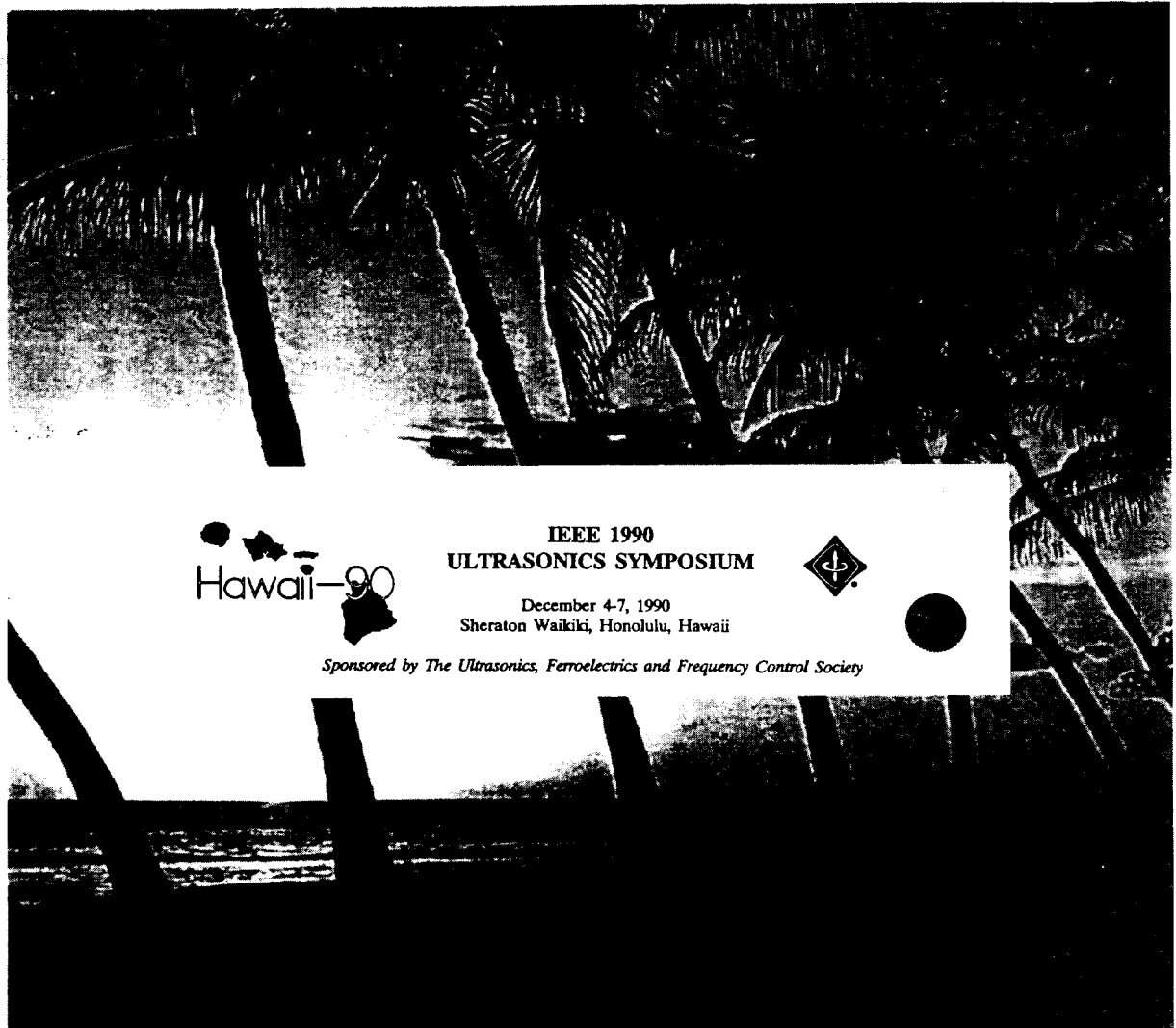
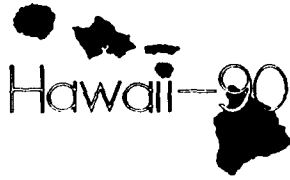


IEEE ULTRASONICS, FERROELECTRICS AND FREQUENCY CONTROL SOCIETY NEWSLETTER

Number 10, October 1990

Editor: Fred S. Hickernell





IEEE 1990 ULTRASONICS SYMPOSIUM

December 4-7, 1990
Sheraton Waikiki, Honolulu, Hawaii



Sponsored by The Ultrasonics, Ferroelectrics and Frequency Control Society

The IEEE Ultrasonics Symposium Technical Program Committee and the Hawaii-90 Symposium Planning Committee have been busy during July and August, and we've put the finishing touches on an Ultrasonics Symposium that you're sure to find technically stimulating. An unprecedented number of abstracts were received and were of such high quality that it became necessary to expand the technical program format for the Hawaii symposium from four to five parallel oral sessions in addition to the usual plenary and poster sessions. The strong international nature of the Ultrasonics Symposium is reflected in this year's exciting program which contains 29 invited papers and 346 contributed papers from scientists in 26 countries.

The Symposium technical program will be held from Wednesday, December 5, through Friday, December 7, 1990, at the Sheraton Waikiki in Honolulu. The technical program will begin with a Plenary session on Wednesday morning. The President's speaker this year is Dr. Donald Thomas from the Hawaii Institute of Geophysics who will present the talk entitled "Hawaiian Islands and Volcanology". In addition, the Achievement Award, the IEEE Transaction on Ultrasonics, Ferroelectrics and Frequency Control Outstanding Paper Award and Fellow Awards will be presented during plenary session. Twenty-nine invited papers will be presented this year to highlight new, emerging and outstanding technical aspects of Ultrasonics phenomena; these papers provide the central theme for many of the technical sessions. The invited talks this year include:

Relaxor Ferroelectric Transducers - Dr. Hiroshi Takeuchi, Central Research Laboratory, Hitachi Limited, JAPAN

Quantitative Study of Dynamic Flow Fields Using Color Doppler Imaging - Dr. Richard S.C. Cobbold, Institute of Biomedical Engineering, University of Toronto, CANADA

