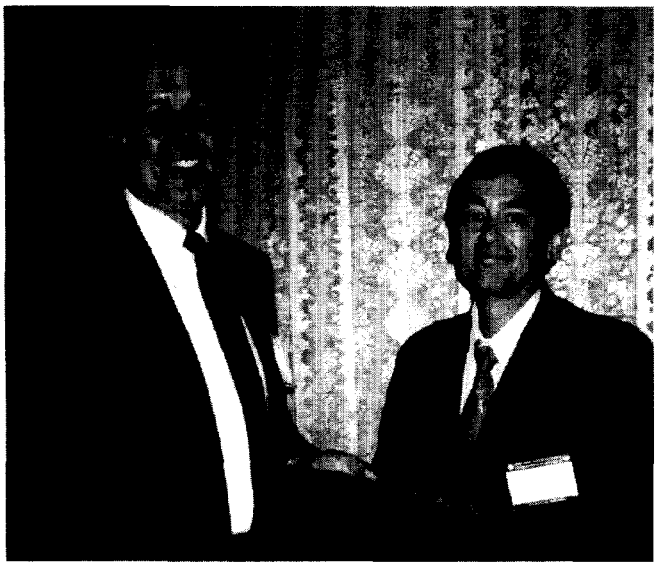
ACHIEVEMENT AWARD

Dr. Fred S. Hickernell was presented with the Achievement Award during the Plenary Session of the 1995 Ultrasonics Symposium. For this recognition, he received a plaque, certificate and cash award. Dr. Hickernell is a member of the technical staff at Motorola, Government and Space Technology Group in Scottsdale, Arizona.

Dr. Hickernell was cited "For his comprehensive research and development of dielectric and piezoelectric films for acoustical and optical microelectronic devices, and for editing the UFFC-S Newsletter since 1977 with enthusiasm and vision."

Dr. David Penunuri graciously introduced Dr. Hickernell to the audience, commenting on their joint experience at Motorola. David began by recounting Fred's early technical assignments as a weather officer in the US Air Force, an experience that has sustained Fred's interest in meteorology to this day. David traced Fred's educational experience from the bachelor's degree in education through MS and PhD degrees in physics at Arizona State University. Fred's involvement with education continues as he presently serves as an Adjunct Professor at the Optical Sciences Center of the University of Arizona at Tucson.

David highlighted Fred's contributions to the field of dielectric and piezoelectric films, for which Fred has gained worldwide recognition. And David emphasized Fred's broad experience in other fields to which he has contributed: high-powered microwave ferrite materials and devices, and bulk-acoustic-mode traveling wave amplifiers and delay lines, to mention just a couple. Fred's more recent activities have been in SAW components, configured in several forms (standard, hybrid and semiconductor monolithic) for system applications. Fred has developed methods to grow thin films for microelectronics, enhancing the films' optical and acoustical properties. Fred's broad range of publications on the technology of zinc oxide growth and applications has led to his well-deserved professional reputation.



UFFC-S Achievement Awardee, Fred Hickernell (l), with introducer, Dave Penunuri (r).

Fred has generously served the IEEE UFFC Society in several roles, most notably as editor of the Newsletter fostering greater communication among workers in the UFFC field. Other activities include serving as an elected AdCom member, co-chairing the 1977 Ultrasonics Symposium, chairing the 1992 Ultrasonics Symposium, and Guest Editor of a special issue on "Thin Films for Acoustoelectronics" in the 1995 Transactions. In his local community, Fred serves on his church's board, and helps at a Respite Shelter for homeless men.

During his acceptance remarks, Fred commented on the

Outstanding paper awardees Stephen W. Smith and Richard L. Goldgerg with Awards Chairman Roger Tancrell (l). Richard Goldberg is now with the University of North Carolina at Chapel Hill.

Fellow certificate to Pierre Khuri-Yakub (r) from President Salvo.

factors that have influenced his life and professional development. In addition to fine colleagues with whom he has collaborated, Fred noted he was further blessed by a strong, loving wife and family, and by a faith in God's goodness and abiding presence in every human being.

OUTSTANDING PAPER AWARD

Dr. Richard L. Goldberg and Prof. Stephen W. Smith, winners of the Outstanding Paper Award, received plaques and certificates during the Plenary Session of the 1995 Ultrasonics Symposium. The authors were honored for their paper, "Multilayer Piezoelectric Ceramics for Two-Dimensional Array Transducers," which appeared in the September 1994 issue, pp. 761-771, Transactions on UFFC. The work reported in this paper was conducted at Duke University, Durham, North Carolina.

The paper explores technology required to fabricate two-dimensional transducer arrays for medical imaging and nondestructive testing. The objective is to create arrays which can reduce the slice thickness of an image, and permit correction of phase aberrations to compensate for acoustic distortions along the propagation path.

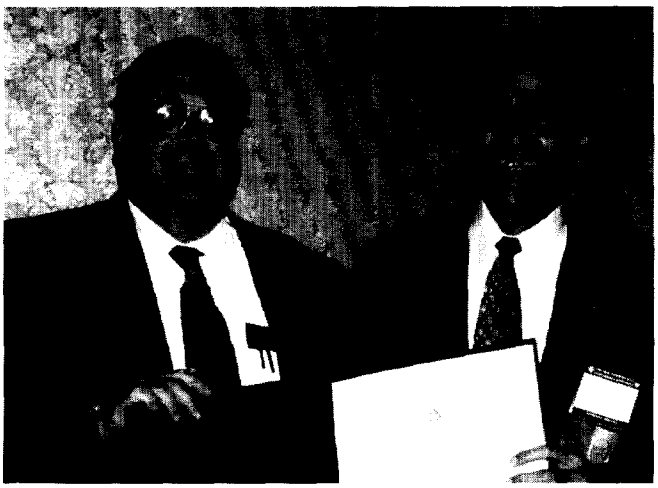
The paper describes innovations essential to the next generation of ultrasonic imaging equipment. New transducer assembly methods are introduced, exploiting prior industrial developments in the field of multilayer ceramic capacitors. This work advances transducer fabrication into a new regime of miniaturization, to achieve tiny elements required for 2-D arrays. A wide range of issues are encompassed ranging from processing of piezoelectric ceramic materials, array fabrication, signal-to-noise performance of the electronics, to initial clinical images.

The paper is well-written and presented in a style which can by understood by the general membership (rather than by specialists alone). The paper reports original work, overcomes previous limitations, and demonstrates viable solutions.

FELLOW CERTIFICATES

Fellow certificates were presented to Pierre Khuri-Yakub, Moises Levy, Gary Montress, and Kazuhiko Yamanouchi by UFFC-S President Harry Salvo.

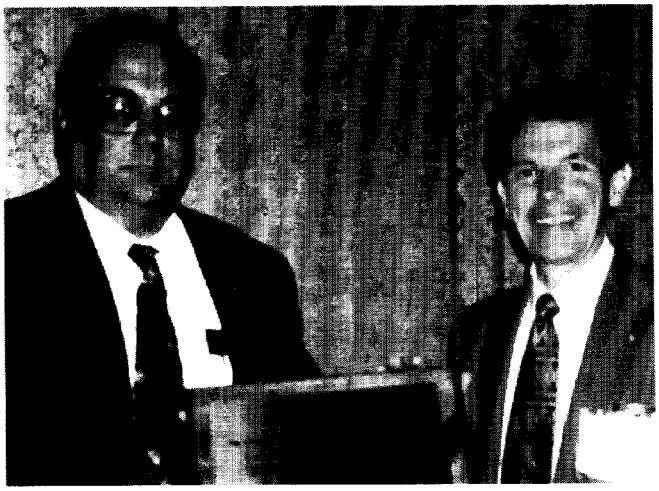
Roger Tancrell
UFFC-S Awards Chairman



Fellow certificate to Moises Levy (r) from President Salvo (l).

Fellow certificate to Gary Montress (r) from President Salvo (l).

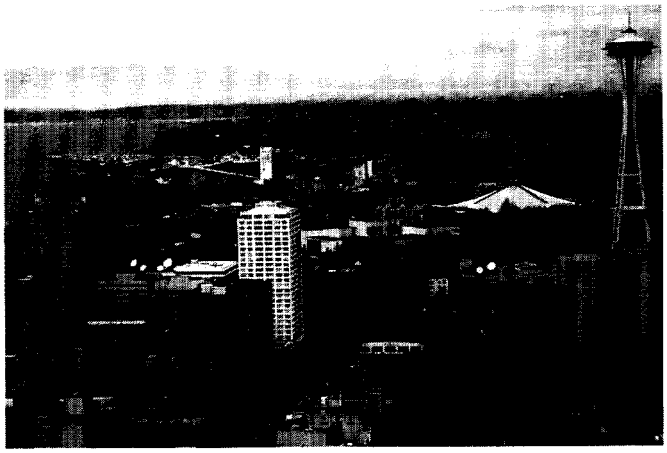
Fellow Awardee Kazuhiko Yamanouchi (r) with President Harry Salvo (l).



Roger Tancrell, Awards Chairman (r) present appreciation plaque to outgoing UFFC-S President Harry Salvo (l).

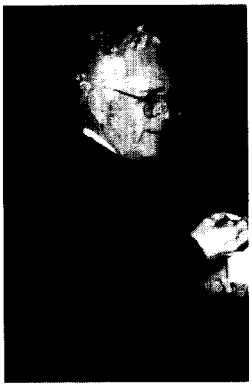
SCENES FROM THE 1995 IEEE ULTRASONICS SYMPOSIUM

Dr. A. Thomas Stavros – Plenary Speaker



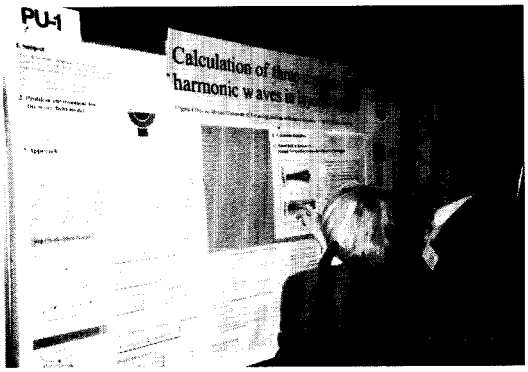
The Seattle skyline from the Symposium hotel.

