

IEEE ULTRASONICS, FERROELECTRICS AND FREQUENCY CONTROL SOCIETY NEWSLETTER

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EDITOR: FRED S. HICKERNELL



Bruce McAvoy
UFFCS President



Chen Tsai
UFFCS National Lecturer

Frequency Control Symposium
Philadelphia, PA
May 28-30

ISAF Symposium
Lehigh University, PA
June 8-11

President's Message

The Trouble with Change

The President of a prestigious university recently wondered out loud why most of the faculty chose to teach by lecturing. He thought that not all were that good at it and that the common textbook had rendered the lecture obsolete. His point was that there was too much of a tendency to band together and accept a consensus on "what ought to be." With the same theme, he pointed the finger at corporate engineering and R&D ranks which use well worn paths to moderate (safe) levels of success. Innovation is painful; it is also hard work. It is painful because risk taking is not encouraged. Nobody wants to be a constant "failure." It is hard work because the odds do not favor success and hence there is more to do. I am sure that there are few of us that do not know the feelings of insecurity that come with taking on new project responsibilities or changing directions in research.

It is my opinion that the success of our Society is because, in large part, we are peopled by individuals and groups with a rather profound grasp of what it is like to be innovative and to do something "new." There has always been a tolerance, for example, of conference papers which do not conform with an attitude to hear it out and to judge on merits. Growth is possible because we do not insist on making boundaries and become preoccupied with structure at the expense of content.

It was not out of character for our organization to undertake the change from Sonics and Ultrasonics to Ultrasonics, Ferroelectrics and Frequency Control. In a sense we have all just joined a new Society but I am confident that the community of innovation which we have fostered over the years will not change.

B. R. McAvoy
President UFFC-S

AdCom Briefs

The Fall UFFC-S ADCOM meeting was held on October 15, 1985 at the Cathedral Hill Hotel, San Francisco, California. The meeting was presided over by H. van de Vaart. Twenty-nine people attended including several personnel from IEEE headquarters and future symposia chairmen.

The agenda was quite extensive with several discussions on the expanded role of the society and how to best serve the three areas of Ultrasonics, Ferroelectrics and Frequency Control. The newly elected ADCOM members, C. K. Campbell, J. G. Miller and J. S. Schoenwald were introduced. Their term of office is from January 1, 1986 to December 31, 1988. The new Bylaws reflecting the expanded role were unanimously approved by ADCOM. H. van de Vaart suggested that ADCOM consider holding their meeting not only in conjunction with the Ultrasonics Symposium but also the International Symposium on

Applications on Ferroelectrics and the Frequency Control and Ferroelectrics area and Chapter/Membership Committee coordinate with all three areas. W.D. O'Brien mentioned that he is planning special issues for the Ferroelectrics and Frequency Control. The Newsletter now has expanded coverage to include both Frequency Control and Ferroelectrics. A. Ballato pointed out that with the approval of the Bylaws, the Ferroelectrics Standards Committee now becomes a sub-committee under the UFFC-S Standard Committee. Thus, all three areas, Ferroelectrics, Frequency Control and Ultrasonics are represented.

S. Wanuga, the outgoing editor presented his final report. He had served as editor for more than 14 years. H. van de Vaart thanked him for his long years of service. W. D. O'Brien, the new editor, presented a list of all the Associate Editors and their areas of responsibility. He then received approval for the 1986 Transaction Page Budget. For future Symposia the cost of typesetting of abstracts will be paid by the Transactions.

I. Engleson, Director of IEEE Technical Activities, was pleased that we are now a Society rather than a Group. He was happy that our Society Bylaws strongly reflect a Transnational flavor.

R. Moore, Chairman of Chapter/Membership Committee, presented his subcommittee Chairman. The Chapters Committee is chaired by L. P. Solie, the Membership Committee chaired by H. Salvo and Distinguished Lecturers Committee is chaired by W. Tanski.

G. W. Farnell presented a summary of the Ultrasonics Symposium. The 1985 Ultrasonics Symposium, San Francisco, chaired by W. R. Shreve, 1986 Ultrasonics Symposium, Williamsburg, chaired by R. A. Moore, 1987 Ultrasonics Symposium, Denver, chaired by R. S. Wagers, the 1988 Ultrasonics Symposium, Chicago, is chaired by W. D. O'Brien, and the 1989 Ultrasonics Symposium, Montreal, is chaired by H. van de Vaart. To increase the Transnational flavor, by getting greater International participation, Hawaii was selected for the 1990 Ultrasonics Symposium.

T. E. Parker presented the final report for the 39th Annual Frequency Control Symposium and the budget for the 40th Annual Frequency Control Symposium. The Annual Frequency Control Symposium are running well and providing the Society with a modest surplus.

W. A. Smith presented the Ferroelectrics report. The 1986 International Symposium on Applications of Ferroelectrics (ISAF) will be held at Lehigh University, Bethlehem, Pennsylvania on June 8-11, 1986. The 1988 ISAF site has not been selected at this time.

B. McAvoy was unanimously elected as President and G. Farnell also unanimously elected as Vice President. The next regular meeting of ADCOM will be held on March 25, 1986 at Holiday Inn O'Hare/Kennedy, Rosemont, Illinois.

Reynold S. Kagiwada
Secretary-Treasurer

IEEE ULTRASONICS, FERROELECTRICS AND FREQUENCY CONTROL SOCIETY
DISTINGUISHED LECTURER PROGRAM

ACOUSTO-OPTIC INTERACTIONS, DEVICES, AND APPLICATIONS

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ABSTRACT

Acousto-Optics broadly refers to the interactions between optical (light) waves and acoustic (sound) waves. However, it is now common to refer to Acousto-Optics more narrowly to the influences of the latter upon the former since these influences have already been successfully utilized to construct various types of devices of both scientific and technological importance. Diffraction of light by sound was first predicted by Brillouin in as early as 1922. In 1932 it was observed in independent experiments by Debye and Sears, and by Lucas and Biquard. The simultaneous availability of the coherent light sources through advent of the lasers and the very high frequency acoustic waves through advancement in piezoelectric transducer technology stimulated revival of interest in the subject in the 60's. Like all previous studies, these later ones were limited to Bulk-Wave Acousto-Optics in which both the light and the sound propagate as unguided (unconfined) column of waves in mostly solid media. Concomitant success in growth of new and superior solid materials has also enabled realization of various types of bulk acousto-optic (AO) devices including modulators, scanners, deflectors, Q-switches, mode-lockers, tunable-filters, spectrum analyzers, and correlators. Such bulk AO devices have now been deployed in a variety of commercial and military applications. In the meantime, since the early 70's, a great deal of studies have been focused on Guided-Wave Acousto-Optics in which both the light and sound waves are confined to a small depth in suitable solid substrates. This focus on Guided-Wave Acousto-Optics was a natural outgrowth of the Guided-Wave Optics science and technology and the surface acoustic wave device technology that had been undergoing intensive research and development a few years earlier. These latest studies on Guided-Wave Acousto-Optics have also already generated many fruitful results. For example, the resulting wideband planar AO Bragg modulators and deflectors are now widely used in the development and realization of microoptic modules for real-time processing of radar signals, e.g., the integrated optic RF spectrum analyzers.

This lecture covers the principle of AO Bragg diffraction, the resulting devices, and applications, with emphasis on Guided-Wave Acousto-Optics. First, a brief review on Bulk-Wave Acousto-Optics in terms of the interaction geometry, the physical principles involved, the key parameters of the resulting Bragg modulators and deflectors, and some commercial products is given. The corresponding configuration and mechanisms for planar guided-wave AO Bragg diffractions are then discussed. Subsequently, a number of SAW transducer configurations for realization of wideband Bragg cells are described and compared. Design, fabrication, and measured performances of wideband AO Bragg cells in LiNbO_3 and GaAs substrates are also presented. The lecture concludes with a progress report on realization of integrated AO device modules in LiNbO_3 planar, planar-channel, and spherical waveguides, and some of the applications of such device modules in optical communications, computing, and RF signal processing.