Neural Networks for Adaptive Image Analysis - Dr. Christopher M. Daft, General Electric Corporate Research and Development Center, USA

Ultrasound Thermometry in Hyperthermia - Dr. Tsutomu Yano, Matsushita Research Institute Tokyo, Inc., JAPAN

A Quarter Century of Medical Ultrasound Technology 1975 - 2000 - Dr. Kirk W. Beach, Department of Surgery, University of Washington, USA

Relaxor Ferroelectric Materials - Dr. Thomas R. Shrout, Materials Research Laboratory, Pennsylvania State University, USA

Domain Contributions to Piezoelectricity - Dr. Gottfried Arlt, Institut für Werkstoffe der Elektrotechnik, University of Technology, FRG

Intra-vascular and Intra-cardiac Ultrasound Imaging: Current Research and Clinic Potential - Dr. Natesa G. Pandian, Tufts University, Boston, MA, USA

Thermal Dosimetry Models for Diagnostic Ultrasound - Dr. Kai E. Thomenius, Interspec, Inc., USA

Low Temperature Acoustic Microscopy for Material Characterization - Dr. Kazushi Yamanaka, Mechanical Engineering Laboratory, JAPAN

Elastic Wave Propagation in Anisotropic Materials - Dr. J. Roux, Lab. Mécanique Physique, Université de Bordeaux 1, FRANCE

Nanometer Resolution Photoacoustic and Photothermal Imaging with ATM - Dr. H. Kumar Wickramasinghe, IBM T.J. Watson Research Center, USA

NDE in Space - Dr. B. Boro Djordjevic, Martin Marietta Laboratories, USA

NDE Research for Aging Aircraft Integrity - Dr. Joseph S. Heyman, NASA Langley Research Center, USA

Resonance Scattering Studies in Underwater Acoustics: The Direct and Inverse Problems - Dr. Gerard J. Quentin, G.P.S., Université Paris 7, FRANCE

Ultrasonic Instrument to Predict Drawability of Sheet Metal - Dr. R. Bruce Thompson, Center for NDE, Iowa State University, USA

Picosecond Ultrasonics - Dr. Humphrey J. Maris, Department of Physics, Brown University, USA

Piezoelectric Motorola for Micro Robots - Dr. Anita M. Flynn, MIT Artificial Intelligence Laboratory, USA

Physical Origins of 1/f Noise in Solids - Dr. Brage Golding, AT&T Bell Laboratories, USA

Film Bulk Acoustic Resonator Technology - Dr. S.V. Krishnaswamy, Science & Technology Center, Westinghouse Electric Corporation, USA

Nonlinear Phenomena in Solid State Physics and Technology - Dr. John H. Cantrell, NASA Langley Research Center, USA

Growth and Applications of Piezoelectric and Ferroelectric Films - Dr. Tadashi Shiosaki, Department of Electronics, Kyoto University, JAPAN

Wave Propagation in Fluid-Saturated Porous Materials: Theory v.s. Experiment - Dr. Thomas J. Plona, Schlumberger-Doll Research, USA

Optical Interactions with Magnetostatic Waves and Applications - Dr. Daniel D. Stancil, Department of Electrical & Computer Engineering, Carnegie Mellon University, USA

Piezoelectric Devices for Frequency Control and Selection in Japan - Dr. Satoru Fujishima, Murata Manufacturing Company, Ltd., JAPAN

SAW Signal Microprocessor Overview - Dr. William J. Hunsinger, Electronic Decisions Inc., USA

Diffraction Compensation of SAW Devices - Dr. Franz Seifert, Corporate Research and Development, Siemens AG, FRG

Applications for Piezoelectric Leaky Surface Waves - Dr. Kazuhiko Yamanouchi, Research Institute of Electrical Communications, Tohoku University, JAPAN

1991 and Beyond: The Current Status and Future Trends for SAW Devices in Europe - Dr. James Highway, Roditi International Corporation LTD., UK

In addition to the oral presentations, 19 topical poster sessions have been developed and will be held on Thursday, December 6, during the early afternoon session. No oral session will be held parallel with the poster sessions. Poster session topics include Medical Imaging, Ferroelectric Materials and Processes, Hyperthermia, Arrays and Beam Steering, Ultrasound Scattering, Acoustic Microscopy II, Nondestructive Evaluation, Sensors II, Acousto-optics and Magneto-optics, Magnetostatic Waves, Geophysical Acoustics, Superconductivity and Physical Acoustics, and SAW Technology.

The 1990 Ultrasonics Exhibition will be held in the Ballroom Foyer in the Sheraton Waikiki. Several companies, including Crystal Technology, SAWTEK, Tektronix, Hitachi, and Clarion, will display their products and their representatives will be on hand to meet with you. The Symposium program will again be preceded by a Short Course Program on Tuesday, December 3, 1990. This year's courses include **Fundamentals of Elastic Waves in Crystals**, presented by Bert Auld; **Bulk Wave Resonators and Transducers**, presented by Arthur Ballato; **Fundamentals of the Finite Element Method for Piezoelectric Resonators**, presented by Yook-Kong Yong; **Piezocomposites for Acoustic Transducers**, presented by Wallace Arden Smith; **Fundamentals of Applied Ultrasonics for Nondestructive Evaluation**, presented by Joseph Heyman; and **Medical Ultrasound Fundamentals: Imaging, Therapeutics and Flow**, presented by William O'Brien, Jr. Enrollment for these courses is limited, so be sure to register early. All short courses will be held in the Sheraton Waikiki.

While you're at the conference, your guests will be able to enjoy the sights and sounds of Hawaii. An exciting Guest program has been arranged including visits to the "usual" Oahu attractions, such as Diamond Head and the USS Arizona Memorial. But even though these may be the "usual", these tours will be conducted especially for our guests and will include transportation in an air-conditioned motorcoach will full narration, and (just for our guests) a special Snorkeling Expedition to Hanauma Bay has been arranged. Snorkeling equipment and a picnic lunch will be provided as well as frozen peas to feed the tropical fish which swim in this beautiful coral-filled bay.