Seattle Art Museum



George Alers, Seattle Symposium Technical Program Chairman, takes a break at Tillicum Village.

The Brazeales at Tillicum Village



Poster session at the Seattle Symposium

SCENES FROM THE 1995 IEEE ULTRASONICS SYMPOSIUM

Steve Smith, Stuart Foster and Pierre Khuri-Yakub.

Future UFFC-S member, daughter of the Hashimotos.

O'Brien, Malocha and Yakovkin at reception.

Sinclair, Bhagatt and Samie at 1996 Ultrasonic Symposium Technical Planning Meeting.

Gatra, Cheeke, Yuhas, and Furgason at 1996 Ultrasonic Symposium Technical Planning Meeting

C. Ruppel, Germany, and M. Hikita, Japan, as east meets west at the reception.

Colleaques from the FSU, Alexander Ruklenko (Belarus) and Sergei Dobershtein (Russia) meet more often in the USA at the Symposia.

Sergei Dobershtein considers if you are in America you must have turkey ...

String quartet at Seattle reception (friends of Helen Routh).

... and drive a cadillac without fail

Guest Program at the Seattle Ultrasonics Symposium

Symposia guests began their visit to Seattle with a Wednesday tour "in the mist" of the city. For many it was the first time we had seen salmon travel a fish ladder. On Thursday the sun came out and we were able to enjoy a visit to Whidbey Island, Deception Pass and the countryside surrounding Seattle. Evidence of recent flooding was apparent when we neared rivers or streams. The good weather continued into the evening when 300 guests and attendees took a moonlight cruise to Blake Island where we enjoyed "clammers", salmon and an evening of Native American legend and dance. On Friday, it was off to Pioneer Square where some of Washington's finest glass artists display their works. We had a tour of the Klondike museum and then a tour of the Underground for a revelation of some of the city's historic secrets. In between these excursions it was hard to keep track of the bargains coming in from Nordstrom's and the Rack. Next year, see you in sunny, warm and dry San Antonio.

Mary Lou Blessing
Guest Program Coordinator

Guest program attendees in the underground tour in Seattle.

Thresa Hickernell and Ludmila Bogomolova at guests' luncheon.

Mary Lou Blessing (center) Guest Program Coordinator.

Mr. Crapper's contribution to easier living seen on the guests Seattle underground tour.

Karen Malocha and Lee Adler share a story.

"Now which way do I point this?" — Liz Salvo

IEEE
Ultrasonics, Ferroelectrics, and Frequency Control Society
Administrative Committee

IEEE HEADQUARTERS

Director, Division IX	M. Kayton*
Secretary, TAB	R. T. Wangemann*
General Manager, IEEE	D. J. Senese*

SOCIETY OFFICERS

President	D. C. Malocha	*University of Central Florida, Orlando*
Vice-President	J. R. Vig	*U. S. Army Research Laboratory, Fort Monmouth*
Secretary-Treasurer	G. K. Montress	*Raytheon Company, Research Division*

ELECTED COMMITTEE MEMBERS

1994 - 1996	B. T. Khuri-Yakub	*Stanford University*
1994 - 1996	G. R. Johnson	*Sawyer Research Products Inc.*
1994 - 1996	R. Lerch	*University of Linz, Linz, Austria*
1994 - 1996	R. E. Newnham	*The Pennsylvania State University*
1995 - 1997	G. A. Alers	*National Institute of Standards & Technology*
1995 - 1997	J. Brown	*JB Consultants*
1995 - 1997	N. Chubachi	*Tohoku University*
1995 - 1997	J. R. Vig	*U. S. Army Research Laboratory, Fort Monmouth*
1996 - 1998	K. W. Ferrara	*University of Virginia*
1996 - 1998	D. A. Hutchins	*University of Warwick*
1996 - 1998	T. Shoup	*Hewlett-Packard Company, Hewlett-Packard Labs*
1996 - 1998	J. G. Smits	*Boston University*

EX-OFFICIO COMMITTEE MEMBERS

Awards	R. H. Tancrell	*Tancrell Associates*
Chapters-Membership	E. S. Furgason	*Purdue University*
Fellows	R. M. White	*University of California, Berkeley*
Ferroelectrics	L. E. Cross	*The Pennsylvania State University*
Finance	H. van de Vaart	
Frequency Control	T. E. Parker	*National Institute of Standards & Technology*
Long Range Planning	H. L. Salvo, Jr.	*Westinghouse Electric Corp., Electronic Systems Group*
Newsletter	F. S. Hickernell	*Motorola, Inc., GSTG*
Nominations	B. R. Tittmann	*The Pennsylvania State University*
Standards	A. Ballato	*U. S. Army Research Laboratory, Fort Monmouth*
Transactions	W. D. O'Brien, Jr.	*University of Illinois, Urbana*
Ultrasonics	G. W. Farnell	*McGill University, Montreal*
Past President (1994 - 1996)	J. F. Greenleaf	*Mayo Clinic*
Past President (1996 - 1998)	H. L. Salvo, Jr.	*Westinghouse Electric Corp., Electronic Systems Group*

*Non-Voting Member

ADCOM BRIEFS

The Administrative Committee (AdCom) meeting of the Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S) was called to order at 9:04 A.M., November 7th, 1995, by H. L. Salvo, Jr., at the Westin Hotel, Seattle, Washington. Introductions of attending members were conducted.

H. L. Salvo, Jr., UFFC-S AdCom President, introduced the four newly elected UFFC-S AdCom members, whose terms begin on January 1st, 1996: K. W. Ferrara, D. A. Hutchins, T. Shoup, and J. G. Smits. K. W. Ferrara and D. A. Hutchins were able to attend today's UFFC-S AdCom prior to the start of their elected terms.

J. Brown moved to approve the minutes of the February 2nd, 1995, UFFC-S AdCom meeting. The motion was seconded by D. C. Malocha. The motion passed.

H. L. Salvo, Jr., reported that the proposed new TAB funding plan was discussed at the recent TAB meeting, and the plan was approved. H. L. Salvo, Jr. voted against the funding change, as directed by the UFFC-S AdCom. The full financial consequences will be available shortly, although it does not appear that our Society (UFFC) will be affected in a significant way.

J. Brown indicated that publication of proceedings on CD-ROM and the Internet is under consideration. The financial impact on IEEE's publishing revenues is not clear at this time, particularly the potential impact on the IEEE's book broker program. The current trend is to electronic publishing, and it is growing rapidly. An important issue under consideration is the format and search engine that should be used. There was considerable discussion of this matter by the UFFC-S AdCom as to how we should proceed to place our publications on either CD-ROM or the Internet. This issue will be discussed in more depth at a future UFFC-S AdCom meeting.

K. W. Ferrara has asked to be replaced as UFFC-S Committee Chair for Chapters/Membership Services. E. S. Furgason was placed in nomination for the appointment by H. L. Salvo, Jr., to assume immediate responsibility (effective November 8th, 1995) for the UFFC-S's Committee on Chapters/Membership Services. The appointment was approved by a vote of elected UFFC-S AdCom members, with all in attendance at the meeting (nine elected, voting members) voting in favor of the appointment. The appointment was thereby confirmed.

F. S. Hickernell reported that he has been investigating a UFFC-S Membership Directory, using the Plasma Physics Society as an example. The directory would contain names, addresses, etc., and would run approximately one-hundred pages in length. The approximate cost to the UFFC-S would be $15k, including mailing costs to all UFFC-S members. Three-thousand copies would be printed. Distribution would be only to UFFC-S members. A decision has not yet been made as to whether the directory should be published every year or not. F. S. Hickernell made a motion to approve $15k for the publishing in print form of a UFFC-S Membership Directory, which would be mailed to all UFFC-S members. The motion was seconded by J. Brown. The motion passed.

W. D. O'Brien, Jr. described the potential benefits to the UFFC-S of a WWW site home page which could contain all sorts of information relating to the UFFC-S and its activities. The Long Range Planning Committee will develop an effort to get the UFFC-S on the WWW.

J. F. Greenleaf, UFFC-S Long Range Planning Committee Chair, conducted a detailed review of the proposed revisions to the UFFC-S Constitution. The revisions were approved, and will next be published in the UFFC-S Newsletter (April 1996) issue. After the proposed revisions appear in the Newsletter, the IEEE must approve the changes.

J. F. Greenleaf also conducted a discussion of proposed changes to the UFFC-S Bylaws. Only Section 7 and the exact nature of the Publications Vice-President position remain unresolved. These discussions will be completed at the next UFFC-S AdCom meeting.

W. D. O'Brien, Jr., UFFC-S Transactions Editor-in-Chief, indicated that there has been a problem closing-out the 1995 Transactions volume. The problem is due to an IEEE error in estimating the number of index pages. The UFFC-S AdCom approved a sixteen page increase in the 1995 page budget for the Transactions in order to resolve this problem. The UFFC-S AdCom also approved an increase in the 1996 page budget, to a total of 1128 pages. This represents an overrun of 168 pages compared to the official page budget. The UFFC-S Transactions budget for 1996 was approved, at $35.5k. The UFFC-S AdCom also approved purchase of a 1996 IEEE Membership Directory for each UFFC-S Transactions Associate Editor.

W. D. O'Brien, Jr. conducted a discussion of publishing the UFFC-S Transactions outside of IEEE Publishing Services. The UFFC-S AdCom approved a motion to pursue and negotiate a contract with an outside publisher, subject to UFFC-S AdCom review and approval.

F. S. Hickernell, UFFC-S Newsletter Editor-in-Chief, presented an oral report. The deadline for submission of material for the April 1996 issue of the UFFC-S Newsletter is March 15th, 1996.

H. van de Vaart, UFFC-S Finance & Operations Committee Chair, presented oral and written reports. The UFFC-S AdCom approved the modified 1996 UFFC-S budget as submitted.