BIOGRAPHY

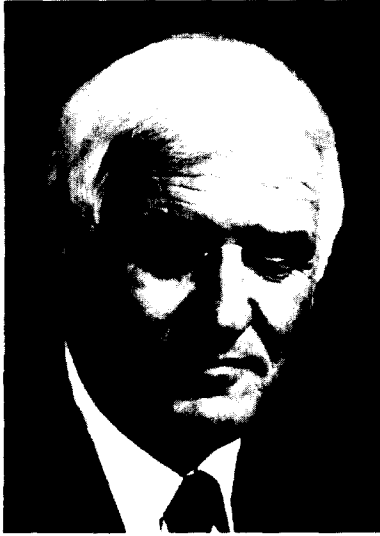
Chen Tsai is a naturalized citizen of the U.S. He received his B.S., M.S., and Ph.D. degrees in Electrical Engineering from National Taiwan University, Utah State University, and Stanford University, respectively, in 1957, 1961, and 1965. He was with the Lockheed Palo Alto Research Laboratories as a Research Scientist for three and a half years before joining Carnegie-Mellon University as an assistant professor in 1969. In 1974 he was promoted to Professor of Electrical Engineering and was awarded an Endowed Chair Professorship in 1979. In the Fall of 1980 he joined the University of California, Irvine as Professor of Electrical Engineering and is currently serving as Acting Department Chair. One of his accomplishments at UCI includes the establishment of a microfabrication facility to pursue research on Integrated Optics, Acoustic Microscopy, and other areas of microelectronics. The areas of his current research interest include Integrated Optics, Integrated Optic Signal Processing and Computing, Acousto-optics, Electro-optics, Magneto-optics, and Acoustic Microscopy. During the past 16 years, Dr. Tsai's group has carried out various NSF-, DOD-, and industry-sponsored research on the aforementioned subject areas. Some of the resulting optical devices invented by Dr. Tsai and developed by his research group are now utilized or are being further developed for utilization in signal processing, communications, and computing in both civilian and military communities. Dr. Tsai was the first to employ Acoustic Microscopy for nondestructive study of hybrid microelectronics, an area that has now become a focus of international effort. He has authored and co-authored some 140 research papers (35 invited), two of which won the IEEE Best Paper Award in Guided-Wave Acousto-Optics and Acoustic Microscopy.

Dr. Tsai currently serves as an associate editor of IEEE Trans. on Ultrasonics, Ferroelectrics, and Frequency Control in the topical area of Optical Interactions. He is also the Editor-in-Chief of a Springer-Verlag Volume on "Guided-Wave Acoustooptic Interactions, Devices, and Applications." Dr. Tsai has organized and chaired five major technical conferences and workshops on Electro-optics, Integrated Optics, Laser Communications, and Optical Switching Technology; served on various technical program committees and chaired numerous technical sessions at national and international meetings. Also, he was the founding chairman of the Society's Pittsburgh Chapter and Southern California Chapter.

Dr. Tsai is a Fellow of the IEEE, a Fellow of the Institute for the Advancement of Engineering (IAE), and a Fellow of the Optical Society of America (OSA). Included among his honors are the 1984 Outstanding Alumni Award from Utah State University, and the 1985 Engineering Instructor of the Year Award from UC Irvine.

Dr. Tsai may be reached at (714) 856-5144.

New AdCom Members



COLIN K. CAMPBELL

Colin Campbell was born in St. Andrews Scotland in 1927. During World War II he dropped out of school at the age of 15 to train as a radio operator for the British Merchant Navy, and at 17 volunteered for active service with the Royal Corps of Signals, British Army. Following war service he was a communications engineer with the British Embassy, Washington, D.C. before entering university. He holds an Honours B.Sc degree in electrical engineering and a Ph.D. degree in low temperature physics from St. Andrews University, as well as a D.Sc. in engineering and applied science from the University of Dundee, Scotland. He attended M.I.T. twice on undergraduate and graduate scholarships, including the Massachusetts Golf Scholarship, and holds an S.M. degree from M.I.T. for an EE thesis on power and machines. While he was a graduate student in Scotland, he was invited to attend the 1957 Meeting of Nobel Physics Prize Winners in Lindau, Germany, under the sponsorship of Count Bernadotte.

He has been at McMaster University, Hamilton, Ontario, Canada since 1960, and is currently a Professor of Electrical and Computer Engineering. Past research has included superconductive tunneling, masers, giant pulse lasers, dielectrics, millimeter wave instrumentation and VLSI. For a number of years now his principal interest has been in SAW devices. He holds Fellowships in the Royal Society of Canada, the Engineering Institute of Canada and the Royal Society of Arts (England), and holds the Eadie Medal of the Royal Society of Canada for major contributions to research in Canada.

Since 1954 he has been happily married to Vivian, who is a native of Buffalo, Wyoming. They have three children.



JAMES G. MILLER

Jim Miller is currently Professor of Physics at Washington University in St. Louis. Miller's research focuses on ultrasonic tissue and materials characterization, on the physics underlying the propagation of ultrasound in inhomogeneous media, and on ultrasonic transducers. He holds two patents and has co-authored approximately 60 manuscripts on ultrasonic topics. He was the recipient of two Industrial Research IR-100 awards, in 1974 for an ultrasonic microemboli monitor used in open-heart surgery and in 1978 for a phase insensitive ultrasonic transducer based on the acoustoelectric effect. In addition to his appointment as Professor of Physics, he holds a joint appointment as Research Associate Professor of Medicine and as Research Associate in the Biomedical Computer Laboratory in the Washington University School of Medicine.

Jim Miller is a Senior Member of the IEEE and was elected to two terms on the Administrative Committee of the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society. Miller served as a Sigma Xi National Lecturer for 1981-1982. He served as a member of a National Academy of Sciences NRC committee on non-destructive evaluation. Miller was born in 1942, received a B.A. degree in Physics from St. Louis University in 1964, and M.A. and Ph.D. degrees in Physics from Washington University in 1966 and 1969, respectively. Miller's wife, Judy, is about to complete her Ph.D. in molecular biology/genetic engineering. The Millers have one child, Doug, who is about to enter junior high school.

New AdCom Member



JEFFREY S. SCHOENWALD

Jeffrey S. Schoenwald was born in Brooklyn, NY in 1947. He earned an S.B. in physics from the M.I.T. in 1967, and an M.S. in 1969 and Ph.D. in 1973, both in physics from the University of Pennsylvania, PA. His doctoral work focused on the properties of surface electromagnetic wave (SEW) propagation. Subsequent to that, Dr. Schoenwald concentrated on surface acoustic wave (SAW) device research at Texas Instruments and participated in the development of several commercial SAW products at Teledyne MEC.

Jeff is currently program manager for sensor research for Robotics and Intelligent Machines at the Rockwell International Science Center. Work is conducted in sensor device physics, new control concepts and systems design and integration of advanced sensor integrated robotic manipulators. Applications have been demonstrated in ultrasonic ranging, tactile sensing, binocular vision, force-torque sensing and hybrid control based on multiple sensor system integration. In addition, he is developing fiber optic sensors to sense and control strain deformation in large structures.

He is a member of the American Association of Artificial Intelligence, American Physical Society, Sigma XI research honor society and, of course, the IEEE. Jeff regularly serves on the IEEE Ultrasonics Symposium planning committee, and is a member of the editorial board of the Transactions on UFFC, and rf design magazine. Jeff has published over 45 technical papers, and holds two patents, with numerous additional disclosures pending.

Jeff just celebrated his tenth wedding anniversary with his wife Sheri. They have two children (one of each), a house and two cars, but no pets. His favorite leisure activities include skiing, reading and computer graphics, but his leisure activities usually consist of yardwork and paying bills.

IEEE Field Award Winners

Our congratulations to Professor Richard M. White and Dr. Thomas G. Giallorenzi who were named recipients of 1986 IEEE Field Awards. Information on the awards and biographical sketches follow:

Richard M. White

The Clede Brunetti Award to Richard M. White (F), professor of electrical engineering and computer sciences at the University of California in Berkeley, "for invention of surface-acoustic-wave electronic devices for signal processing applications."