The symposium will not, however, be "all work" for you either. You'll be able to get together with your colleagues at the Wednesday evening Social Gathering over hors d'oeuvres and cocktails. On Thursday, evening, you will be able to attend a traditional Hawaiian Luau. The luau has been planned especially for our Symposium attendees and will take place on the Diamond Head Lawn of the Sheraton Waikiki. In addition to the delightful scenery, you'll be entertained by Hula dancers as they recount tales of gods, great chiefs and long voyages expressed in the medium of dance. The food will include roasted pig, Poi, Lomilomi salad and other Hawaiian delicacies. And after the Symposium, you'll be able to participate in a special all-day Saturday Get-Away at the Polynesian Cultural Center. The day will start with a scenic drive via the beautiful Nuuanu Valley to the famed Pali lookout with its spectacular view of the windward coastline and then on through the little hamlets of Oahu's windward coast to the magnificent Polynesian Cultural Center a 42 acre setting of seven authentic Pacific Island societies. Mingle with the villagers and enjoy their crafts, dances, music and pageantry....tour the water ways in a dug-out canoe...watch Tongans fashion tapa into clothing and decorative wall hangings. Enjoy an exciting evening topped by the "Pageant of Long Canoes", a delectable Hibiscus Buffet Dinner and the Polynesian's dramatic amphitheater show, "Invitation to Paradise". A cast of 150 entertainers perform the authentic songs and dances of the different villages. This will be a day you will not soon forget!

United Airlines has been selected as the official airline for the 1990 Ultrasonics Symposium. The official carrier agreement gives a 5% discount off any United or United Express published fare in effect when the tickets are purchased, subject to all applicable restrictions; or a 40% discount off unrestricted coach fares (Y/YN) in effect when the tickets are purchased. **These discounts will apply only if travel is commenced and completed during the Meeting Travel Period of December 2, 1990, to December 11, 1990. When making reservations in the United States, call the US toll-free number 1-800-521-4041 and state the meeting I.D. number 445HD.**

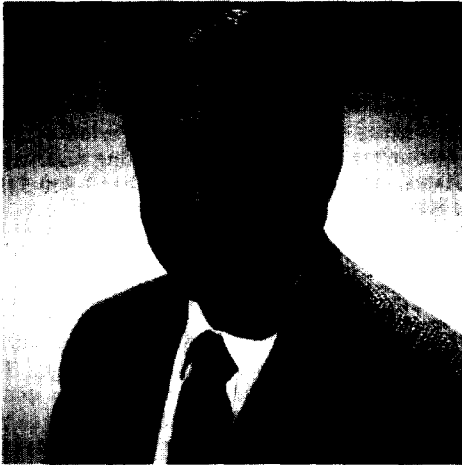
Hertz has been appointed the official car rental supplier for the 1990 IEEE Ultrasonics Symposium. Special group rates have been negotiated for this event, to help economize on your travel costs. All rates include unlimited mileage. These rates are valid for a one week period both before and after the Symposium. To take advantage of these rates, you must **make your rental reservations at least four weeks in advance of your arrival in Hawaii.** For reservations, call Hertz at (800) 654-2240 and ask for the Meetings Desk. Be sure to identify the name **"IEEE Ultrasonics Symposium"** or **"Meeting no. 7097"** to facilitate your reservations. From Canada, call (800) 263-0600.

The main conference hotel for the 1990 Ultrasonics Symposium is the **Sheraton Waikiki**. The Sheraton Waikiki has reserved a block of rooms at special rates for Symposium attendees. To augment the rooms at the Sheraton Waikiki, an additional block of rooms for the Symposium has been reserved at the Princes Kaiulani Hotel, another Sheraton resort hotel. The Princess Kaiulani hotel is an 8 minute brisk walk from the Sheraton Waikiki. To secure a room at either the Sheraton Waikiki or the Princess Kaiulani Hotel, use the centerfold tear-out form in the Advanced Program Booklet. **This form must be received by the hotel reservations desk by November 2, 1990.** Please reserve early to ensure availability. A one night deposit by check or credit card guarantee is required. Reservations can also be made by telephone by calling (808) 922-4422, Ext. 72576. You must specify "IEEE Ultrasonics Symposium" to obtain the special room rates. For those who wish to spend an extra few days in Honolulu, the special rates will also apply the weekend before and after the Symposium.

The weather in Honolulu will be perfect for our stay. In December, the average maximum and minimum temperatures are 80°F and 67°F, a welcome break from the beginning of winter for those of us in "the North". There may be some rain during the day, but it usually showers in the early mornings or afternoons for brief periods. Hawaii is in the Hawaii-Aleutian time zone and observes standard time all year. In December, Hawaii will be 2 hours behind the Pacific time zone.

And be sure to **mark November 2, 1990 on your calendar.** This important date is the deadline for **advanced registration** for the Symposium, the short course programs, the social and guest programs, and for hotel reservations. In addition, special audiovisual requests are due by that date.

This has just been a short "blurb" to whet your appetite for what we know will be a memorable Symposium in the land of everlasting summer. More details about the Symposium are available in the Advanced Program Booklet, which you should have already received. The booklet contains the early registration form for the Symposium as well as the hotel reservation form. If you need additional information, please feel free to contact either Dr. Moises Levy at the University of Wisconsin-Milwaukee at (414) 229-4168 or Dr. Harry L. Salvo at Westinghouse ESG (301) 765-4290.



Moises Levy
General Co-Chair

Moises Levy was born in Concepcion, Chiriqui, Rep. of Panama on April 8, 1930. He received a B.S. in Chemistry and an M.S. in Chemical Engineering from Cal Tech in 1952 and 1955, and a Ph.D. in Physics from UCLA in 1963. Following industrial, military and academic positions he joined the Physics Department at the University of Wisconsin-Milwaukee as an Associate Professor in 1971 and became a Professor in 1973. He was elected Chairman of the Physics Department from 1975 to 1978.

Moises has engaged in the ultrasonics investigation of superconducting materials, most recently the newly discovered high T_c superconductors. He has used bulk waves to investigate type I and type II superconductors, reentrant ternary compound superconductors, and heavy Fermion superconductors. He has used surface acoustic waves to study several types of superconducting films such as beta structure films, rocksalt structure films, amorphous films and granular films.