R. E. Newnham indicated that the 1994 International Symposium on Applications of Ferroelectrics is anticipating an approximate $20k surplus.

J. R. Vig reported that the 1995 IEEE International Frequency Control Symposium's technical program and activities were very successful, however, due to a decrease in anticipated outside support for foreign participant travel, a loss of approximately $3k is expected.

J. R. Vig reported that arrangements for the 1996 IEEE International Frequency Control Symposium (the 50th anniversary) in Honolulu, HI, are proceeding well.

T. E. Parker, UFFC-S Frequency Control Committee Chair, reported that the 1997 symposium will be in Orlando,

FL, the 1998 symposium will be in Los Angeles, CA, and the 1999 symposium will be held jointly with the European Frequency & Time Forum, in Besancon, France. The UFFC-S AdCom approved the 1999 symposium arrangements and location.

H. van de Vaart provided an oral report on the 1994 IEEE International Ultrasonics Symposium, held in Cannes, France. The meeting was extremely successful, however, due to some unanticipated additional expenses, there will be a loss of approximately $2k.

G. V. Blessing reported that advance registration for the 1995 IEEE International Ultrasonics Symposium (Seattle, WA) is extremely strong. Advance registration for the short courses is also very good.

F. S. Foster reported that arrangements for the 1997 IEEE International Ultrasonics Symposium (Toronto, Ontario, Canada) are proceeding nicely. The Hotel will be the Marriott. K. W. Ferrara has agreed to serve as Technical Program Chair.

N. Chubachi is preparing a proposal to hold the 1998 IEEE International Ultrasonics Symposium in Sendai, Japan. The proposal will be discussed at the next UFFC-S AdCom meeting.

G. W. Farnell, UFFC-S Ultrasonics Committee Chair, indicates that Cleveland, Las Vegas, and Puerto Rico are under consideration as locations for future symposia.

R. H. Tancrell, UFFC-S Awards Committee Chair, presented oral and written reports. T. E. Parker was approved by the UFFC-S AdCom as the UFFC-S's Distinguished Lecturer for 1996-1997. The title of his presentation is: "The Search for the Perfect Oscillator".

R. H. Tancrell mentioned the possibility that Distinguished Lecturer candidates from overseas (i.e., non-North American) will be under consideration in the future.

K. W. Ferrara, UFFC-S Chapter/Membership Services Committee Chair, presented oral and written reports. The UFFC-S"s membership continues to grow at a modest rate.

H. L. Salvo, Jr., reported that the Moscow UFFC-S Chapter is now active, including plans to sponsor a conference.

B. R. Tittmann, UFFC-S Nominations Committee Chair, presented oral and written reports. The recent UFFC-S elections results are as follows: K. W. Ferrara, D. A. Hutchins, T. Shoup, and J. G. Smits were elected to three-year terms, effective January 1st, 1996. The nominations committee will begin work shortly on preparing a slate of candidates for the 1996 UFFC-S adcom election

H. L. Salvo, Jr., presented certificates of appreciation to the four retiring UFFC-S AdCom members: G. V. Blessing, F. S. Foster, T. W. Grudkowski, and T. Shiosaki.

D. C. Malocha was elected UFFC-S AdCom President for 1996.

J. R. Vig was elected UFFC-S AdCom Vice-President for 1996.

A motion was introduced that the next UFFC-S AdCom meeting be held at 9:00 A.M., on June 4th 1996, in conjunction with the 1996 IEEE International Frequency Control Symposium, in Honolulu, Hawaii. The motion passed.

The UFFC-S AdCom meeting adjourned at 5:11 P.M.

Gary K. Montress
UFFC-S Secretary-Treasurer, 1996

UFFC Financial Report

As can be seen from the accompanying UFFC Operating Financial Statement 12/31/95, UFFC ended the year with a $55.1K surplus, against a budgeted surplus of only $2.0K. The higher than expected surplus is primarily due to a higher than budgeted interest income (this includes the unrealized gain from our long term investment) and lower than expected AdCom expenses (these include various travel expenses as shown on the bottom of the sheet and AdCom meeting expenses).

The Transactions surplus of $28.9K was lower than expected, due to higher composition/editing costs and also greatly increased paper costs. However, the overlength paper charge income was more than double the budgeted income; both the overlength and voluntary page charge can vary greatly from year to year and are very hard to predict. Note that the IEEE accounting program lumps the actual income from both the membership subscriptions and the non-member subscriptions together, while in the budget column they are separated.

The Symposia by and large continue to do well. The 1993 Ultrasonics Symposium had a surplus of $39.2K, while the 1994 Frequency Control Symposium had a surplus of $14.0K. The 1994 International Symposium on Applications of Ferroelectrics had a surplus of $25.5K although the final report did not make it in time to be included in this report. On the other hand, both the 1995 Frequency Control Symposium and the 1994 Ultrasonics Symposium will end up with a loss of about $3K. Neither of these reports have been finalized yet. A major sponsor for foreign speaker travel withdrew its support at the last minute resulting in the loss for the Frequency Control Symposium, while the Ultrasonics Symposium in Cannes suffered from success; the unexpectedly large number of papers submitted and the large attendance resulted in increased expenses which were not balanced out by increased registration fees.

At the end of 1995, UFFC's reserves stand at $530.7K. Our investment of $200K in the long term fund has grown to $245.9K, an increase of 23%. Overall, UFFC's financial condition remains very healthy.

H. van de Vaart
Chair, Finance and Operations Committee
March 5, 1996

UFFC OPERATING FINANCIAL STATEMENT 12/31/95

UFFC	INCOME		EXPENSE		NET	
	BUDGET	ACTUAL	BUDGET	ACTUAL	BUDGET	ACTUAL
INTEREST	19.3	60.5	0.0	0.0	19.3	60.5
TRANSACTIONS	244.1	265.2	178.9	236.3	65.2	28.9
NEWSLETTERS	0.0	0.1	10.8	10.7	–10.8	–10.6
NON-PERIODICALS	1.6	0.6	1.3	1.3	0.3	–0.7
SYMPOSIA	432.0	343.9	396.2	295.8	35.8	48.1
HQ ADMINISTRATION	0.0	0.0	14.8	15.3	–14.8	–15.3
ADCOM	0.0	0.6	93.0	56.4	–93.0	–55.8
TOTAL	**697.0**	**670.9**	**695.0**	**615.8**	**2.0**	**55.1**

TRANSACTIONS	INCOME		EXPENSE		NET	
	BUDGET	ACTUAL	BUDGET	ACTUAL	BUDGET	ACTUAL
MEMBERSHIP FEES	28.4	94.3	0.0	0.0	28.4	94.3
INDIVIDUAL NM SUBS.	85.8	0.0	0.0	0.0	85.8	0.0
ALL TRANS. PACKAGE	84.3	105.0	0.0	0.0	84.3	105.0
POSTAGE	2.6	5.9	11.6	21.1	–9.0	–15.2
VOLUNTARY PAGE CHARGES	29.6	31.3	6.2	6.1	23.4	25.2
OVERLENGTH PAGE CHARGES	13.3	28.7	2.5	1.2	10.8	27.5
PUB. ADMINISTRATION	0.0	0.0	4.4	5.4	–4.4	–5.4
UFFC EDITOR	0.0	0.0	26.0	21.9	–26.0	–21.9
COMPOSITION/EDITING	0.0	0.0	78.0	101.9	–78.0	–101.9
PRINTING	0.0	0.0	41.3	61.3	–41.3	–61.3
SUBSCRIBER HANDLING	0.0	0.0	5.9	5.9	–5.9	–5.9
MISCELLANEOUS	0.1	0.0	3.0	11.5	–2.9	–11.5
TOTAL	**244.1**	**265.2**	**178.9**	**236.3**	**65.2**	**28.9**

SYMPOSIA	INCOME		EXPENSE		NET	
	BUDGET	ACTUAL	BUDGET	ACTUAL	BUDGET	ACTUAL
1993 ULTRASONICS	0.0	212.1	0.0	172.9	0.0	39.2
1994 FREQUENCY CONTROL	0.0	131.8	0.0	117.8	0.0	14.0
1994 ULTRASONICS	212.0	0.0	196.2	0.0	15.8	0.0
1995 FREQUENCY CONTROL	130.0	0.0	115.0	0.0	15.0	0.0
1994 FERROELECTRICS	90.0	0.0	85.0	0.0	5.0	0.0
CONFERENCE ADMINISTRATION	0.0	0.0	0.0	5.1	0.0	–5.1
TOTAL	**432.0**	**343.9**	**396.2**	**295.8**	**35.8**	**48.1**

ADCOM	BUDGET	ACTUAL
PRESIDENT'S OFFICE	5.0	5.5
ADCOM TRAVEL	15.0	—
STUDENT TRAVEL	20.0	—
FOREIGN SPEAKER TRAVEL	20.0	—
ADCOM MEETINGS	4.0	—
TOTAL ADCOM	59.0	35.0
CHAPTERS/DIST. LECTURER	10.0	10.0
MEMBERSHIP	10.2	–0.9
IEEE HQ EXPENSE	8.8	6.8
TOTAL	**93.0**	**56.4**
LONG TERM INVESTMENT	**245.9**	**+23.0%**

OUTSTANDING LOANS	
1994 ULTRASONICS	50.0
1995 ULTRASONICS	33.0
1996 ULTRASONICS	10.0
1994 FERROELECTRICS	15.0
1995 FERROELECTRICS	15.0
1995 FREQ. CONTROL	8.0
1996 FREQ. CONTROL	8.0
TOTAL	**139.0**
RESERVES 1/1/95	475.6
SURPLUS/DEFICIT	55.1
RESERVES 12/31/95	**530.7**

CONSTITUTION REVISION

The following is the revised constitution as modified and approved by the Administrative Committee of the IEEE UFFC Society. It is published in the newsletter along with the former constitution as information to our membership.