White began his career working on microwave component research at the General Electric Microwave Laboratory in Palo Alto, California, in the late 1950s. In 1962 he joined the faculty of the University of California at Berkeley, where, in addition to teaching, he has performed research in microwave and solid-state electronics, solar cells, ultrasonics, and integrated sensors.

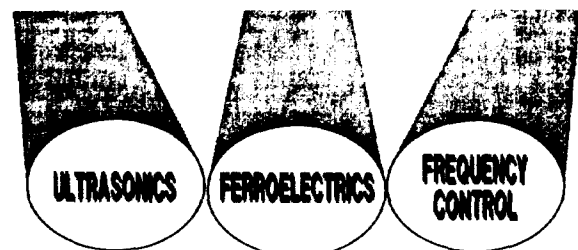
He has written and edited several books, including a McGraw-Hill textbook on solar energy and IEEE Electro Technology Review 1984, a review of developments in electrical engineering. White received the B.S., M.S., and Ph.D. degrees from Harvard University.

Thomas G. Giallorenzi

The Harry Diamond Memorial Award to Thomas G. Giallorenzi (F), director of the optical science division of the Naval Research Laboratory, Washington, D.C., "for contributions to the development of naval electrooptics and optical fiber technology."

Giallorenzi joined the U.S. Naval Research Laboratory in 1970, after two years at General Telephone & Electronics Laboratories Inc. studying plasma processes in gaseous lasers and arc lamps. He was named head of the Naval Laboratory's optical techniques branch in 1977 and director of its optical sciences division in 1979, overseeing a broad range of optics research. His own research has included studies of optical parametric oscillators and scattering, dye lasers, integrated optics, and optical sensors.

Giallorenzi holds 25 patents and has written more than 80 technical articles. He edits the IEEE/OSA Journal of Lightwave Technology. He received B.S. and M.S. degrees in engineering physics and a Ph.D. in applied physics from Cornell University.



Standards Activities

The UFFC society is currently responsible for six items, three standards and three "projects". The status of the Standards Activities Committee is as follows:

Surface Acoustic Wave Devices - E. A. Mariani (P996, redesignated P1037)

A draft nomenclature standard entitled, "International Electrotechnical Commission Standard - SAW Devices", by Eric Kentley was published in our transactions, Vol. SU-32, November 1985, pp. 864-865. This had been coordinated with the UFFC SAW Devices Subcommittee and is virtually identical in its definitions to the draft standard of P1037 published in the July 1985 SU Transactions. After final coordination, P1037 will be submitted to the IEEE Standards Board.

Acousto-Optics - D. L. Hecht (P1022)

A local working group is preparing a draft nomenclature standard, with a goal of presenting a poster paper at Williamsburg to solicit comments and suggestions. The full subcommittee will meet at the Symposium.

Industrial Ultrasonics - E. P. Papadakis

ASTM, INDE, and ASNT standardization activities are being monitored.

Delay Lines - A. A. Comparini

Presently inactive.

Ultrasonics in Medicine - F. W. Kremkau (P790)

The latest draft of P790 is being distributed to the full subcommittee; it will be discussed at the Allerton Conference on Ultrasonic Exosimetry on May 28th. A final revised version is scheduled to be discussed at the Subcommittee meeting in Williamsburg.

Piezomagnetic Technology - S. L. Ehrlich (319-1970)

Work on the upgrade of Standard 319 has been held up temporarily.

Piezoelectric Crystals - T. R. Meeker (176-1978)

Standard 176-1978 supersedes Standards 177, 178, and 179. Al Meitzler (Ford Research) has prepared a revised version of 176. It will have typographical corrections, but the most important changes will be additions that specifically address doubly rotated cuts of quartz. The Subcommittee has been sent the revised version with a ballot. Coordination with the appropriate EIA/IEC groups is planned for the near future. A meeting of the Subcommittee is scheduled for Williamsburg.

Ferroelectrics - A. H. Meitzler (180-198X)

In addition to the revision of 176, Al is in the last stages of seeing the Standard on Primary Ferroelectric Terms through the IEEE Standards Board editing process. We are aiming to have the standard available for sale at the UFFC Ferroelectrics Symposium (June 8-11); with a little luck it might even be ready for the Frequency Control Symposium (May 28-30).

Other Subcommittees

Two Frequency Control-related subcommittees are in formation.

Idemnification

The IEEE is seeking to idemnify those who serve on standardization committees on a voluntary basis. The IEEE Board of Directors has approved an amendment to the Bylaws to accomplish this end. For this purpose, a listing of all UFFC Standards Activities Committee/Subcommittee members has been furnished to the Standards Board. It is the responsibility of each Subcommittee Chairman to keep a current list of those presently serving and to furnish it periodically to the Standards Activities Chairman.

Symposium Committee

The Technical Program Committee is actively planning for the Ultrasonics Symposium to be held November 17 through 19 in Williamsburg. At the first meeting of the Committee held March 26th in Chicago, Technical Chairman Jim Miller outlined the responsibilities of Committee members. Four goals were identified for the March 26th meeting: 1) to disseminate information about the Williamsburg meeting, 2) to coalesce the 1986 Technical Committee into a cohesive unit organized into four topical Groups, 3) to lay the groundwork for the second Committee meeting on August 1st during which the final program will be determined, and 4) to identify topics and speakers for invited talks. Miller announced the appointment of Technical Committee Vice Chairmen for each of the topical Groups: Roger Tancrell for Group I, Bernie Tittmann for Group II, Art Ballato for Group III, and Gary Montress for Group IV. The Committee made the necessary preparations to evaluate in an orderly and objective fashion the abstracts of contributed papers, the deadline for receipt of which is Monday, June 23rd.

James G. Miller
Chairman

Distinguished Lecturer Presentations

Robert E. Newnham is the 1985-1986 Distinguished Lecturer for the Ultrasonics, Ferroelectrics, and Frequency Control section of IEEE. Dr. Newnham is Professor and Chairman of the Solid-State Science program at the Pennsylvania State University. His talk entitled, "Transducers, Sensors, and Actuators", was given at more than thirty locations.

IEEE Chapters

Austin, Baltimore-Washington, Boston, Central Florida, Kyoto, Long Island, New London, Pittsburgh, Santa Clara, Syracuse, Tokyo.

Universities

Colorado State, Drexel, Kyoto, Marquette, Penn State, Pittsburgh, Sophia, Stanford, Texas, Texas A&M, Tohoku, Tokyo.

Companies

Alcoa, Allied Corp., American Cyanamid, Celanese, Corning, DuPont, Dow, General Electric, Hewlett-Packard, Murata, Nippon Electric, NTK-NGK, Raytheon, Sandia, Schlumberger, Stauffer, United Technologies, Westinghouse.

Report of the Ferroelectrics Committee

The Ferroelectrics Committee met at the Washington Hilton Hotel, Washington, D.C., on December 1, 1985. Dr. Hermann van de Vaart attended the meeting and reported on the transition from G-SU to UFFC-S. He outlined changes incorporated in the new Constitution and Bylaws of UFFC-S and explained the new committee structure and some of the plans for the new Transactions.

The principal items of business discussed at the meeting were the status of the 1986 ISAF meeting, presented by the symposium chairman, Dr. W. A. Smith, and the status of the IEEE Standard on Definitions of Primary Ferroelectric Terms, presented by Dr. A. H. Meitzler, chairman of the subcommittee on standards.

The ISAF Program Committee met at Pennsylvania State University on January 30, 31 and February 1. They organized the program and selected the session chairmen. The program consists of 205 papers compared to 124 papers presented at the 1983 ISAF. Ninety-six papers will be presented in oral sessions, and the remaining papers will be presented in poster sessions. The preliminary program booklet was published early in March, and 2,015 copies were mailed to prospective attendees in the U.S. and 600 copies were mailed to prospective foreign attendees by March 21, 1986. The impressive increase in number of pages to be presented at the 1986 ISAF compared to the 1983 meeting suggests that the attendance this year may greatly exceed that in 1983. The 1986 ISAF has received \$5,000 in support of the meeting from industrial donors, and \$16,000 from U.S. Government Agencies. The final budget has been submitted and approved by UFFC-S and IEEE Headquarters.