Moises has been associated with the UFFC and its progenitor the Sonics and Ultrasonics Group since 1969. He was the General Chairman of the IEEE Ultrasonics Symposia in Milwaukee in 1974 and in Atlanta in 1983. He is the General Co-Chairman for the IEEE 1990 Ultrasonics Symposium which will be held in Hawaii. He has served on the technical program committee of the IEEE Ultrasonics Symposium and as chairman of the nominations committee of IEEE Group of Sonics and Ultrasonics. He is presently serving as Associate Editor of the IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control. He is a member of the Acoustical Society of America, a Fellow of the American Physical Society, and a senior member of the IEEE. Recently he was one of the recipients of the UWM Foundation/Graduation School Awards for excellence in research.

Moises would like to ask all who read this column to attend the IEEE 1990 Ultrasonics Symposium which will be held in Hawaii, December 4, 5, 6, and 7, 1990. We are planning a wonderful reception and Luau overlooking colorful sunsets in the Pacific Ocean, and an exciting technical program with the active participation of scientists and exhibitors from Japan. We expect to have a truly international conference by attracting participants and papers from each of the five continents.



Nobuo Mikoshiba
General Co-Chair

Nobuo Mikoshiba was born in Nagano Prefecture in Japan, on October 3, 1930. He received the B.S. and Ph.D degrees in Solid State Physics from Nagoya University in 1953 and 1960, respectively. He joined the Electrotechnical Laboratory, Tokyo, in 1957 and was engaged in research on physical acoustics and acoustoelectronic devices including surface acoustic wave (SAW) devices. He was a research associate in the Institute for the Study of Metals, University of Chicago, for two years from 1961 to 1963.

He was a professor in the Section of Acoustoelectronics at the Research Institute of Electrical Communication, Tohoku University, Sendai during 1974 ~ 1990. He was Director of the Laboratory for Microelectronics of the Institute founded in 1984. He was engaged in research on SAW convolvers, SAW image scanners, SAW parametric amplifiers and generators, surface acoustooptic devices, SAW charge transfer devices and acoustic DFB lasers.

He was an invited speaker at the Ultrasonics Symposium in 1978, 1979, 1983 and 1989. He served as Chairman of the Program Committee for the 1976 International Conference on Solid State Devices in Tokyo. He served as chairman of the Steering Committee for the 4th (1984) Symposium on Ultrasonic Electronics, which is held every year in Tokyo. He was Chairman of the Tokyo Chapter of the IEEE Society, UFFC (Ultrasonics, Ferroelectrics and Frequency Control), which was established on August 5, 1983. He was elected as a member of the Administrative Committee of the IEEE UFFC Society for 1988 - 1990. He is serving as Chairman of the Organizing Committee of the 21st (1989) and 22nd (1990, International) Conference on Solid State Devices and Materials, which is held in Japan.

Dr. Mikoshiba received, together with Dr. K. Tsubouchi, the 1983 Hattori Award (SIEKO Watch) for contributions to new AlN SAW devices. On January 1, 1988, he was elected to the grade of Fellow of IEEE for contributions to the development of physical acoustics and surface acoustic-wave devices. Very recently, he accepted a new position as Director of Hewlett-Packard Laboratories Japan, which was established on April 1, 1990.

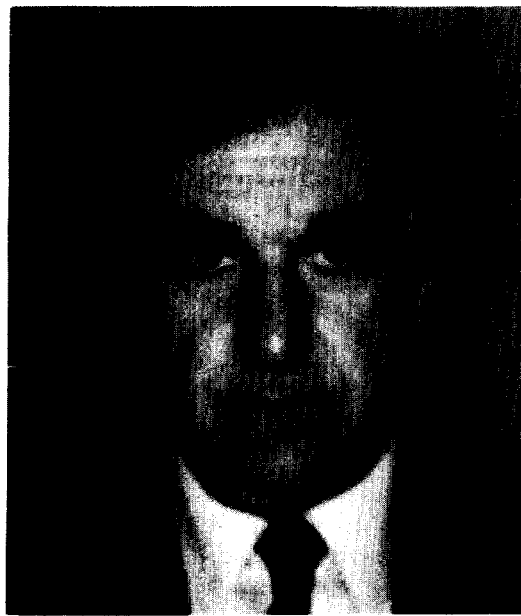


Harry L. Salvo, Jr.
Technical Program

Harry L. Salvo, Jr. was born in Racine, Wisconsin. He received his B.S. degree in Applied Mathematics and Physics from the University of Wisconsin in 1969. He attended graduate school at the University of Wisconsin - Milwaukee where he received his M.S. and Ph.D degrees in Physics in 1974 and 1979 respectively.

Since 1979 he has been with the Westinghouse Electronic Systems Group and is a member of the Advanced Technology Division located in Baltimore, Maryland. He is currently acting manager of the Microwave Acoustics and Magnetics Department. He is primarily involved in thin film bulk acoustic devices for use in signal processing and frequency control applications.

Harry has been the Secretary - Treasurer of the UFFC-S Administrative Committee since 1987, a member of the Ultrasonics Symposium Technical Program Committee since 1985, and a past president of the Baltimore, Washington and Northern Virginia chapter of the UFFC-S. He was involved with the local arrangements for the 1974 Ultrasonics Symposium in Atlanta. In addition to his position as Technical Chair for the 1990 Ultrasonics Symposium, he is the General Chairman for the 1993 Ultrasonics Symposium to be held in Baltimore, MD. Harry is a member of the American Physical Society as well as the IEEE.



Ted J. Lukaszek
Finance

Ted Lukaszek received the B.S. degree in Physics from Monmouth College, West Long Branch, NJ, in 1960, the M.S. degree in Solid-State Physics from Fairleigh Dickinson University, Rutherford, NJ, in 1966, and did post graduate work at the Polytechnic Institute of Brooklyn, NY from 1967 to 1970.