Modified and Approved by: AdCom 11/7/95;
Endorsed by: IEEE - TAB _____;
Approved by: IEEE Executive Committee: _____

CONSTITUTION IEEE ULTRASONICS, FERROELECTRICS AND FREQUENCY CONTROL SOCIETY (NEW)

Article 1 Name and Object

Section 1.1. This organization shall be known as the IEEE Ultrasonics, Ferroelectrics and Frequency Control Society.

Section 1.2. Its objectives shall be scientific, professional, and educational in character. The Society shall strive for the advancement of the theory and practice of electrical and electronic engineering and of the allied arts and sciences, and the maintenance of a high professional standing among its members, all in consonance with the Constitution and Bylaws of the IEEE and with special attention to such aims within the field of interest of the Society as are hereinafter defined.

Section 1.3. The Society shall aid in promoting close cooperation and exchange of technical information among its members and with the scientific community. To this end the Society will publish technical papers and hold meetings for the presentation of papers and their discussion, and through its committees shall study and provide for the needs of its members.

Article 2 Membership

Section 2.1. Membership in the Society shall be available only to members of the IEEE in any grade, including students, having a professional interest in any aspect of Ultrasonics, Ferroelectrics, or Frequency Control.

Section 2.2. Affiliates may participate in the Society activities as provided by the IEEE bylaws and subject to the applicable IEEE rules and regulations and any additional limitations imposed by the Society Bylaws.

Article 3 Field of Interest

Section 3.1. The scope of interest of the Society shall include the theory, technology, materials, and applications relating to:

(1) the generation, transmission, and detection of mechanical waves and vibrations and their interactions with other phenomena;

(2) medical ultrasound, including hyperthermia, bioeffects, tissue characterization and imaging;

(3) ferroelectric, piezoelectric, and piezomagnetic materials, including crystals, polycrystalline solids, films, polymers, and composites;

Approved by: G-SU AdCom 3-26-85;
Endorsed by: IEEE - TAB 5-31-85;
Approved by: IEEE Executive Committee: 6-1-85

CONSTITUTION IEEE ULTRASONICS, FERROELECTRICS AND FREQUENCY CONTROL SOCIETY (OLD 1985)

Article 1 Name and Object

Section 1.1. This organization shall be known as the IEEE Ultrasonics, Ferroelectrics and Frequency Control Society.

Section 1.2. Its objectives shall be scientific, professional, and educational in character. The Society shall strive for the advancement of the theory and practice of electrical and electronic engineering and of the allied arts and sciences, and the maintenance of a high professional standing among its members, all in consonance with the Constitution and Bylaws of the IEEE and with special attention to such aims within the field of interest of the Society as are hereinafter defined.

Section 1.3. The Society shall aid in promoting close cooperation and exchange of technical information among its members and with the scientific community. To this end the Society will publish technical papers and hold meetings for the presentation of papers and their discussion, and through its committees shall study and provide for the needs of its members.

Article 2 Membership

Section 2.1. Membership in the Society shall be available only to members of the IEEE in any grade, including students, having a professional interest in any [phase] of Ultrasonics, Ferroelectrics, and Frequency Control.

Section 2.2. Affiliates may participate in the Society activities as provided by the IEEE bylaws and subject to the applicable IEEE rules and regulations and any additional limitations imposed by the Society Bylaws.

Article 3 Field of Interest

Section 3.1. The scope of interest of the Society shall include the theory, technology, materials, and applications relating to:

(1) the generation, transmission, and detection of mechanical waves and vibrations and their interaction with [light and electric fields;]

(2) medical ultrasound, including hyperthermia, bioeffects, tissue characterization and imaging;

(3) piezoelectric, and piezomagnetic materials, including crystals, polycrystalline solids, films, polymers, and composites;

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(4) frequency control, timing, and time distribution, including crystal oscillators and other means of classical frequency control, and atomic, molecular and laser frequency control standards.

Areas of interest range from fundamental studies to the design and/or applications of devices and systems within the general scope defined above.

Article 4 Financial Support

Section 4.1. The Society shall collect from its members an annual assessment or fee, in accordance with the IEEE bylaws and applicable rules and regulations.

Section 4.2. The Society may make registration charges at its Society meetings, symposia, conferences, and conventions. The registration fee for non-members of the IEEE may be higher than for IEEE members.

Section 4.3. The Society may raise revenues by other means, such as advertising, shows, requests for contributions, and charges for sending out notices to non-Society members, provided such means are consistent with applicable IEEE rules and regulations, and do not encroach on revenue fields of prior established groups or sections. Any new revenue means not explicitly covered by IEEE rules and regulations must be approved by the IEEE Executive Committee, before being adopted by the Society.

Article 5 Administration of the Society

Section 5.1. AdCom Membership and Offices

5.1.1. The Society shall be managed by an Administrative Committee (AdCom), consisting of a President, and not more than 12 elected members and not more than three most recent past Presidents as ex-officio and not more than 12 non-elected members ex-officio as prescribed in the bylaws.

5.1.2. The terms of the elected members of the AdCom shall be for three years, four members to be elected each year. Only two consecutive terms are permitted for elected members, but eligibility is restored after a lapse of one year.

5.1.3. In a manner described in the Society Bylaws, the AdCom shall elect every two years a President-Elect whose term of office will be for two years.

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

5.1.5. A Secretary-Treasurer shall be appointed by the President for his/her term.

5.1.6. The President, newly elected President-Elect, members of the AdCom, and the newly appointed Secretary-Treasurer shall assume office on the first of January, unless a different date is provided by the bylaws.

Section 5.2. Duties and Responsibilities of the AdCom

5.2.1. The duties and responsibilities of the officers shall

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[(4) ferroelectric materials, including crystals, polycrystalline solids, films, polymers, and composites;]

(5) frequency control, timing, and time distribution, including crystal oscillators and other means of classical frequency control, and atomic, molecular and laser frequency control standards. Areas of interest range from fundamental studies to the design and/or applications of devices and systems within the general scope defined above.

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5.1.2. The terms of the [12] elected members of the AdCom shall be for three years, four members to be elected each year. Only two consecutive terms are permitted for elected members, but eligibility is restored after a lapse of one year.

5.1.3. The AdCom shall elect [annually from the committee a President and a Vice-President whose terms of office will be for one year. Both the President and Vice-President may not be elected for more than two consecutive terms.]

5.1.[4.] A Secretary-Treasurer shall be appointed [annually] by the President [for a one-year term. This officer need not be a member of the AdCom at the time of appointment and may be reappointed indefinitely.]

5.1.[5.] [The newly elected President, Vice-President,] members of the AdCom, and the newly appointed Secretary-Treasurer shall assume office on the first of January, unless a different date is provided by the bylaws.

Section 5.2. Duties and Responsibilities of the AdCom

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be as defined hereunder and in the bylaws and as delineated by the AdCom.

5.2.2. The President shall supervise the affairs of the Society, as directed by the AdCom and in accordance with his or her power and duties as defined hereunder and in the bylaws. In the President's absence or incapacity, the President's duties shall be performed by the President-Elect. In the event that neither the President nor the President-Elect is available, these duties shall be performed by an AdCom member appointed by the President.

5.2.3. When the President is notified of meetings of IEEE Boards of which he/she is a member, the President shall insure representation of the Society at such meeting by himself/*herself*, or by an alternate. If an alternate cannot be found, the President shall present the views of the Society by a letter of proxy.

5.2.4. The Administrative Committee may utilize the services of IEEE Headquarters as bursar for all or part of the funds of the Society, as provided by the IEEE bylaws and rules and regulations. If any part of the Society funds are received and deposited separately, the terms and conditions shall be in accordance with IEEE policies and subject to the provisions of the Society bylaws and to any special limitations imposed by the AdCom.

5.2.5. Neither the Society, nor any officer or representative thereof, shall have any authority to contract debts for, pledge the credit of, or in any way bind the IEEE, except in accordance with budgets previously approved.

Section 5.3. Sub Organization of the Society

5.3.1. The Administrative Committee may establish standing and ad hoc committees as provided by the bylaws. All appointments to committees shall be for a term of one year or until successors are appointed or the committees dissolved, except where other specifically designated terms of office are established by the AdCom.

5.3.2. The President shall appoint the Chair and give charge to each committee of the Society. Not more than four Committee Chairs can have the title of Vice-President as prescribed in the Bylaws. The appointment of each Chair or Vice-President shall be ratified by a majority of the elected members of AdCom.

5.3.3. The President shall be an ex-officio member of all committees of the Society.

Article 6 Election and Nominations of the AdCom

Section 6.1. Selections

6.1.1. Election of the members of the AdCom shall be by mail ballot to the entire Society membership as prescribed in the bylaws.

6.1.2. Within-term vacancies on the AdCom shall be filled by appointments, for the unexpired terms, by the President. The appointment shall be ratified by a majority vote of the AdCom.

Old (1985) Version

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Section 6.2. Nominations

6.2.1. The nomination procedure and the makeup of the Nominating Committee shall be as prescribed in the Bylaws. The nomination procedure shall include provision for the Society members to place a name on the ballot.

Article 7 Meetings

Section 7.1. General Meetings

7.1.1. The Society may hold meetings, conferences, symposia, or conventions either alone or in cooperation with Sectional or Regional Committees of the IEEE, or other technical organizations, subject to IEEE rules and regulations. The Society shall sponsor at least one technical conference of international scope each year.

7.1.2. Meetings conferences, symposia or conventions of the Society shall be open on an equal basis to all members of the IEEE, and may be attended by non-IEEE members.

Section 7.2. AdCom Meetings

7.2.1. The AdCom shall hold at least two meetings annually, as specified in the Bylaws. Additional meetings of the AdCom may be called at the discretion of the President of the Society or upon request of at least three other members of the AdCom and held at such times as are found necessary and/or convenient.

7.2.2. Nine members of the AdCom shall constitute a quorum. All members, including ex-officio members, shall have an equal vote, unless otherwise provided.

7.2.3. A majority vote of those members of the AdCom attending a meeting shall be necessary for the conduct of its business except as otherwise provided in this constitution.