The proposed IEEE Standard on Definitions of Primary Ferroelectric Terms is scheduled for publication prior to both the ISAF and the UFFC-S Frequency Control Symposium so that copies will be available for sale at both meetings.

With the prospect of a highly successful 1986 ISAF and with the publication of the new IEEE Standard on Definitions of Primary Ferroelectric Terms, 1986 may well be remembered as a year of achievement for the UFFC-S Ferroelectrics Committee. It is fitting that this should coincide with the first year of UFFC-S.

The Ferroelectrics Committee is chaired by C. E. Land, Sandia National Laboratories, and G. W. Taylor, Princeton Resources, is secretary. The following is a list of committee members and their affiliations.

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Upcoming Frequency Control and ISAF Symposia

40TH ANNUAL FREQUENCY CONTROL SYMPOSIUM

The 40th Annual Frequency Control Symposium will be held May 28-30, 1986 in Philadelphia, PA. Seventy-two papers are scheduled to be presented. The topics to be covered include:

- Fundamental Properties of Piezoelectric Crystals
- Theory and Design of Piezoelectric Resonators
- Resonator Processing Techniques
- Filters
- Surface Acoustic Wave Devices
- Quartz Crystal Oscillators
- Microwave and Millimeter Wave Oscillators
- Signal Processing and Frequency Control Circuitry
- Atomic and Molecular Frequency Standards
- Frequency and Time Coordination and Distribution
- Sensors and Transducers
- Applications of Frequency Control
- Measurements and Specifications

The preliminary program and registration information were mailed in late March. For further information, contact:

Frequency Control Symposium
Rd. 1, Box 352
Brinley Plaza, Route 38
Wall Township, NJ 07719
Tel.: (201) 280-0410 or (201) 544-1510

SIXTH ISAF SYMPOSIUM

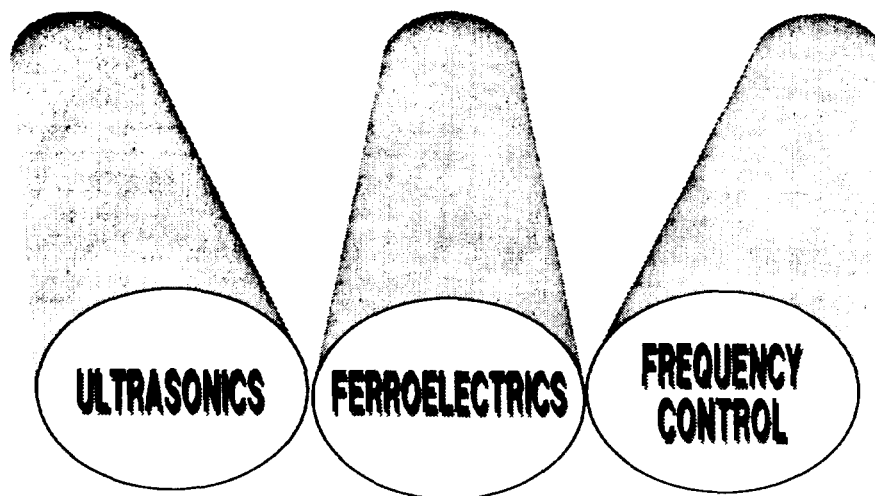
The 1986 IEEE International Symposium on the Applications of Ferroelectrics (ISAF) will be held at Lehigh University in Bethlehem, Pennsylvania, on June 8-11, 1986. The meeting is co-sponsored by the Electronics Division of the American Ceramic Society. ISAF-86 is the sixth in a series of symposia organized by the IEEE Committee on Ferroelectrics to provide a forum for exchange of technical and scientific information on device and systems applications of ferroelectrics and related materials. Over the years, the ISAF have been increasingly successful. The number of papers has risen from 30 to more than 200, and attendance has increased from fewer than 100 to over 300.

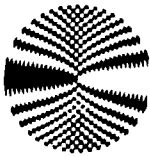
The symposium chairman for ISAF-86 is W. A. Smith (Philips Laboratories), the program chairman R. E. Newnham (Penn State) and local chairman M. Harmer (Lehigh).

This year's program will have 24 lecture sessions in two parallel streams and six poster sessions. Highlights include electro-optics, integrated optics, liquid crystals, capacitors, millimeter wave devices, electrostrictive actuators, piezoelectric transducers, piezoelectric polymers and composites, pyroelectric sensors, thin film ferroelectrics, PTCR thermistors, ferroelectric ceramics and single crystals, high-frequency dielectrics, and photovoltaic effects. An educational session with talks on ferroelectric composites, mechanical properties of ferroelectrics, and electro-optic properties will precede the meeting.

Registration material, programs, and further information can be obtained from:

Betty Zdinak
Bursar's Office
Alumni Memorial Bldg. #27
Lehigh University
Bethlehem, PA 18015





ISAF 86



1986 IEEE INTERNATIONAL SYMPOSIUM

ON THE APPLICATIONS OF FERROELECTRICS

June 8-11, 1986, Lehigh University, Bethlehem, Pennsylvania, USA

Sponsored by the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society
with the cooperation of the Electronics Division of the American Ceramic Society

DISCUSSION TOPICS

- Piezoelectrics: transducers, adaptive optics, PVDF and other polymers, composites, filters.
- Electro-optics: IR E/O materials, modulators, composite devices and systems, ceramics.
- Photo-effects: optical storage, display, photorefractive devices, photo electrolysis.
- Dielectrics: microwaves, high voltage, barrier layers, multiple layers, phase compensation.
- Thin Films: transducers, integrated optics, electro-optics, field effect, conducting, insulating, index matching, wave-guide optics.
- Memory/Display: PLZT, switching, novel effects, liquid crystals, related technology.
- Materials: processing, stoichiometry, crystal growth, structure and properties.
- Pyroelectrics: detectors, arrays, vidicons.

INFORMATION

Betty Zdinak, Conference Coordinator, Department of Metallurgy & Materials Engineering
Lehigh University, Whitaker Laboratory #5, Bethlehem, Pennsylvania 18015, U.S.A.,
Phone (215 861-4221)

STUDENT TRAVEL SUPPORT - We would like to encourage student speakers at the conference. Students who intend to present a paper may apply for financial assistance. Requests must be made by letter to Betty Zdinak accompanied by a letter from their faculty supervisor, indicating the student's activity and achievements in the subjects related to the conference. The deadline for all requests is MARCH 15, 1986.

IEEE 1985 Ultrasonics Symposium



Bill Shreve, General Chairman of the 1985 Symposium selling San Francisco.



G-SU Achievement Award presented to Richard Williamson by Ernie Stern.



G-SU Best Paper Award presented to Henry Bertoni by Herman van de Vaart.



The G-SU President's Speaker, Jeffrey Borish, relating ultimate truths.

Behind the Scenes at the 1985 Ultrasonics Symposium



The 1985 Symposium Committee takes a break with the 1986 committee.



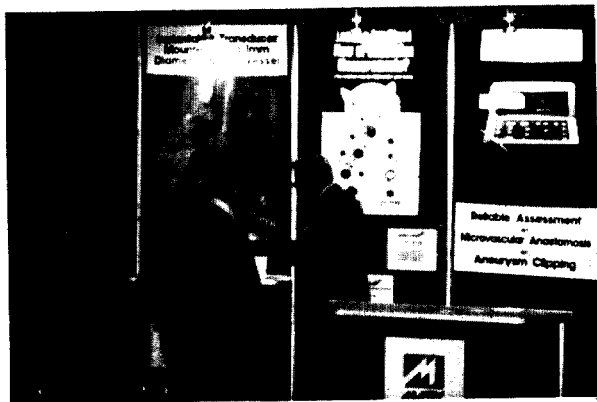
Your 1986 Symposium Committee at work.



Nominations Committee meeting with Chairman John D. Larson.



Dave Hecht and Al Comparini exchanging viewpoints.



The exhibit area.



Steve Wanuga (second from right with Mrs. Wanuga) congratulated by Bob Adler, Herman van de Vaart and Dick Williamson for long years of service as Transactions Editor.