Currently, he is leader of UHF/Microwave Frequency Sources Team in the U.S. Army Electronic Technology and Devices Laboratory at Ft. Monmouth, NJ. He has done extensive work with bulk acoustic wave (BAW), surface acoustic wave (SAW), shallow bulk acoustic wave (SBAW) devices and has authored/coauthored a number of papers in these areas. More recently, he has investigated the properties of dielectric resonator oscillators (DRO).

His work in these areas have been acknowledged with the receipt of the U.S. Army Research and Development Achievement Award in 1980, 1986 and in 1989, the Electronic Technology and Devices Laboratory Harold Jacobs Award of R&D Excellence for 1990, the Secretary of Defense DOD Productivity Excellence Award in 1987 and the LABCOM R&D Achievement Award in 1989.

Ted is a senior member of the Institute of Electrical and Electronic Engineers (IEEE), and serves on numerous committees in the Microwave Theory and Techniques (MTT) and the Ultrasonics, Ferroelectric and Frequency Control (UFFC) Societies.



IEEE 1990
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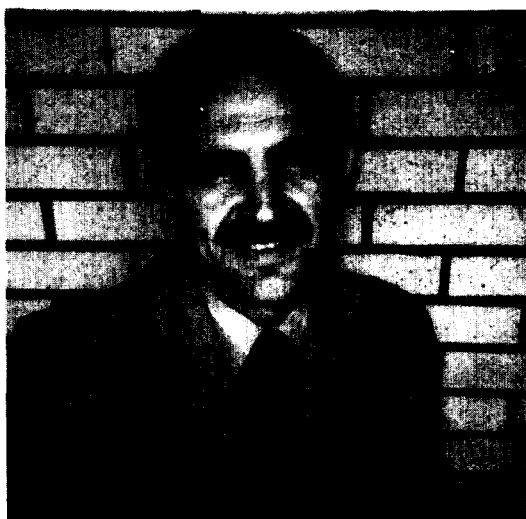


Murli H. Manghnani
Local Arrangements - Hawaii

Murli H. Manghnani was born in India in 1936. He received the B.S. (Honors) degree in 1957 and the M.S. degree in Applied Geology in 1958 from the Indian School of Mines, and the Ph.D. in Geology from the University of Montana in 1962.

He is currently a Professor of Geophysics at the University of Hawaii at Manoa, where since 1965 he has been the Director of the High Pressure Mineral Physics Laboratory. Dr. Manghnani's current research interests are related to the elastic and anelastic properties of minerals and melts, and phase transformations at high pressures and temperatures.

Dr. Manghnani is a member of the American Geophysical Union, American Ceramic Society, Minerals Research Society, Acoustical Society of America, and a Fellow of the Mineralogical Society of America Fellowship. He received a Guggenheim Fellowship Award in 1986 for ultra-high pressure and temperature studies in mineral physics.



Ralph A. Treder
Local Arrangements - USA

Ralph A. Treder received a B.S. degree in physics from Marquette University in 1967, an M.S. degree in cosmology from University of Wisconsin-Milwaukee in 1971, and a Ph.D. in Solid State Physics from University of Wisconsin-Milwaukee in 1975. Following post-doctoral work on spin-phonon interactions in rare earth crystals at University of Wisconsin-Milwaukee, he taught physics at Saginaw Valley State College in Michigan before joining AT&T's Engineering Research Center in Princeton, New Jersey in 1978. At AT&T he applied his academic work in experimental ultrasonics to studies of practical problems in NDT and automation (NDE for Si crystal, bond integrity between diverse materials, EMAT's) and later broadened his interests into sensor studies and hybrid systems for interrogating matter. Most recently, his work has even encompassed machine vision and environmental research areas, and he has four patents. He has been an active member of the Technical Program Committee for the Ultrasonics Symposium for several years, and is also Local Arrangements Co-chair for 1990.

He hopes that all members come to the symposium in Hawaii with a sense of wonder and awe at both the superior technical program this year and the most exotic "local arrangements" ever provided!



Yasutaka Shimizu
Publicity/Publications - Japan

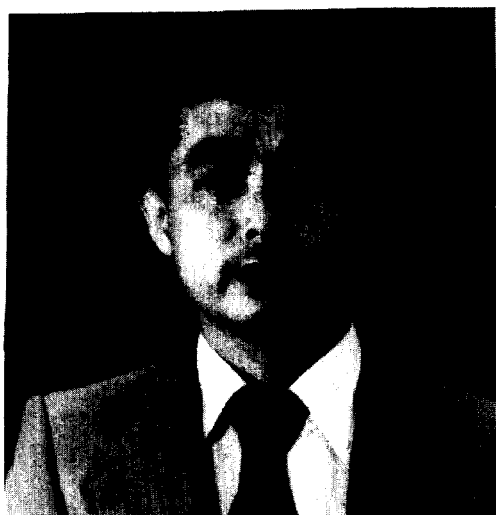
Yasutaka Shimizu graduated from Tokyo Institute of Technology in 1964, and received the Master and Doctor degrees of Engineering both from Tokyo Institute of Technology in 1966 and 1971 respectively. From 1966 to 1969, he worked with Seiko Company to develop the atomic frequency standard. Since 1969 he has been with Tokyo Institute of Technology and is currently Professor of the Center for Research and Development of Educational Technology (CRADLE). From 1972 to 1973 he was a Post Doctoral Fellow at the Polytechnic Institute of New York where his research was on surface acoustic waves. He has been working on microwave propagation theory and techniques especially on the development of microwave absorbers for anechoic chambers and the surfaces of tall buildings or huge bridges to prevent TV ghost or marine radar ghost image. He was the former Vice Chairman of UFFC Tokyo Chapter.



Susan C. Schneider
Publicity/Publications - USA

A lifelong native of Wisconsin, Susan C. Schneider received the B.S. degree from the University of Wisconsin-Stevens Point in 1972 and the Ph.D. degree from the University of Wisconsin-Milwaukee in 1981; both degrees are in physics.

In 1981, she joined the Department of Electrical Engineering and Computer Science (since renamed Electrical, Computer and Biomedical Engineering) at Marquette University as an assistant professor. Her teaching interests have been in electromagnetic fields and advanced analog circuit design. Her recent research interests include theoretical studies of the electron-phonon interaction and experimental studies to characterize charge transport mechanisms across the interface formed by the union of dissimilar materials. In addition, she has been involved in developing and implementing signal processing algorithms for "near real time" time differentiation.