7.2.4. Business of the AdCom may be handled by correspondence, telephone, fax, or e-mail where in the opinion of the President matters requiring action can be adequately handled in that manner. A majority vote of the AdCom members is necessary for approval of actions handled in that manner, unless otherwise provided.

Article 8 Publications

Section 8.1. Publications undertaken by the Society shall be subject to IEEE policies and to further guidance or controls prescribed by the AdCom or its duly appointed committees. The Society shall be responsible for the financial aspects of its publication program.

Section 8.2. The President, with the advice and consent of the AdCom, shall appoint such editors-in-chief as may be required to implement the publication program. The duties of an editor-in-chief, and compensation, if any, shall be as prescribed in the bylaws.

Article 9 Amendments and Bylaws

Section 9.1. Amendments

9.1.1. Amendments to this Constitution may be initiated by the AdCom, or by petition submitted by at least one hundred

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IEEE UFFC-S Members Elected to Fellow Grade

Congratulations to the following members of the Ultrasonics, Ferroelectrics, and Frequency Control Society who were recently elected to the grade of IEEE Fellow.

Dr. Joseph M. Crowley

For contributions to education and practice in electrostatic processes, and for fundamental contributions to electrohydrodynamics.

Dr. Satoru Fujishima

For the development of piezoelectric ceramic filters, SAW filters for TV, and SAW filters for mobile communication

New (1995) Version

members of the Society. Proposed amendments shall not conflict with the IEEE Constitution.

9.1.2. Initial approval of an amendment to this constitution as initiated by AdCom requires a two-third vote of the AdCom members present at a meeting, provided that notice of the proposed amendment has been sent to each member of the AdCom at least 15 days prior to such meeting. After having been submitted to the TAB, and by the TAB to the IEEE Executive Committee for approval, the proposed amendment shall be published in the Newsletter, or otherwise publicized by direct mailing to the membership, with notice that it goes into effect unless ten percent of the Society members object within 30 days of mailing. If sufficient objections are received, a ballot by mail shall be initiated as prescribed in Section 9.1.4.

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9.1.4. If a mail ballot is initiated, a copy of the proposed amendment shall be mailed with a ballot to all members of the Society at least 30 days before the date appointed for return of the ballots, and the ballots shall carry a statement of the time limit for their return to the IEEE office. When a mail vote of the entire Society membership is made necessary, approval of the amendment by at least two-thirds of the ballots returned shall be necessary for its enactment.

Section 9.2. Bylaws

9.2.1. Suitable Bylaws, and Amendments thereto, may be adopted by a two-thirds vote of the AdCom members present at a meeting, provided that notice of the proposed Bylaw, or Amendment, has been sent to each member of the AdCom at least 15 days prior to such meeting; or a Bylaw, or Amendment, may be adopted by a two-thirds mail vote of the members of the AdCom, provided a 30-day period is provided for such responses. In either event, the proposed Bylaw, or Amendment, shall be published in the Society Newsletter. No Bylaw, or Amendment, shall take effect until it has been received by the TAB Secretary.

Old (1985) Version

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DISTINGUISHED LECTURER TOUR (1995-1996)

Medical and Biological Imaging with High Frequency Ultrasound

F. Stuart Foster

Institution	City	Date of Lecture	
United Kingdom:			
Inst. of Cancer Res.	London	June 26, 1995	
Oxford University	Oxford	June 28, 1995	
University of Bristol	Bristol	June 30, 1995	
U. of Edinburgh	Edinburgh	July 3, 1995	
Far East:			
Toshiba Corp	Nasu City	Nov 21, 1995	
Tohoku University	Sendai	Nov 24, 1995	
Aloka Corp.	Oume-shi	Nov 27, 1995	
GE/Yokogawa Corp.	Tokyo	Nov 28, 1995	
Ultrasonic Electronics Symposium	Tsukuba City	Nov 29, 1995	
Nanjing University	Nanjing	Dec. 2, 1995	
Fudan Universiy	Shanghai	Dec. 3, 1995	
IEEE Singapore	Singapore	Dec. 8, 1995	
USA:			
University of Illinois	Urbana	January 16/96	
Drexel University	Philadelphia	January 17/96	
Arizona State University	Phoenix	January 18/96	
Sawtek	Orlando	January 22/96	
Marquette University	Milwaukee	January 23/96	
University of Maine	Bangor	February 12/96	
Boston IEEE	Boston	February 13/96	
Raytheon Corp.	Boston	February 13/96	
IBM TJ Watson Research Center	White Plains	February 14/96	
Penn State	State College	February 15, 1996	Postponed
University of Virginia	Charlottesville	February 16, 1996	Postponed
Duke University	Durham	May 6, 1996	

As the Distinguished Lecturer for the Ultrasonics Ferroelectrics and Frequency Control Society for 1995/96, it has been my pleasure to visit a number of laboratories around the world and to exchange ideas with many scientists involved in the three disciplines represented by our Society. I began my tour with a visit to the United Kingdom in which I visited London, Oxford, Bristol and Edinburgh in the early summer of 1995. Although famed for dreary weather, my stops in England and Scotland rewarded me with hot, sunny weather at every turn. For me, it was particularly rewarding to talk science by day and experience the rich, historical perspective in the evenings and during the drives between lectures. I am deeply indebted to my hosts, Drs. Bamber, Briggs, Wells and McDicken for making my stay so enjoyable.

In late November, I headed for the Far East for a series of lectures in Japan, China and Singapore. In Japan I was particularly pleased to be able to visit Professors Kushibiki, Chubachi and colleagues at Tohoku University in Sendai, Japan. For many years I have admired the work of this outstanding laboratory so that the opportunity to visit and talk with both my colleagues and with their students, was a highlight. While the discussions were excellent, the food was superb. My palate, which is already well honed to Japanese cuisine, was treated to new levels of gastronomic extravagance. While visiting Japan, I was also very happy to see my old friend and colleague Dr. Hiroyuki Obara and his wife. We spent two beautiful days in the hot spring areas surrounding Fukushima before returning to the Tokyo area where I gave a presentation at the USE conference. This conference is a parallel to the ultrasonics symposium held by the UFFC each year

With Professor Kushibiki (second from left) in Sendai, Japan.

With Toshiba executives.

and highlights the year's technical advances in ultrasonics. Finally, while in Japan, I visited a number of important commercial organizations such as Toshiba, Aloka and General Electric/Yokogawa who are very actively involved in the field of medical ultrasound imaging. I am indebted to Dr. Yasuhiko Nakagawa and the IEEE Chapter in Tokyo for arranging my schedule seamlessly and providing physical support in the form of a series of guides who prevented me from wandering aimlessly through the myriad of train and subway stations that comprise the major centres in Japan.

With Dr. Hanada and Dr. Kasai at Aloka, Tokyo, Japan.

China proved to be a fascinating study in contrasts. On one hand, Shanghai offered an unparalleled vista of building and development based on the steadily growing machination of joint venture projects (a form of carefully contained and controlled capitalism) and, on the other hand, the common people with their day to day lives under the communist ideology. Although the contrasts are stark, the people are justifiably proud of the progress that they have made. The two universities that I visited, Nanjing University and Fudan University were both beautiful campuses and each appeared to display a pride in learning and in academic achievement. I thank both of my hosts Prof. Shigong Ye at Nanjing and Prof. Wang at Fudan University for their hospitality during my visit and for introducing me to some of the beauty of China. I finished my tour of the Far East with a lecture in Singapore at the second Asian Conference on Computer Vision. This conference included a component on medical ultrasound imaging which was organized by Prof. Thijssen.

With Professor Shigong Ye in Nanjing China.

I began the USA phase of my tour in January of 1996 with visits to a number of laboratories and companies. Although lecturing in the United States is not as exotic as some of the previous lectures, the warmth and hospitality and free flow of ideas more than made up for the fact that I had to endure some of the worst winter storms in a few decades. At one point I ended up driving from Urbana-Champagne to Chicago in a virtually impenetrable fog and later in the trip had to catch a limo from Millwaukee to Chicago on account of an unexpected blizzard. On the latter ride I was entertained by a third world pesticide salesman, an interventional radiologist, and two software moguls. Unfortunately, a few of my talks had to be cancelled while I twiddled my thumbs at Dulles Airport in Washington. I hope to be able to reschedule these and fit them in during the late spring or possibly in the fall. My woes in the north east compensated for by superb weather in Phoenix where I lectured at Arizona State University. I was somewhat surprised to see one of my predecessors (and the only other Canadian "distinguished lecturer") Prof. Eric Adler in the audience. I wish to thank everyone for the invitations to speak, particularly the SAW people, for whom the content of the lecture may not have been thrilling. I can assure you that it has been a pleasure to represent the Ultrasonics Ferroelectrics and Frequency Control Society on my interesting and varied lecture tour.

With Fred Hickernell in the shade of a saguaro the day after the Phoenix Chapter Meeting in January.

With the Boston Chapter in February 1996.

Chapter Activities

Introductory remarks by Werner Buff at the Chapter organization meeting.

Richie, Malocha, Weigel and Buff listening to discussion.

Frank Moeller and Helmut Ermert discuss cooperation between German UFFC-S Chapter and other German organizations in the area.

German UFFC Chapter Organized

The idea of forming an UFFC chapter in Germany was born much earlier, but first at the 1995 IEEE Ultrasonics Symposium in Seattle, WA, several people met to discuss the possibility more detailed. A meeting was arranged later, on December 12, 1995, while Professor Malocha and Professor Richie from the University of Central Florida were visiting the SAW group at Technische Universitaet Ilmenau. The idea was to form the chapter while the future president of UFFC society would be in Germany. Because the time to organize the meeting was relatively short, a lot of German members could just send messages via fax or telephone, but couldn't come.