New UFFC Society By-Laws

1. Nature of the Bylaws. These Bylaws are intended to provide general, and in some cases explicit, instructions for the supervision and management of the affairs of the Society, in accordance with the Society Constitution and the IEEE Technical Activities Manual which includes the Constitution and Bylaws of the IEEE. Amendments to these Bylaws may be made by means of the procedures described in Article 9, Section 9.2 of the Constitution. Decisions on procedures made and voted by the AdCom as reported in its Minutes are binding as written and approved. Only the most important and time independent procedures shall be incorporated in the Bylaws.
2. Membership
 - 2.1 Regular Members. There shall be only one grade of Society membership available to all IEEE members, based on the payment of the annual fee prescribed in Bylaw 4.1.
 - 2.2 Honorary Life Members. Such membership, exempt of the payment of the annual fee, shall be based on the recommendation of the Awards Committee and the approval of AdCom.
 - 2.3 Affiliates. No societies are recognized for affiliate purposes. However, affiliates may join in accordance with any other provision that may be incorporated in the IEEE rules and regulations.
 - 2.4 Students. An exception to annual fee shall be made for students, as prescribed by IEEE rules and regulations.
 - 2.5 Voting Membership. The voting membership shall be constituted of Regular Members, Honorary Life Members and Affiliates.
3. Administrative Committee
 - 3.1 AdCom Makeup. Article 5, Section 5.1 of the Constitution provides that AdCom shall consist of a President, a Vice-President, not more than 15 ex-officio members, and 12 elected members. Of the elected members, at least three must be from regions 8 through 10. Article 7, Section 7.1 provides that a quorum shall be nine members, without distinction between elected members and ex-officio members, and that all members shall have an equal vote except as noted in paragraph 5.1. Unless otherwise provided, a majority vote of the members attending an AdCom meeting shall be sufficient for the conduct of its business.
 - 3.2 Ex-Officio Members. The following shall be ex-officio members with vote if they are not already elected members (in any case, each shall have only one vote).
 - a. The retiring AdCom President for a period of three years
 - b. The Chairmen of the standing committees as listed in Section 5.1 of these By-laws
 - c. The Secretary-Treasurer
 - d. The Transactions Editor
 - e. The Newsletter Editor
 - 3.3 Absences and Vacancies. In order to create a continuously active AdCom, elected and ex-officio members who miss three consecutive meetings will be dropped from membership in the AdCom in the absence of extenuating circumstances. A vacancy in the elected membership thus or otherwise created will be filled by appointments for the unexpired term by the President as prescribed in Article 6, Section 6.1 of the Constitution.
 - 3.4 Nomination of Members. A slate of nominees for vacancies on the AdCom shall be prepared by the Nominations Committee for presentation of the AdCom at its spring meeting. The number of nominees shall be at least six from regions 1 through 7 and at least two from regions 8 through 10, and proper consideration shall be given to technical interest. A Nominating petition carrying at least 25 names of Society members places that nominee automatically on the slate to be presented by the Nominating Committee to the AdCom. Nominees can also be presented from the floor by members of AdCom. A simple majority vote will place the nominee on the ballot. All nominees must be voting members of the Society in good standing at the time of nomination.
 - 3.5 Election of Members. The election to fill forthcoming vacancies on the AdCom shall be by mail ballot to the entire Society voting membership. To ensure representation from regions 8 through 10, each member shall vote for three nominees from regions 1 through 7, and for one nominee from regions 8 through 10. The deadline for the return of the ballots shall be not less than 30 days after the actual date of mailing of the ballots. Distribution, collection, and counting of ballots shall be done by IEEE Headquarters. Election shall be based on the highest number of votes, taken in descending order for the candidates from regions 1 through 7, and in descending order for the candidates from regions 8 through 10. Ties shall be broken by the AdCom. The Chairman of the Nominations Committee shall insure an orderly progression and completion of the election procedure prior to the last scheduled AdCom meeting of the year.
 - 3.6 Nomination and Election of Officers. At its last scheduled meeting of the year, the AdCom shall elect a President and a Vice-President for the following year. Nominations will be invited from the floor, nominees must be incumbent members of AdCom, either elected or ex-officio. Election will be by secret ballot. A majority of the ballots shall determine the election. In case there are more than two nominees, and nobody receives a majority, the nominee with the lowest number of votes shall be dropped from the slate, and the voting repeated until a majority is obtained. The election for President shall be conducted by the incumbent President, unless he is nominated for reelection, in which case the Vice-President conducts the election. The election for Vice-President will be conducted by the incumbent President.
 - 3.7 Term of Office. As provided in Article 5, Section 5.1 of the Constitution, the term of both the President and the Vice-President shall be for one year, commencing January 1, and either may be re-elected for a second term of one year. Whether the President serves for one or two years, he shall not be eligible for election to the same office until a lapse of three years. Eligibility for the Vice-President is restored after a lapse of one year.
 - 3.8 Duties of Officers and Members of AdCom. It is intended to retain as much flexibility in the operation of the AdCom as possible. Therefore, with the exception of a few minimum requirements, the provisions of this section are intended to serve as general guidelines without being binding in detail. It is the responsibility of all officers and standing committee chairmen to continue in service until their successors have had the opportunity to be briefed, receive the files appropriate to their offices, and in other respects take the reins of office. Transfer of Society records and files should always be confirmed in writing, with copies of the letter of transmittal sent to the Secretary-Treasurer. At the discretion of the President, archive files can be transferred to the Ultrasonics, Ferroelectrics and Frequency Control Society section of the IEEE Archives.

3.8.1 President. The President shall supervise the affairs of the Society, as defined in Article 5, Section 5.2 of the Constitution, and shall speak for the Society on all matters not specifically delegated to others. The President is automatically a member of certain IEEE committees, and in these positions is expected to promote the interest of the Society, and to influence for the better the conduct of IEEE affairs. He shall also serve as the Society representative on the IEEE Division IX Nominating Committee. The Society may provide funds to enable the President or his designee to attend the IEEE TAB Meetings and to chair the Spring AdCom meeting, provided he has exhausted all possibilities that his employer could pay all or part of his travel expenses.

3.8.2 Vice-President. The Vice-President shall fulfill the duties of the President in his absence or incapacity, and shall fulfill such other functions as directed by the President or the AdCom. He shall also direct a Finance Committee as prescribed in Section 5.4 of these bylaws.

3.8.3 Secretary-Treasurer. The Secretary-Treasurer shall be responsible for keeping the records of the AdCom. He shall prepare and distribute meeting notices and minutes in sufficient detail that they constitute a satisfactory record of decisions made by AdCom, and other Society affairs. He shall maintain a complete file of minutes, financial records and other correspondence, which will become the permanent record of the Society. He shall endorse and transmit to IEEE all bills for payment and monitor rates of receipts and expenditures in order to insure conformance to the Society's budget and guidelines imposed by the AdCom. He shall at least once a year examine AdCom decisions and submit those deemed of sufficient general importance to the AdCom for consideration to be included in the bylaws, as prescribed in Article 9, Section 9.2 of the Constitution.

3.9 Meetings. The basic conduct of AdCom meetings is covered in Article 7, Section 7.2 of the Constitution. No AdCom meetings shall be held for the purpose of transacting business unless each member has been notified of the place and time of such meeting at least 10 days prior to the scheduled date of the meeting. In case less than a quorum attend a duly called meeting, tentative actions may be taken which will become effective upon ratification at a subsequent meeting or by mail by a sufficient number of members as to constitute a majority. Minutes of each meeting shall be mailed to all AdCom members at least 10 days before the next scheduled meeting.

4. Society Funds

4.1 Annual Fee and General Expenditures. The Society may raise funds as specified in Article 4 of the Constitution and in the IEEE Bylaws and rules and regulations. The Society may spend funds within the same restrictions. Expenditures must fall within budget projections, as approved by AdCom. It is the responsibility of the Secretary-Treasurer to monitor the expenditures, and in case of gross deviations from the budget consult with the Finance Committee and obtain AdCom approval for those expenditures. The annual Society fee shall be set by the AdCom subject to approval by the IEEE Executive Committee. The Affiliate fee shall be equal to the Society fee plus an IEEE support surcharge set by the IEEE Executive Committee. Actual Society fees are to be found in the current IEEE fee schedule. IEEE Headquarters shall act as a bursar for all Society funds except as specified hereunder. Billings and

receipt of the annual fee shall be via the IEEE Membership and Fiscal Departments. All other fiscal affairs shall be handled through the office of the TAB Secretary.