Kenshiro Takagi
Transportation - Japan

Kenshiro Takagi was born in Hiroshima, Japan, in 1944. He received the B.S. degree in 1968, the M.S. degree in 1970, and the Dr. Eng. degree in 1975 from the University of Tokyo all in applied physics.

Since 1972 he has been with the Institute of Industrial Science, University of Tokyo, and at present is a professor of the Department of Applied Physics and Applied Mechanics. His main research area has been ultrasonic spectroscopy and its application to molecular physics. He has particularly been interested in various light scattering techniques for UHF and hypersonic measurement of velocity and attenuation. Currently, he is interested in thermal ripplon and liquid surface physics.

Dr. Takagi is a member of The Japan Society of Applied Physics, The Institute of Electronics, Information and Communication Engineers, The Acoustical Society of Japan. He is at present the Vice Chairman of IEEE UFFC Tokyo Chapter.



B. R. Tittmann
Transportation - USA

Dr. Tittman is Bayard Kunkle Professor of Engineering, Department of Engineering Science and Mechanics at Penn State University. He received a B.S., in Physics from George Washington University and a Ph.D., Physics, from UCLA in 1965. Dr. Tittmann has a broad background in Physical Acoustics gained during his tenure of nearly 25 years at the Science Center of Rockwell International. He is probably best known for his work in geophysical ultrasonics, NDE and acoustic sensors. He investigated and explained the dramatic reduction of anelastic attenuation of lunar return samples when subjected to the lunar environment. His main interest is in material characterization, using surface acoustic wave dispersion, internal friction, ultrasonic attenuation, and diffraction to characterize polymers, ceramics and metal alloys. He is currently engaged in studies on fiber reinforced composites. He has about 170 publications and is a member of the Acoustical Society of America, the American Physical Society and Fellow of the Institute of Electrical and Electronics Engineers.



Janpu Hou
Short Courses

Janpu Hou was born in Taipei, Taiwan. He received his B.S. degree from Chen Kung University, and his M.S. and Ph.D. degree in Applied Mechanics from Princeton University, Princeton, New Jersey. His Ph.D. thesis work involved the development of a theoretical model to study the interaction between acoustic waves and electric fields in piezoelectric crystals.

Since joining Allied-Signal Inc. in Morristown, New Jersey in 1984 he has been involved in the design, fabrication and testing of acoustic wave devices and other RF/Microwave components. He also has been involved in the evaluation of new piezoelectric materials and their application to frequency control and signal processing devices. He is presently a Senior Research Physicist in the Solid State Devices Program and works in the areas of materials research and sensor development. He has authored or co-authored fourteen technical publications, and he is a co-inventor on one U.S. patent. He has been a member of the Ultrasonics Symposium Technical Program Committee since 1987, and is a member of the American Society of Test Engineers.

Janpu, his wife Yumei and their sons Dennis and Raymond reside in a small town in Central New Jersey. He is active in community programs and has been listed in American Leaders in Achievement for Contributions to the Asian American Community in U.S. by the American Biographical Institute.

FUTURE SYMPOSIA

1991 IEEE Ultrasonics Symposium
December 8-11, 1991
Orlando, Florida

For information:

D.C. Malocha, General Chair
Department of Electrical Engineering
University of Central Florida
Orlando, FL 32816-0450
(407) 823-2414

1992 IEEE Ultrasonics Symposium
October 13-16, 1992
Tucson, Arizona

For information:

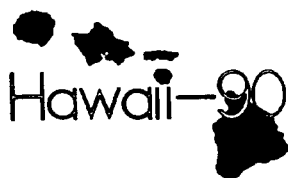
Fred S. Hickernell, General Chair
Motorola, Inc.
Government Electronics Group
8201 E. McDowell Road, MD H1019
Scottsdale, AZ 85252
(602) 441-2923

1993 IEEE Ultrasonics Symposium
November 1993
Baltimore, Maryland

For information:

Harry L. Salvo, General Chair
Westinghouse Electric Corporation
Electronic Systems Group
333 Gordon Avenue
Severna Park, MD 21146
(301) 765-4290

1994 IEEE Ultrasonics Symposium
Fall of 1994
Southern France



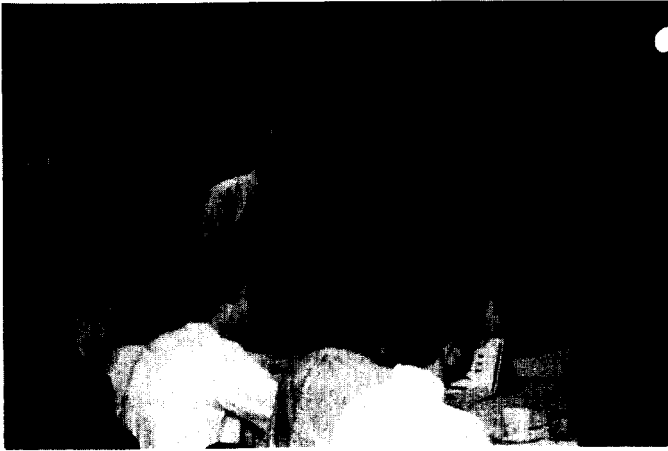
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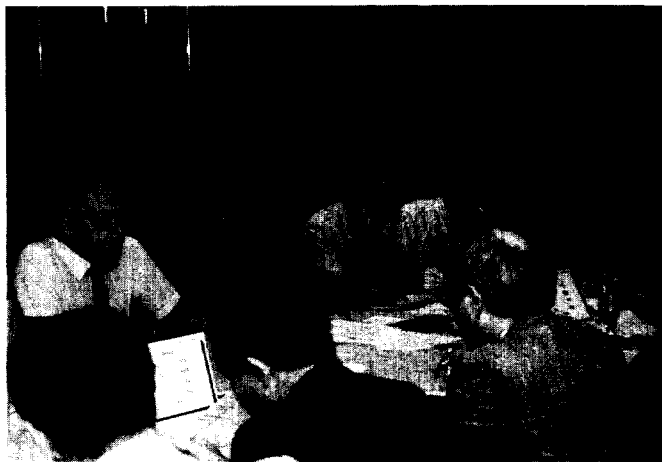
Technical Program



"I can't believe the number of papers that were submitted this year."