The meeting was held in conference room K 2001 of the Kirchhoff Building of TU Ilmenau. Participants were Professor Ermert from Ruhr-Universitaet Bochum, Dr. Weigel from Technische Universitaet Muenchen, Professor Malocha and Professor Richie from UCF as well as Professor Buff and Dr. Moeller from TU Ilmenau. After the opening by Professor Buff, the reason and goals for a German UFFC chapter were discussed. The idea is to enhance work and information exchange in the UFFC working field. Within IEEE there would be support for organizing workshops, symposia, etc. and the chapter could use the publication possibilities of IEEE as well. There are several other advantages concerning cooperation between educational and scientific institutions, developers, producers and users working in the UFFC area.

Professor Ermert proposed again to form a joint chapter between Austria, Switzerland and Germany. Due to the process of getting the addresses it couldn't be done until December 12, 1995. Professor Malocha gave an introduction to the work of an UFFC chapter, about support and some ideas for chapter work. All participants decided to start with forming a German UFFC chapter and to offer the idea to the UFFC members of Austria and Switzerland as soon as the addresses would be available. The status of the German chapter could be changed later to a joint one, if there would be some interest. Dr. Moeller was chosen to serve as first chairman of the German UFFC chapter and to organize further discussion and programs of the chapter. Another decision was to offer co-operation to the members of the German VDI/VDE in the field of UFFC. It is also planned, that the chapter will have some cooperation (i.e. joint meetings) with the Ultrasonics Group of the German Society of Biomedical Engineering which is headed by Professor Ermert.

By the end of the year 1995 several copies of the petition were sent out and by the end of January 27 signatures were received. The copies of the petition were sent to the chairman

Don Malocha explains UFFC-Society support. Robert Weigel looks on.

Sam Richie and Don Malocha discuss a point.

Moeller and Ermert enjoying a lighter moment in the conversation.

of the German Section and should already have been received by the IEEE Headquarter. Unfortunately, the information about approval has not been received prior to this article.

Besides this, other activities have been started and first results are acheived. Both chairman of the Swiss and Austrian section were informed about the chapter. Addresses of UFFC members of Switzerland arrived and members have been sent a letter explaining the idea. The letter proposed the idea of forming an UFFC chapter and to discuss the formation of either a joint chapter with the German section or rather single chapters within the area of each section. Already four members have answered and are interested in a joint chapter. Due to the problems with IEEE database a lot of addresses were not updated and letters were returned. There isn't any answer from the Austrian chairman nor from UFFC members of Austria, so far. However, we would like to encourage the discussion of forming an UFFC chapter either a joint one or single ones.

A WWW-page is planned for the German UFFC chapter. Links will become available via the IEEE, UFFC, Region 8 and German section web-pages soon. Please check **http://merlin.e-technik.tu-ilmenau.de/UFFC/uffc.html** — where the German page exists. The address for the English version is: **http://merlin.e-technik.tu-ilmenau.de/UFFC/uffceng.html**

We would like to receive some input concerning any ideas the membership might have. Please send email to frank.moeller@e-technik.tu-ilmenau.de or telephone ++49-3677-69/3129.

Frank Moeller
Chapter Chairman

Russian UFFC-S Chapter

The Russian Chapter has planned five events for 1996. The main event is an International Symposium on Acoustoelectronics, Frequency Control, and Signal Generation. It will be held September 17-19, 1996, at the hotel "Uzkoje" in Moscow. We hope that the Symposium is going to involve many researchers and engineers in international cooperation in our field. We hope also that some new persons will join the IEEE and Russian UFFC-S Chapter during the Symposium.

One of the events scheduled for 1996 was held on March 5, 1996. It was the Moscow Student Scientific Conference on Radio Engineering that was organized by the Department of Radio Engineering of the Moscow Power Engineering Institute (Technical University). The Section of Signal Generation and Frequency Control was organized under sponsorship of the UFFC-S Russian Chapter. Six student papers were presented and discussed at the Section. Information about the IEEE structure and activities and particularly about the UFFC-S Chapter activities were presented at the plenary Session of the Conference.

In May, 1996, the Chapter plans participation in the 51st Annual Meeting devoted to the Radio Day. In June we scheduled a workshop at Bear Lakes (near Moscow) to discuss issues connected with the Symposium (review papers, proceedings structure and so on). The last Chapter meeting of this year is scheduled for December. It will consist of two parts. In the first part some papers will be presented. The second part is going to be devoted to results of the Chapter activity in 1996 and to the Chapter plans for 1997.

Valentin N. Kuleshov
Vice Chairman
Russian UFFC-S Chapter
Email: rpdu@mpei-rt.msk.su

Member Activities

Colin Campbell

Colin Campbell (*Life Fellow, IEEE*) was awarded a 60-day Invitation Fellowship to Japan, in May, June, and July of 1995, by the Japan Society for the Promotion of Science (JSPS). His visit to Japan was under the sponsorship of Professor Kazohiku Yamanouchi of Tohoku University. During this visit, Colin gave invited lectures on SAW and leaky-SAW devices at Tohoku University (Professor Kazohiku Yamanouchi), at Tokyo Institute of Technology (Professor Yasutaka Shimizu), at Ishinomaki Senshu University (Professor Noboru Wakatsuki), and at Chiba University (Professor Masatsune Yamaguchi and Professor Ken-ya Hashimoto). He also presented invited SAW and leaky-SAW topics at Japan

Radio Company (Hiromi Yatsuda), Hitachi Central Research Laboratory (Dr. Mitsutaka Hikita) and Murata Manufacturing Company (Dr. Michio Kadota). In addition, Colin presented an invited paper on "Application of surface acoustic and pseudo surface acoustic wave devices for mobile/wireless communications," at the May meeting of the 150th Committee of the Japan Society for the Promotion of Science in Tokyo, as well as an invited paper on "Admittance-parameter modeling of a dual longitudinal-mode RF leaky SAW resonator filter for mobile communication," at the June meeting of The Institute of Electronics, Information and Communication Engineers, in Chiba.

Following his return to Canada in July, 1995, Colin was subsequently awarded a six-week Research Fellowship with the Industrial Electronics Technology Research Group (Professor J. D. van Wyk) at the Ran Afrikaans University in Johannesburg, South Africa, where he was engaged in experimental ceramics research in November and December.

WELCOME NEW UFFC-S MEMBERS

We welcome the following new members to the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society who have joined in the past six months.

ALABAMA
Shepherd, Robert E.
ARIZONA
Briggs, David K.
CALIFORNIA
Buchsbaum, S.
Chen, C. J.
Chu, Wen-Hwa M.
Currie, Charles
Drake, Lynn H.
Hess, Leo M.
Inskeep, Charles G.
Jaduszliwer, Bernardo
Jeng, De-Yin
Kao, Yeh-Jen
Kattan, Shalom
Kim, Kevin
McCallum, Donald T.
Moberly, John David
Percin, Gokhan
Pham, Ha
Roy, Debasis
Sariri, Kouros
Smith, Larry D.
Spratt, Ray S.
Studier, Paul L.
Velayos, Edward J.
Wang, Ji
Ward, Steven M.
Wollam, Paul P.
Zhao, Danhua
COLORADO
Linnenbrink, Thomas E.
Oden, Charles
Walls, Warren F.
CONNECTICUT
Browner, Richard W.
Garstecki, Jeffrey F.
George, Wallace R.
Rosen, Mark D. A.
Truchsess, William F.
Vallent, Martin A.
FLORIDA
Cheng, Weiying
Garris, Steven B.
Hikino, Osamu
King, Danny
Remoundos, George
Rothery, Michael H.
Sunkin, Gerald S.
Thompson, Roger L.
Verma, Sonia
GEORGIA
Poskevich, David R.
IOWA
Masri, Wassef M.
Miller, Robert L.
Xue, Tianji
IDAHO
Land, Glen Don
ILLINOIS
Barich, Joseph M.
Bielick, Brian
Harris, John G.
Spellberg, Robert E.
KANSAS
Rivoldini, John K.
KENTUCKY
Cobb, Andrew T.
MASSACHUSETTS
Abrahamson, Paul B.
Amin, Ahmed
Broadstone, Steven
Daehler, June
Di Angelo, Richard J.
Fertsch, Michael T.
Fowler, Kenneth A.
Lane, David J.
Li, Scott X.
Vigeant, Richard L.
White, Timothy E.
MARYLAND
Bolster, Jr., Bradley
Buriak, George
Zier, David A.
MICHIGAN
Carson, Paul L.
Erkamp, Ramon
Hamilton, James D.
MINNESOTA
Ong, Hang See
MISSOURI
Bateman, Randall J.
Ciardullo, Daniel
Switlik, Larry T.
NORTH CAROLINA
Bashford, Gregory R.
NEW JERSEY
Hadani, Ron
Wittensoldner, Chris J.
NEW MEXICO
Cravens, Paul
Molina, Luis
NEW YORK
Furstenberg, David
Watkins, Ronald D.
OKLAHOMA
Kelly, Ray Tanner
PENNSYLVANIA
Dey, Joyoni
Eisenstein, Bruce A.
Genis, Vladimir
Li, Kenen K.
Petropulu, Athina
RHODE ISLAND
McKenna, Mark J.
TEXAS
Amidei, Anthony M.
Chen, Tung-Sheng
Erb, Tom L.
Li, Xuguang
Page IV, Robert C.
Tampoe, Robin
Weaver, Gregory S.
Wisneiwski, Laurence T.
VIRGINIA
Druva, David B.
Fu, Haizhong
Tempesta, Francis M.
WASHINGTON
Ariessohn, Peter C.
Broschat, Shira L.
Brown, Katherine G.
Clary, Thomas R.
Davis, Thomas J.
Dixon, Roger
Hippe, Richard A.
Hurt, William A.
Jago, James R.
Seliga, Thomas A.
Zobkiw, Chris P.
WISCONSIN
Freund, William R.
Popovich, Steven R.
ARGENTINA
Kuchen, Benjamin R.
AUSTRALIA
Aitken, John J.
Ritter, Edith J.
AUSTRIA
Schobel, Di
Schwarzecker, Gerald
Zagar, Bernhard G.
BELGIUM
Claus, Patrick
BRAZIL
Correa, Jeferson Marian
Eiras, Jose A.
Filho, Arlindo Rodrigues
Silva, Valberto F.
CANADA
Eilander, Paul
Fenster, A.
Ivanov, Dentcho V.
Johnson, Stephen P.
Rerie, Robert W.
Siebert, Martin A.
CHINA
Gao, Shangkai
Li, Longtu
Wang, Jin-Song
Wang, Xinmei
Yang, Daben
COLOMBIA
Barrero-Perrez, Jaime G.
Gomez, Jolman Riveru
DENMARK
Andreasen, Jens H.
EGYPT
Abouzeid, Ahmed A. M.
Allam, Mahmoud E.
ENGLAND
Freear, Steven
Mardia, Kanti V.
FINLAND
Ketonen, Veli-Pekka
FRANCE
Basset, Olivier
Dipaola, Robert
Dulmet, Bernard M.
Fournier, Jacques
Neikens, Gerald
Tayebi, Abdelhamid
GERMANY
Block, Andreas
Jenderka, Klaus V.
Maiwald, Frank
Mund, Hans J.
Schulze-Clewing, Joerge
Wippich, Peter
Zerfowski, Detlef
GREECE
Laopoulos, Theodoros
HONG KONG
Lai, Kwok Wah
Ming, Cheung Chi
Yuen, Da Wai D.
INDIA
Buruginna, Dharmendra
Noronha, E.
Pathak, Shishir M.
INDONESIA
Anwar, Zilmy Z.
ISRAEL
Peleg, Ilan
ITALY
Berardino, Paolo
Penza, Michele
JAPAN
Aramaki, Koji
Hamamoto, Kazuhiko
Hongo, Satoshi
Hu, Jun-Hui
Inui, Shinichiro
Kamae, Takahiko
Kawashima, Hirofumi
Lee, Chengkuo
Nagano, Koji
Noge, Atoru
Ogasawara, Shigemasa
Shiina, Tsuyoshi
Sumiro, Yoichi
Yamamoto, Katsuyuki
KOREA
Choi, Jae-Ha
Chung, Yeon-Bae
Ha, Jo Woong
Ha, Kanglyeol
Hong, Kwang-Seok
Jeong, Mok-Kun
Jung, Myung Jin
Kim, Hyeongdong
Kim, Jeha
Kyungil, Chung
Lee, Bong J.
Lee, Hee Young
Lee, Jong M.
Lee, Man-Hyeong
Lee, Yong-Hyun
Na, Byeong Yoon
Oh, Hyo-Sung