4.2 Symposia Funds. Financial arrangements of conferences or symposia sponsored or co-sponsored by the Society shall be covered by a separate budget with adequate safeguards against undue risk. The general committee for such a conference or symposium may authorize the conference treasurer or finance officer to open an account to be used for the deposit and disbursement of funds related to the symposium and may request from the Society's general fund a loan to cover expenses in advance of the symposium. The relevant Technical Committee Chairman or the Symposium General Chairman is required to submit a formal budget to the AdCom for approval at least ten months before the symposium, and to present a final account of symposium income and expenses at the first scheduled meeting after the symposium. The symposium budget shall also be submitted to the IEEE General Manager for approval, and a Financial Report to IEEE is required no more than six months after the symposium. Final transfer of funds from the Symposium account to the Society's general fund, including return of the loan, must be completed within a year after the symposium.

4.3 Other. In other activities involving the Society or any of its subgroups, financial commitments shall be approved by AdCom, and prudent arrangements shall be made to safeguard the Society funds that may be involved.

5. Committees.

5.1 Standing Committees. Standing committees may be added or deleted by the AdCom as the need arises through amendment of the Bylaws, subject to the restrictions imposed by Article 5, Section 5.1 of the Constitution. Standing Committee Chairman shall be appointed by the President and ratified by a majority of the elected members of AdCom. It will be discretionary with the President to appoint part or all of any standing committee, or to appoint the chairman only and request the latter to appoint additional committee members. The Standing Committees shall be:

1. Awards
2. Chapters/Membership
3. Fellows
4. Ultrasonics
5. Ferroelectrics
6. Frequency Control
7. Nominations
8. Standards

5.2 Term of Office. The terms of office of the chairman and members of the standing committees shall be for one year. However, because it is recognized that the tasks in connection with Society activities are of perpetual nature and it takes some time to become familiar with these tasks and be effective, chairmen of these committees are encouraged to serve more than the minimum term. Therefore, the number of terms of office is not limited by these bylaws.

5.3 Ad Hoc Committees. Special or ad hoc committees may be created by the AdCom as the need arises, as provided for by Article 5, Section 5.3 of the Constitution. For each such case, the AdCom shall specify if the chairman is to be an ex-officio member of the AdCom with or without vote, the number of members the committee shall have and how the members are to be selected, and the terms of office of the Chairman and the members if other than for the life of the Committee. Unless otherwise specified, special or ad hoc committees shall be automatically dissolved after a period of two years.

5.4 Finance Committee. The Finance Committee shall consist of the Vice-President acting as Chairman, the Secretary-Treasurer, the Transactions Editor, and the Chairmen of the Ultrasonics Committee, the Ferroelectrics Committee and the Frequency Control Committee. Its duties are to establish long range financial policy and plans of the Society, monitor and analyze financial data and make appropriate recommendations on expenses such as publication costs, meeting expenses, and prepare the annual budget for the Society. It must review each Symposium budget before it is submitted to AdCom for approval and make sure that Conference Budgets and Financial Reports are submitted to IEEE in accordance with IEEE rules and regulations.

6. Duties of Standing Committees

6.1 General. As with the duties of AdCom officers as noted in Section 3.8 of these bylaws, the duties of the standing committees as listed below are intended to be general guidelines, and serve as minimum requirements only. Each Standing Committee Chairman is expected to gather information from IEEE documents, from other IEEE Societies, from non-IEEE groups where appropriate to establish a point of reference for the Society's operations, and in general remain aware of the status of the Society within its sphere of interest. The Chairman shall take the initiative to inform the AdCom of developments which may affect its operations and plans. He shall also prepare written and oral reports for presentation to AdCom at its meetings.

6.2 Awards Committee. The Awards Committee is charged with the following responsibilities:

- a. Select candidates and prepare nominations for the various IEEE Awards listed in the IEEE Awards Manual.
- b. Evaluate nominations for IEEE Awards if requested to do so by the IEEE Awards Board.
- c. Recommend members for Honorary Life Membership.
- d. Select candidates for the Society Awards. These Awards are:
 1. The Ultrasonics, Ferroelectrics and Frequency Control Society Achievement Award.
 2. The Ultrasonics, Ferroelectrics and Frequency Control Society Best Paper Award.

Nominations for the Society Awards shall be considered annually by the Awards Committee, although awards need not be made annually. The Committee's decision is final and need not be ratified by AdCom, except for Honorary Life Membership.

6.3 Chapter/Membership Committee. The Chapter/Membership Committee shall encourage membership in the IEEE and especially membership in the Society by all IEEE members who are interested in the fields of interest of the Society, support the local or regional Society Chapters

and initiate or actively encourage the formation of new Chapters. It shall initiate membership drives, and prepare membership material for special mailings or distribution at Symposia sponsored by the Society. The Chairman shall be the interface between Chapters and AdCom and report on Chapter activities at AdCom meetings. The Committee shall maintain a list of Chapter officers, and a mailing list of non-Society members who have attended meetings or conferences sponsored by the Society or in any other manner have indicated interest in the activities of the Society. The Committee shall also annually select a Distinguished Lecturer. The selection must be approved by AdCom.

6.4 Fellows Committee. The Fellows Committee shall be responsible for receiving and evaluating nominations for Fellow grade candidates engaged in the fields of activity covered by the Society. The Committee shall make recommendations concerning these nominations on behalf of the Society. Its deliberations and conclusions are confidential and shall only be transmitted to the IEEE Fellow Committee. The Society's Fellows Committee shall consist of at least 5 members, all of whom must be Fellows.

6.5 Ultrasonics Committee. The Ultrasonics Committee shall encourage and assist the orderly development of technical activities related to Ultrasonics and promote the Society as the focal point of these activities. The Committee shall be responsible for selecting schedules, dates and locations for the Ultrasonics Symposium for submission to AdCom. It shall select a Symposium Chairman for each Symposium and appoint a Proceedings Editor, and ascertain that all preparations for the Symposium are progressing satisfactorily. It shall support the Ultrasonics Symposium Chairman and his committee where needed and insure that the Symposium plans are in accordance with Society policies and IEEE TAB manual. Its activities include the organization of workshops and the organization of topical sessions on Ultrasonics at other IEEE conferences. As part of the Finance Committee, the Ultrasonics Committee Chairman shall present the Ultrasonics Symposium Budget to AdCom, or review the budget in case it is submitted to AdCom by the Symposium Chairman, and make sure the Symposium Budget and Financial Report are submitted to IEEE in accordance with IEEE rules and regulations.

6.6 Ferroelectrics Committee. The Ferroelectrics Committee shall encourage and assist the orderly development of technical activities related to Ferroelectrics and promote the Society as the focal point of these activities. The Committee shall be responsible for selecting schedules, dates and locations for the International Symposium on the Applications of Ferroelectrics for submission to AdCom. It shall select a Symposium Chairman for each Symposium and appoint a Proceedings Editor, and ascertain that all preparations for the Symposium are progressing satisfactorily. It shall support the chairman and his committee of the International Symposium on the Applications of Ferroelectrics where needed and insure that the Symposium plans are in accordance with Society policies and IEEE directives on conferences as described in the IEEE TAB manual. Its activities include the organization of workshops and the organization of topical sessions on Ferroelectrics at other IEEE conferences. As part of the Finance Committee, the Ferroelectrics Committee Chairman

shall present the Budget of the International Symposium on the Applications of Ferroelectrics to AdCom, or review the Budget in case it is submitted to AdCom by the Symposium Chairman, and make sure the Symposium Budget and Financial Report are submitted to IEEE in accordance with IEEE rules and regulations.