"You're under pressure, Gary, when the General Chairs and Larry are Looking on."



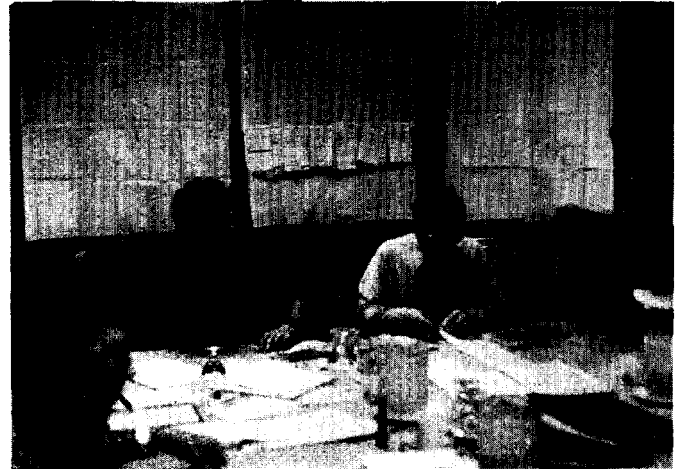
"You would have to look far and wide to find a more serious group."



"All right, Don, how come you're laughing when everyone else is so serious?"



"How are we going to fit all these papers into the symposium and still have time for the beach?"



"Art, take note of Jim's attire; ties will not be required at the Hawaii conference."

44th Annual Frequency Control Symposium

The 44th Annual Symposium on Frequency Control was held May 22 to May 25 at the Stouffer Harborplace Hotel in Baltimore, Maryland. This years Symposium was unique in several ways. First, there was a special plenary session on Friday, May 25th at which two of the 1989 Nobel Prize winners in physics spoke. Professor Ramsey's talk was titled "Experiments with Separated Oscillatory Fields and Atomic Hydrogen Masers". Professor Dehmelt's talk was titled "Experiments with an Isolated Subatomic Particle at Rest".

The second unique feature of this years symposium was five tutorials given on Tuesday, May 22nd. These five tutorials were:

Bulk Wave Resonators and Transducers by Arthur Ballato.

The Instabilities of Quartz Crystal Resonators and Oscillators by John R. Vig.

Design of Experiments and Analysis of Data-Statistical by Thrygve R. Meeker.

Low Noise Oscillator Design Using Acoustic and Other High Q Resonators by Michael M. Driscoll.

How to Make Meaningful Phase Noise Measurements (Is it an Art or a Science?) by T.E. Parker, G.K. Montress and F.L. Walls.

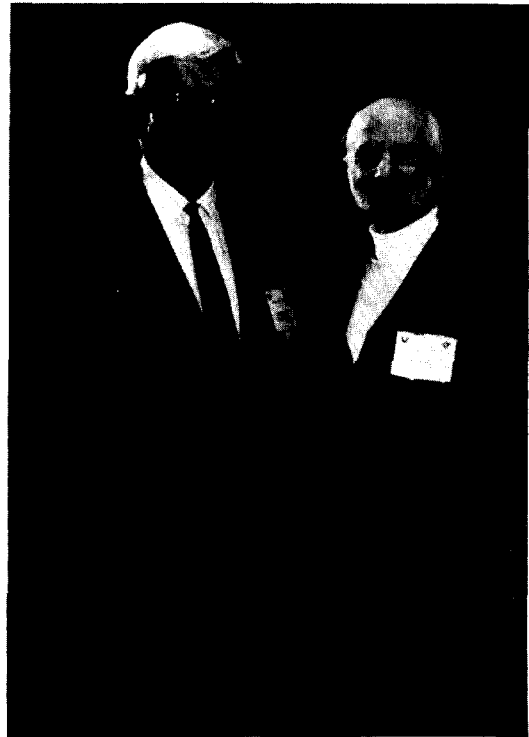
On the first regular day of the symposium (Wednesday, May 23rd) there was another plenary session scheduled with a panel discussion on the Measurement of Environmental Sensitivities of Precision Oscillators, chaired by Helmut Hellwig. There were eight invited and approximately seventy contributed papers presented at the 44th Annual Symposium on Frequency Control.

At the plenary session, the Cady award was presented to John R. Vig by John Kusters. The Rabi award winner was Claude Audoin. The award was presented by Jacques Vanier. William H. Horton received the Sawyer award which was presented by Gary Johnson.

Congratulation to the symposium leadership who fought some tough battles in the closing moments before the start of the program to keep the symposium open as a premier technical event for all comers.

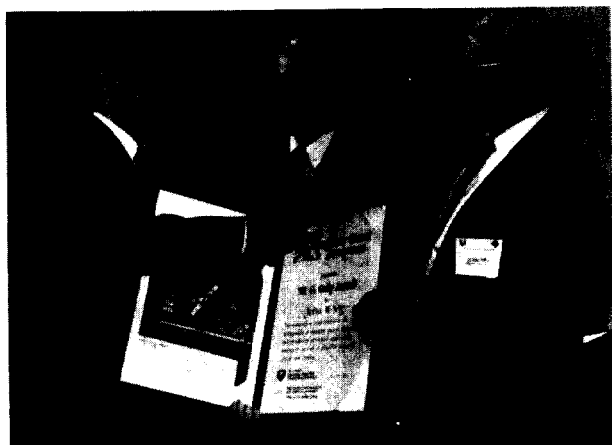


Thomas Parker, Chairman of the Technical Program Committee, opening the technical sessions.



Norman Ramsey and Hans Dehmelt, recipients of the 1989 Nobel Prize in Physics.

44th Annual Frequency Control Symposium



John R. Vig, Cady Award winner, being congratulated by David Allan and presenter John Kusters.



Claude Audoin, Rabi Award winner, being congratulated by David Allan and presenter Jacques Vanier.