continued

Park, Hyunwook	Velarde V, J. Ramon Lopez	Alkhotani, Ghazi Mohd A.	**SWITZERLAND**
Seo, Jungyun	**NORWAY**	Iggo, Jefferson L.	Muralt, Paul
Seok, Chun K.	Yang, Luren	Thamer, Mahesh M.	Shen, Chang
LITHUANIA	**PAKISTAN**	Ugru, G. R.	**TAIWAN**
Ragauskas, Arminas	Choudhry, Mohammad A.	**SCOTLAND**	Lee, Pauli
MALAYSIA	**PANAMA**	May, John	Lee, Shihfong
Teo, Lian Seng	Vergara, Victor M.	**SINGAPORE**	**THAILAND**
Wah, Lee Cheen	**PHILIPPINES**	Chua, Jason	Triamlumlerd, Satien
MEXICO	Reyes, Pavel Ivanoff C.	Lee, Siew-Ping	**TURKEY**
Acevedo, Pedro	**ROMANIA**	Maggiolino, Joseph	Ahmet, Malak
Aguilar, Horacio Munguia	Mihail-Eugen, Tanase	**SLOVENIA**	Ascioglu, I. Mete
Dorado-Ponce-De-Leon, J. L.	**RUSSIA**	Gergic, Bojan	**YUGOSLAVIA**
Kulikov, Sergio	Sakharov, Vadim	Pacnik, Viktor	Buranj, Nandor
Lopez, Ernesto D.	**SAUDI ARABIA**	**SPAIN**	Mancic, Dragan
Lugo, Aldo G. Orozco	Al-Gartas, Raid Hamid S.	Tichell, Alfonso V.	Vasiljevic, Dragan

FUTURE UFFC-S SPONSORED SYMPOSIA

ULTRASONICS SYMPOSIA

1996 IEEE International Ultrasonics Symposium

San Antonio, Texas — 3 - 6 November 1996

For information contact:

Jeffrey S. Schoenwald, *General Chair*
Rockwell International
693 Oak Shadow View Place
Thousand Oaks, California 91320
(818) 586-8958 (Phone); (805) 499-0155 (FAX)

Pierre B. T. Khuri-Yakub, *Technical Program Chair*
Stanford University
Department of Electrical Engineering
E. L. Ginzton Laboratory
Room 11
Stanford, California 94305-4085
(415) 723-0718 (Phone); (415) 725-7509 (FAX)

1997 IEEE International Ultrasonics Symposium

Toronto, Ontario, Canada - 5 - 8 October 1997

For information contact:

F. Stuart Foster, *General Chair*
University of Toronto
Sunnybrook Health Science Center
Department of Medical Physics
Reichmann Research Building
2075 Bay View Avenue
Toronto, Ontario
CANADA M4N 3M5
(416) 480-5716 (Phone); (416) 480-5714 (FAX)

Katherine W. Ferrara, *Technical Program Chair*
University of Virginia
Department of Electrical Engineering
1105 West Main Street
Stacey Hall
Room 1421
Charlottesville, Virginia 22903
(804) 243-6321 (Phone); (804) 982-3870 (FAX)

FREQUENCY CONTROL SYMPOSIA

1996 IEEE International Frequency Control Symposium

Honolulu, Hawaii — 5 - 8 June 1996

For information contact:

John R. Vig, *General Co-Chair*
U. S. Army Research Laboratory
AMSRL-PS-ED
Fort Monmouth, New Jersey 07703-5601
(908) 427-4275 (Phone); (908) 427-4805 (FAX)

or

Kazuhiko Yamanouchi, *General Co-Chair*
Research Institute of Electrical Communication
Tohoku University
Katahira, Aoba-ku
Sendai 980
JAPAN
(81) 22-217-5526 (Phone); (81) 22-217-5526 (FAX)

Frederick L. Walls, **Technical Program Chair**
National Institute of Standards & Technology
Time & Frequency Division
Division 847
325 Broadway
Boulder, Colorado 80303
(303) 497-3207 (Phone); (303) 497-6461 (FAX)

1997 IEEE International Frequency Control Symposium

Orlando, Florida — 28 - 31 May 1997

For information contact:

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Gary R. Johnson, *Technical Program Chair*
Sawyer Research Products Inc.

35400 Lakeland Boulevard
Eastlake, Ohio 44095
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1998 IEEE International Frequency Control Symposium
Los Angeles, California
For information contact:
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1999 IEEE International Frequency Control Symposium
Besancon, France
For information contact:
Donald B. Sullivan, *General Co-Chair*
National Institute of Standards & Technology
Time & Frequency Division
Division 847
325 Broadway
Boulder, Colorado 80303
(303) 497-3772 (Phone); (303) 497-6461 (FAX)
or
Raymond J. Besson, *General Co-Chair*
LCEP-ENSMM
la Bouloie - route de Gray
25030 Besancon Cedex
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(31) 81-666632 (Phone); (31) 81-885714 (FAX)

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325 Broadway
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(303) 497-3207 (Phone); (303) 497-6461 (FAX)

FERROELECTRICS SYMPOSIA

1996 IEEE International Symposium on Applications of Ferroelectrics
East Brunswick, New Jersey
For information contact:
Ahmad Safari, General Chair
Rutgers University
Center for Ceramics Research
Brett & Bowser Roads
P. O. Box 909
Piscataway, New Jersey 08855-0909
(908) 445-4367 (Phone); (908) 445-3258 (FAX)

INVITATION to MOSCOW

It is a privilege to welcome your participation in the International Symposium "ACOUSTOELECTRONICS, FREQUENCY CONTROL, and SIGNAL GENERATION" which will be held in hotel "Uzkoje", Moscow, Russia, during 17-19 September, 1996. The event is organized by the IEEE Moscow UFFC-S Chapter with support of the Russian A.S.Popov Society, Russian Academy of Sciences, Institute of Radioengineering and Electronics, Ministry of Science of Russian Federation, Committee of Russian Federation for Standardization, Metrology and Certification, State Committee of Higher Education of Russian Federation, Moscow Power Engineering Institute (Technical University).

Oral and poster presentations are planned. Some parallel sessions will be organized to discuss in detail the state-of-the-art in basic areas of the Symposium. Authors are invited to submit papers dealing with recent studies and progress in research, development, manufacturing, technology in:

- physical acoustoelectronic and acoustomagnetic phenomena in crystals and layered structures;
- new acoustic materials;
- acoustoelectronic resonators, delay lines, filters;
- acoustoelectronic oscillators;
- microwave oscillators with high frequency stability;
- frequency and signal synthesizers,
- atomic frequency standards,
- requirements to signal sources for different applications (tele-communications, measurement instrumentation, navigation and so on).

The working language of the Symposium is English which will be used for all printed material, presentations and discussion. Deadline for the submission of summaries (E-Mail preferable; at least 300 words; not more than two pages) is April 25, 1996.

It is anticipated that the Symposium fee will be $270. However, pre-registration will entitle you to claim a reduced rate of $230, providing the registration form and payment are returned by the 15th of August 1996. Expected hotel "Uzkoe" rates: single - $50, double - $60.

Additional information:
Moscow UFFC-S Chapter Secretary
Dr. Dmitry P. Tsarapkin
SYMPOSIUM, MPEI, 14, Krasnokazarmennaya,
111250 Moscow, Russia
Tel: (7-095) 273-0374
Fax: (7-095) 362-8938, 361-1620
E-mail: rpdu@mpei-rt.msk.su

Prof. Valentin N. Kuleshov
Moscow UFFC-S Chapter Vice-chairman

1997 IEEE International Frequency Control Symposium

May 28 to 31, 1997
Hilton Hotel, Walt Disney World, Orlando, Florida, USA

The 51st consecutive meeting of the Frequency Control Symposium will be held at Walt Disney World in Orlando, Florida, USA. This Symposium has provided the leading international technical forum for research and development directed towards all aspects of frequency control and precision timekeeping.