6.7 Frequency Control Committee. The Frequency Control Committee shall encourage and assist the orderly development of technical activities related to Frequency Control and promote the Society as the focal point of these activities. The Committee, together with the administrator from the U.S. Army Electronics Technology and Devices Laboratory (USAET&DL), or his designee shall be responsible for selecting schedules, dates and locations for the Symposium on Frequency Control for submission to AdCom, and ascertain that all preparations for the Symposium are progressing satisfactorily and adhere to the Memorandum of Understanding which exists between USAET&DL and the Society. As specified in that Memorandum, the President may at his discretion appoint the Committee's chairman as the Society's Administrator for the Symposium on Frequency Control. The Committee's activities include the organization of workshops and the organization of topical sessions on Frequency Control at other IEEE conferences. As part of the Finance Committee, the Frequency Control Committee Chairman shall present the Budget of the Frequency Control Symposium to AdCom, or review the Budget in case it is submitted to AdCom by the Symposium Chairman, and make sure the Symposium Budget and Financial Report are submitted to IEEE in accordance with IEEE rules and regulations.

6.8 Nominations Committee. The Nominations Committee shall each year prepare a slate of nominees for vacancies on the AdCom for presentation to the AdCom at its Spring meeting, as prescribed in Section 3.4. It shall prepare biographies of candidates for inclusion with the ballots, and interact with IEEE Headquarters in the conduct of the election. The Nominations Committee shall consist of a Chairman and at least four members, not more than half of which may be present members of AdCom.

6.9 Standards Committee. The Standards Committee shall be responsible for establishing and reviewing IEEE Standards within the scope of interest in the Society. The Committee shall periodically upgrade existing standards and shall initiate standards in new areas when they have become sufficiently established. The Chairman of the Standards Committee shall appoint subcommittees to deal with specific areas. He shall serve on IEEE standards committees if called upon.

7. Publications.

7.1 General. The Society shall publish a Transactions, a Newsletter, and a Proceedings for each Symposium sponsored or co-sponsored by the Society. The President shall appoint the Editors for the Transactions and Newsletter, subject to the approval of the elected members of AdCom. These editors may serve indefinitely, subject to mutual agreement with the President, and shall have the status of chairman of a standing committee. The Transactions Editor shall act as a liaison with the IEEE Publications Board. The editors for the Symposium Proceedings will be appointed by the Chairmen of the three technical committees, Ultrasonics, Ferroelectrics and Frequency Control.

7.2 Transactions. The Transactions on Ultrasonics, Ferroelectrics and Frequency Control shall be the primary publication of the Society. It

shall contain the technical papers and review material which constitute the primary output of the Society. Its format, publication schedule, and contents are matters which shall be decided by AdCom, and executed by the Editor. The Transactions Editor may appoint Associate Editors to receive and handle review of manuscripts in various technical areas. Papers review procedures shall be administered in accordance with IEEE and Society policies. Rules for manuscript preparation shall be available to those who request them, and shall be published at least once a year in the Transactions. The Editor may appoint guest editors for special issues, and may delegate corresponding responsibility for assembling the body of technical papers to be included. Other aspects of publication and content of special issues shall remain the responsibility of the Transaction Editor.

7.3 Newsletter. The Newsletter shall be published at least twice a year, and shall contain items of a non-technical nature of interest to members of the Society, such as announcements and results of elections and the biographies of nominees, the minutes of AdCom meetings, and reports of officers and committee chairmen of the AdCom. The Newsletter Editor shall have the responsibility of assembling the material and publishing the Newsletter in accordance with Society policy.

7.4 Symposium Proceedings. A Proceedings shall be published for each Symposium sponsored or co-sponsored by the Society which will contain papers presented at that Symposium. The Proceedings Budget based on projected printing cost and the cost of the Proceedings to Symposium attendees and members of the Society shall be set by the Proceedings Editor and the Chairman of the relevant technical committee, and is subject to approval by AdCom. Budget approval and financial report for each Symposium Proceedings shall be concurrent with those of the Symposium. The Proceedings Editor shall be a member of the relevant Symposium organizing committee. In all aspects, the Proceedings Editor shall follow the guidelines as set forth in the IEEE Policy and Procedures Manual.

New IEEE Fellows

Congratulations to the following members of the UFFC Society who were elected to the grade of Fellow as of January 1, 1986.

Professor Colin K. Campbell, McMaster University

For contributions to surface-acoustic-wave devices and electrical engineering education.

Professor Yukio Kagawa, National University of Toyama

For the development of the finite boundary element methods and their applications to acoustic and electroacoustic simulation.

Dr. Robert L. Rosenberg, AT&T Bell Laboratories

For contributions to surface-acoustic-wave filters in digital transmission systems.

Chapter Activities

BALTIMORE, WASHINGTON AND NORTHERN VIRGINIA CHAPTER

The Baltimore, Washington and Northern Virginia Chapter of UFFCS has the following schedule of lectures for 1985/1986. Lectures take place at the Ramada Inn, Calverton, exit 29B on route I-95 unless scheduled elsewhere. The lectures begin at 8:00 PM, preceeded by dinner at the adjoining Plata Grande restaurant.

5 November 1985
Dr. Roger Sanders
JOHNS HOPKINS HOSPITAL
Topic: Clinical Uses of Diagnostic Ultrasound

3 December 1985
Mr. Terry Turpin
SYSTEM ENGINEERING AND DEVELOPMENT CORPORATION
Topic: Acousto-Optic Signal Processing

6 January 1986
Dr. Robert E. Newnham
PENN STATE UNIVERSITY
Topic: Transducer Sensors and Actuators

13 March 1986
Mr. Paul W. Klipsch
KLIPSCH AND ASSOCIATES
Topic: History and Philosophy of Distortion in Audio

1 April 1986
Dr. Dan Flynn
NATIONAL BUREAU OF STANDARDS
Topic: Reverberation Room Measurements of Sound Power

6 May 1986
Dr. Nelson Hsu
NATIONAL BUREAU OF STANDARDS
Topic: Acoustic Emission: Recent Applications and Developments

The program this year consists of the traditional blend of medical ultrasonics, and acousto-optics which are always popular topics as well as a few less well known areas. The national lecturer, Prof. Newnham, gave an especially good talk which was very well attended.

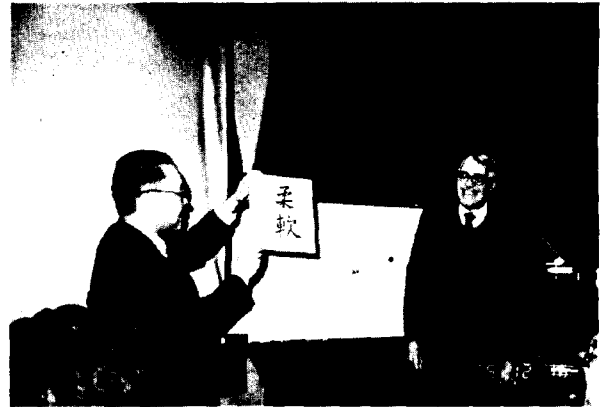
There has been a continuing demand by our members for a lecturer on acoustic speakers. We were therefore pleased that Mr. Paul Klipsch accepted our invitation and traveled the distance from Arkansas to speak to our group. The talk took place at the Applied Physics Lab of Johns Hopkins University and was attended by about 100 people despite a very severe fog that evening.

Joel Rosenbaum
Chairman

TOKYO CHAPTER

NATIONAL LECTURER IN TOKYO

Prof. R. E. Newnham, UFFCS National Lecturer, visited by visitation the Tokyo Chapter for his lecture series on December 8-21, 1985. Prof. Newnham presented five talks in Tokyo, Kyoto, and Sendai. The photograph shows that Prof. Mikoshiba was explaining the Chinese letters of Prof. Newnham at the meeting.



THE SIXTH SYMPOSIUM ON ULTRASONIC ELECTRONICS

The Sixth Symposium on Ultrasonic Electronics was held in Tokyo on December 10-12, 1985, sponsored by the UFFCS Tokyo. Seventy-two papers were presented and 327 people attended; Prof. Newnham was one of the invited speakers.

TECHNICAL MEETINGS

The Tokyo Chapter has held nine technical meetings in conjunction with the Technical Group on Ultrasonics of the Institute of Electronics and Communication of Japan as follows:

<u>Date</u>	<u>Papers</u>	<u>Place</u>
July 26	5	Chiba
August 27	4	Tokyo
September 27	8	Sendai
October 28	8	Tokyo
November 21	9	Nagoya
December 16	6*	Tokyo
January 28	8	Tokyo
February 24	6	Tokyo
March 20	4	Tokyo

*Including IEEE lecture by Prof. Newnham.

SANTA CLARA VALLEY CHAPTER

The Santa Clara Valley Section has been very active. The following five speakers have made presentations:

11 September 1985
Dr. Peter Fessenden
STANFORD UNIVERSITY
Topic: Practical Aspect of Clinical Hyperthermia

13 November 1985
Dr. Bob Bray
HEWLETT PACKARD
Topic: Surface Wave Devices for Instrumentation Application

11 December 1985
Mr. Gary Elston
CRYSTAL TECHNOLOGY
Topic: Dynamic Range of Acousto-Optic Bragg Cells

12 February 1986
Dr. Robin Giffard
HEWLETT PACKARD
Topic: Trapped Mercury Ion Frequency Standard

5 March 1986
Professor Robert E. Newnham
UFFCS National Lecturer
PENNSYLVANIA STATE UNIVERSITY
Topic: Transducers, Sensors and Actuators

Two more talks are scheduled as follows:

9 April 1986
Dr. Patrick Katzka
LITTON/APPLIED TECHNOLOGY
Topic: Acousto-Optic Tunable Filters

14 May 1986
Dr. Don Armstrong
XCI
Topic: SAW Identification System

For additional information on the Santa Clara Valley Chapter contact Larry Castelli at (415) 856-7916.

Larry Castelli
Chapter Chairman

ORLANDO CHAPTER

On October 30 the Orlando UFFCS held its first meeting. It was a joint meeting with EDS held at the University of Central Florida and the topic was "Microelectronics and Research Program at the University of Central Florida", presented by Dr. Donald C. Malocha. The meeting reviewed the university's activities in solid-state devices.

On November 18, the UFFCS held a meeting at Piezo Technology, Inc. and the topic was "Current Developments in VHF Frequency Control" presented by Mr. John Hunt of PTI. The presentation included a review of quartz crystal resonators, processing techniques and results to date. There were 15 attendees.

On January 27, a UFFCS dinner meeting was held at the House of Beef restaurant in Orlando. The speaker was Dr. Robert Newnham, the 1986 UFFCS National Lecturer, and the topic was "Transducers, Sensors and Actuators". It was a very successful and enjoyable meeting with 34 attendees, including several spouses.

On March 20, the UFFC held a meeting at Sawtek, Inc. and the topic was "SAW Stabilized Oscillators", presented by Mr. Thomas O'Shea of Sawtek. A review of several of Sawtek's activities in SAW oscillators and systems was presented. There were 17 attendees.

In May the UFFC hopes to have a speaker from NRL, Orlando, to present their activities in underwater acoustics and transducers.

Donald C. Malocha
Chapter Chairman

Nominations Committee Report

The slate of candidates for the 1987-89 term on the UFFCS Administrative Committee is given below. Members will vote for one of two candidates from regions 8-10 and three of six candidates representing regions 1-7 (see Bylaws, Section 3.4). This provides a better balance on the ADCOM for representation outside the United States.

Regions 8-10

Dr. Charles Maerfeld - Thompson SINTRA
Dr. J. J. Gagnepain - Ecole National Supérieure

Regions 1-7

Dr. W. A. Smith - Philips Laboratories
Prof. Eric Cross - Pennsylvania State College
Dr. John Vig - U. S. Army ERADCOM
Dr. Robert Smythe - Piezotechnology Inc.
Prof. M. A. Breazeale - University of Tennessee
Prof. Grover Wetsel - Southern Methodist University

This represents an outstanding slate of candidates. Ballots will be sent to UFFCS members shortly. Carefully consider each candidate's qualifications and area of representation and be sure to vote.

J. D. Larson, Chairman
Nominating Committee

Scenes from the AdCom Committee Meeting



Herman van de Vaart and Bob Adler.



Bob Moore, Dick Williamson and Bruce McAvoy.



Ann Burgmeyer and W. D. O'Brien, Jr.



Art Ballato, Tom Parker and Roger Tancrell.



Bob Adler, Steve Wanuga and Tom Parker.



Bruce McAvoy and Reynold Kagiwada.

Invitation to Join the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society

THESE ARE exciting times for the ultrasonics, ferroelectrics, and frequency control profession. The IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society needs your support. During the past year the Society has greatly expanded its scope in order to address what was perceived to be a need. That need was a professional society that could aid in the furthering of ferroelectrics and frequency control. The ultrasonics component of the Society has long been and will continue to be one of its mainstays.

The expansion in the Society's Field of Interest adds a greater dimension to the ways in which the membership can be served. This has been accomplished with the change in name of the Society and with the greatly expanded editorial support of this TRANSACTIONS. It is clear that the areas of ferroelectrics and frequency control are now well represented. This is further evidenced by an examination of the inside front cover of this issue, in which you will find a list of 16 technical areas with an equal number of dedicated and expert Associate Editors. Clearly you can see that this Society represents your technical interests.

This letter is an invitation for you to join the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society. One of the principal membership benefits is this TRANSACTIONS, which is published bimonthly and provides over 800 pages annually with the latest engineering and scientific advances in ultrasonics, ferroelectrics, and frequency control.

In the past two years, this TRANSACTIONS has had five outstanding special issues, each which has become an essential part of our member libraries. These special issues have been the following:

- Digital Acoustic Imaging (July 1984)
- Ultrasonic Hyperthermia (September 1984)
- Acoustic Microscopy (March 1985)
- SAW Convolvers and Correlators (September 1985)
- Biological Effects of Ultrasound (March 1986).

We have not stopped there. Within the next few issues will be three additional special issues dealing with the following topics:

- Photoacoustics
- Acoustic Sensors
- Computers in Ultrasound.

Following these there will be special issues on various topics in ferroelectrics and in frequency control, in addition to other topics in ultrasonics.

In addition to the UFFC Transactions, the Society provides many other benefits. These include the sponsorship of three symposia:

- Annual Frequency Control Symposium
- Triannual Symposium on the Applications of Ferroelectrics
- Annual Ultrasonics Symposium.

The calendar of dates and locations for these symposia can be found on the inside back cover of this issue.

The abstracts for these three symposia can be found in this TRANSACTIONS following the meeting. In the January 1986 issue are included the 1985 Frequency Control Symposium abstracts and the 1985 Ultrasonics Symposium abstracts. And in the latter issues of the UFFC Transactions this year will be published the abstracts of the 1986 Frequency Control Symposium and the 1986 International Symposium on the Applications of Ferroelectrics.

Other membership benefits include

- the semiannual Newsletter, which keeps you informed on many of the newsy items;
- the Distinguished Lecturer, which is selected annually and provides a Society-supported, internationally known distinguished lecturer for UFFC Chapters and other appropriate gatherings;
- nine local UFFC Chapters which provide outstanding programs in our technical discipline in your local community; and
- many other opportunities to interact on a technical basis with colleagues.

Joining the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society is easy. An application form is included within this issue. If you are already an IEEE member, the cost to you is only \$7.00, which is one of the best bargains today. If you are not an IEEE member, consult the application form.

If you have any membership related questions, Bob Moore, the Chapters-Membership Chairman, will be pleased to hear from you. His address is on the inside back cover.

Together the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society can make a difference. Join today and be part of this exciting time.

Robert A. Moore, *Membership Chairman*
William D. O'Brien, Jr., *Editor in Chief*

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Is there a UFFCS member's name that is qualified for the grade of IEEE Fellow but not on this list? If so, contact the Chairman of our Fellows Committee, Gordon Kino and he'll be happy to let you know the procedure. You can reach him at 415/497-0205. The new IEEE nomination kits can be obtained from the Staff Secretary, IEEE Fellow Committee, 345 East 47th Street, New York, NY 10017 (Tel. 212/705-7750).

The editor appreciates the articles from various members which make up this issue of the UFFCS newsletter. Newsworthy articles are always welcome. The editor gratefully acknowledges the work of Sue Tallerino who patiently typed this edition.

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