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

Group 1
- **A. Fundamental Properties of Materials**
- **B. Theory and Design of Resonators and Filters**
- **C. Sensors and Transducers**

Group 2
- **A. Oscillators - BAW and SAW**
- **B. Oscillators - Microwave to Optical**
- **C. Synthesizers and Other Circuitry**
- **D. Noise Phenomena and Aging**

Group 3
- **A. Atomic and Molecular Frequency Standards**
- **B. Frequency and Time Coordination**
- **C. Measurements and Specifications**
- **D. Applications of Frequency Control**

AWARD NOMINATIONS

Formal nominations for the Cady, Rabi, and Sawyer Awards should be sent to the Program Chairman, Gary Johnson. Informal suggestions of deserving nominees should be sent to the Awards Chairman, Roger Ward.

EXHIBITS

For information on arranging for exhibit space, please contact:
Mr. Michael R. Mirarchi
Synergistic Management, Inc.
3100 Route 138
Wall Township, NJ 07719, U. S. A.
Tel: (908) 280-2024, Fax: (908) 681-9314
The deadline for arrangements is 3 March, 1997.

TRAVEL SUPPORT

Presenters from outside the United States – Limited funds are available to help with the travel expenses of presenters from outside the United States who might not otherwise be able to attend. Requests for support, including the name of the presenter and the amount requested (in U. S. dollars) must be included with the paper summary. The Symposium will provide reimbursement up to an amount to be specified. *Airline tickets and travel arrangements will no longer be provided.*

Student authors/co-authors – Limited funds are available to support the travel of student authors (from anywhere). Requests must be included with the summary.

CALL FOR PAPERS

Special Issue on Ultrasonic Transducers

(Submission Deadline: July 1, 1996)

The IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control invites the submission Ultrasonic Transducers manuscripts on any of the following topics:

- Novel transducer materials
- Properties and processing of transducer materials
- Backing, matching, bonding and lens materials and design
- One-dimensional array fabrication and design
- Multi-dimensional array fabrication and design
- Cross-talk analysis and measurements
- Multi-dimensional arrays for imaging and therapy
- Interconnections
- Modeling of transducers and arrays
- Imaging and therapeutic transducers and specialty probes

The contributed papers must have a significant ultrasonic transducers component in order to fall within the scope of this Special Issue. Contributed papers must be sent to the Editor-in-Chief

William D. O'Brien, Jr.
Department of Electrical and Computer Engineering
University of Illinois
405 North Mathews
Urbana, IL 61801

In the transmittal letter identify that the contribution is being submitted for publication consideration for the Ultrasonic Transducers Special Issue. Consult the "Information for Contributors" for manuscript preparation requirements. All papers are subjected to the normal peer-review process. Submission deadline is July 1, 1996, and the expected publication date is mid-1997. The Guest Editor for this Special Issue is Professor K. Kirk Shung of The Pennsylvania State University.

Second International Conference on Optical Information Processing

The Second International Conference on Optical Information Processing will be held in St. Petersburg, Russia from 17 to 21 June, 1996. This conference, first held in the same location in 1993, will provide a unique opportunity for researchers from throughout the world to discuss recent advances in optical information processing - including components, algorithms, architectures, and systems. Approximately 200 papers will be presented on all aspects of optical image processing, optical signal processing, optical interconnections, optical memory, and optical computing. About 75% of the papers are from Russia and the Former Soviet Union Republics while, 25% are from the West - with contributions from the USA, Japan, Germany, France, Italy, Denmark, Finland, Sweden, China, UK, Canada, Mexico, Turkey, Greece, and Scotland. A significant number of papers report on new advances in acousto-optic devices and acousto-optic signal processing systems. The conference will be held in a conference facility near the famous Pushkin Park outside of St. Petersburg. For additional information including registration forms, please contact the US conference cochairman, Dennis R. Pape, Photonic Systems Incorporated, at (407) 984-8181, Fax: (407) 952-7748, or Email: dpape@snap.org.

Editor's Note

There will be three major symposia sponsored by our society this year. The first is the 50th anniversary meeting of the annual Frequency Control Symposium. It will have a solid technical program, historic reviews of the progress of frequency control over the past 50 years, and a very scenic location for times not spent in the technical sessions. John Vig and his committee have worked hard to make this a very memorable and the best ever symposium. In August the International Symposium on the Applications of Ferroelectrics will be held near Rutgers University with Ahmed Safari as the General Chair. In November, San Antonio will be the location of the Ultrasonics Symposium with Jeff Schoenwald as the General Chair. You can stay up-to-date on the Ultrasonics Symposium by tapping into the web page listed on the back cover of this newsletter. I trust you will be able to make one or more of these symposia.

Congratulations to Don Malocha, the societies newly elected president, and to John Vig, the new Vice President. Our Distinguished Lecturer for 1996-97 is Tom Parker. Be sure and schedule him for a presentation. His biography and abstract are near the front of the newsletter. Welcome to the new elected Administrative Committee members; Katherine Ferrara, David Hutchins, Tom Shoup, and Jan Smits who were elected to three-year terms, effective January 1st, 1996. Sorry I didn't get their pictures in this issue. I will try to do it the next issue. Also a hearty congratulations to Gene Haertling who was elected to the National Academy of Engineers.

As I write this note our members in the midwest and eastern United States are again being hit by winter storms while in Arizona we have continued to get an over abundance of sunny warm days. I haven't kept up on how our international membership has fared weatherwise this winter or summer as the case may be. I trust it has been pleasant and the next months bring milder weather. Those of us attending the Ultrasonics Symposium in Seattle had some cool and partial rainy conditions. We missed the flooding rains which came later to that area and which reminded me of the floods in Cannes the previous year.

The Seattle Ultrasonics Symposium was very successful with a large international attendance. The opening session pictures of awardees and photos during the symposium were courtesy of the General Chair, Gerry Blessing. Congratulations to all the awardees. I felt very blessed to receive the Achievement Award. Blessed in many ways one of which is the wonderful association I have had with the people of the UFFC. I was glad to see that Harry Salvo was much better dressed for this years symposium. The ladies had great fun and Elke Lerch provided the newsletter with the photo memories.

Our secretary-treasurer Gary Montress came through with the pertinent information from the AdCom meeting in Seattle. Herman indicates the Society is fiscally fit. Congratulations to our two newly elected IEEE Fellows, Joseph Crowley and Satoru Fujishima. Jim Greenleaf and his Constitutional Review Committee have provided the membership with the constitutional revisions as approved by the Administrative Committee in this newsletter. Bylaws revision is in the offing.

Stuart Foster has shared his distinguished lecture itinerary with us and provided the photographs accompanying his article. It was a special privilege to have news from the newly formed German Chapter (pictures by Frank Moeller) and the Russian Chapter. There is information on upcoming conferences and calls for papers. Sendai Japan is being considered for the 1998 Ultrasonics Symposium.

All in all, we are looking forward to another great year for the UFFC Society. We welcome our 242 new members. The email (dcm@ece.engr.ucf.edu) and phone (407-823-2414) lines are open to the president if you want to volunteer for service to the society. Be sure and check out the UFFC Home Page which is listed on the back cover of this newsletter. The newsletter is also a place where you can contribute an article or photos. I will need inputs for the next newsletter by the beginning of August. Every member is a potential contributor so please send me any information or photos which relate to our society. My communication net remains as: phone: 602-441-2923, fax: 602-441-7714, email f.hickernell@ieee.org or p04564@email.mot.com, and address, Fred Hickernell, Motorola GSTG, 8201 E. McDowell, Scottsdale AZ 85252.

Special thanks go to Ann Scrupski and her coworkers at IEEE Magazines/Newsletters for final assembly of this newsletter edition. It is Ann's final touch that makes this newsletter come alive.

Fred Hickernell
Newsletter Editor

UFFC Society on the Web.

The IEEE UFFC-Society has established a world wide web site which has sections devoted to (not surprisingly) ultrasonics, ferroelectrics and frequency control. Check it out at:

http://bul.eecs.umich.edu/~haddadin/uffc/

This site is brand new. It is still under construction (at the Univ. of Michigan, thanks to Prof. Emad Ebbini). Among the files posted in the frequency control section so far, for example, are the abstracts of all the symposium papers ever published in the proceedings (~40 years' worth, up to 1995), information on the Cady, Rabi and Sawyer awards, including the listing of past winners and their citations, a listing of past chairmen, and a listing of past proceedings and how to obtain them. Also available is the advance program of the next Symposium, and of the Tutorials, to be held June 5 to 8 in Honolulu, Hawaii. We have started to add links to other relevant WWW sites, and we plan to make reference information available in the future (the first will be the constants of quartz). For example, there is a link to a home page devoted to the 1996 IEEE Ultrasonics Symposium to be held in San Antonio, Texas. You can also access this site directly, at

http://macro.stanford.edu/groups/uffc.

At this point, besides links to the US Symposium (Stanford/San Antonio), it links to the ISAF/IFCS (listing of upcoming meetings till 2004) and also has a link to the ULTRANET and the Medical Ultrasound Imaging from the University of Toronto. If you have any material that you'd like included in this page, please let us know. Also, if you are aware of any related sites that we can link to, we welcome that as well.

A link has been added between the UFFC Society home page and the IEEE Society home page

http://www.ieee.org/society.html

in two places, both at the top of the page where the societies are listed and in the body of the page, where UFFC-Soc's field of interest appears. You're also welcomed on the IEEE Society's newcomers page at:

http://www.ieee.org/events_new.html

Finally, we are currently working on electronic submission format for our conferences and a shared image data base with restricted access. This might take longer time, but will be hopefully finalized by this June.

The AdCom hopes to make the UFFC Society web site a useful site for you to visit on a regular basis. Your suggestions on how to make this site useful to you will be welcome.

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