William H. Horton, Sawyer Award winner, being congratulated by David Allan and award presenter Gary Johnson.



"Look ma! I got an award!"

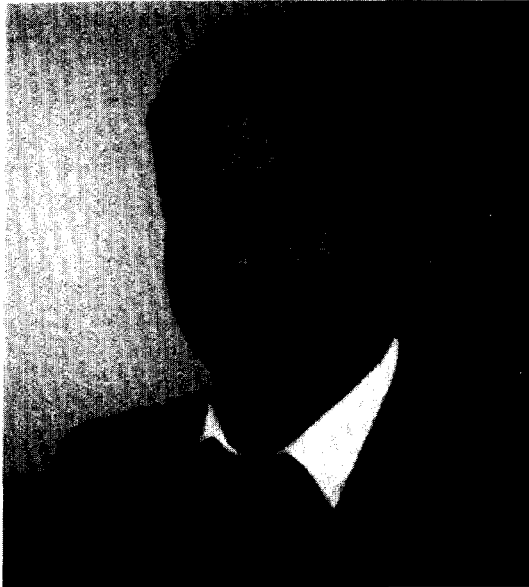


Congratulations all around



Hans Dehmelt, John Vig, Claude Audoin, William Horton and Norman Ramsey.

New AdCom Member



Charles Maerfeld

Charles Maerfeld was born in Paris in 1940. He received his undergraduate education at the Ecole Supérieure de Physique et Chimie Industrielles de Paris and his Ph.D. at the University of Nice working on Multistrip Couplers. His early contributions beginning in 1969 were on surface acoustic waves in the studies of propagation of SAW on layered media, Beam Width Compressors and Multistrip Couplers, Monolithic Convolver, and Memory Correlators.

He was head of the Transducer Department of the Sonar Group of THOMSON CSF from 1976 to 1981. In this field, the most characteristic works were on hydrophones, HF arrays and especially the demonstration of the finite element method impact on array simulation. He was Managing Director of CGR Ultrasonics from 1982 to 1984. CGR Ultrasonics is a THOMSON CSF subsidiary responsible for the ultrasound scanner product lines within CGR. He was the Managing Director of the DTAS from 1985 to 1989. DTAS is a THOMSON Department devoted to the R & D, Manufacturing and Sales of both SAW devices and Transducer Arrays and Probes for Ultrasound Medical Scanners. Presently Dr. Maerfeld is the Managing Director of the Department of ARCUEIL of THOMSON SINTRA ASM.

Dr. Maerfeld has published more than 35 papers, most of them in IEEE publications. He has written more than 40 patents. His publication on the finite element method received an award from the IEEE Committee for the best paper published in 1981 in the IEEE Transaction on Sonics and Ultrasonics.

He is father of 3 children and the whole family is very fond of down hill skiing (in the Alps Mountains).

REQUEST FOR NOMINATIONS

IEEE EDUCATION MEDAL

Every year IEEE awards an Educational Medal to recognize outstanding engineering educators. You are encouraged to nominate a professor who you think deserves recognition by the whole IEEE community. The recipient receives a gold medal, a bronze replica, a certificate and \$10,000.

The award is given "for excellence in teaching and ability to inspire students; leadership in electrical engineering education through publication of textbooks and writings on engineering education; innovation in curricula and teaching methodology; contributions to the teaching and engineering profession through research, engineering achievements, technical papers, and participation in the education activities of professional societies."

Recent recipients are: James D. Meindl (1990), Ben G. Streetman (1989), Alan V. Oppenheim (1988), Joseph W. Goodman (1987), and Richard B. Adler (1986).

To start the nomination process, send your suggestions to:

Roger H. Tancrell
Chair, UFFCS Awards Committee
Raytheon Research Division
131 Spring Street
Lexington, MA 02173
FAX (617) 860-3195

We hope to nominate a UFFCS member for the 1992 award. Your participation is encouraged, so a worthy candidate is not overlooked. Submit name(s) by January 31, 1991.

ORLANDO CHAPTER UFFCS

This spring our chapter held two technical and one administrative meetings. The participation in these events was quite good, particularly for a presentation on Micromechanics given by distinguished lecturer Dr. R. White of Berkeley.

The Orlando Section chose as outstanding engineer for 1989 a member of the UFFCS Chapter, Dr. Benjamin P. Abbott. Ben was selected for his pioneering work in coupling of modes theory. Dr. Donald C. Malocha was chosen as the recipient of the Orlando Section's Award for Outstanding Service, in recognition of his numerous contributions to the Chapter, Section, and National IEEE organizations.

Chapter officials for the upcoming year are as follows:

Chairman:	Sunder Gopani Sawtek Inc. (407) 886-8860
Vice Chairman:	Dr. Donald C. Malocha Electrical Engineering Dept. University of Central Florida (407) 275-2414
Secretary/Treasurer:	Dr. Samuel Richie Electrical Engineering Dept. University of Central Florida (407) 281-5765

MEMBERSHIP REPORT

The current membership of the UFFC-S as of July 31, 1990, is 2,006. This is composed of the following:

95	Fellows
225	Senior Members
174	Student Members
222	Associates
1285	Members
5	Affiliates

Members are urged to aid membership development by recruiting interested persons in the ultrasonics, ferroelectrics, and frequency control areas. UFFC membership materials and information can be obtained from:

Dr. Don Malocha
Electrical Engineering Department
University of Central Florida
Orlando, FL 32816-0450
(407) 823-2414
FAX (407) 823-5835

Under the direction of the UFFC Administrative Committee, Membership Development is initiating a membership outreach program. The intent of the program is to encourage participation by interested engineers and scientists in the UFFC society where membership has been traditionally low. The society provides a free, two-year membership in the IEEE and UFFC societies. It is hoped that this program will entice others in these regions to join the society and encourage their participation through the UFFC-S Transactions and our technical symposia. It is anticipated that most of the free memberships will be given to individuals in countries where currency problems or other hardships exist. Any member of the UFFC can be our "Outreach Ambassador" when traveling. If you are interested in participating in this effort, please feel free to contact me at the University of Central Florida.

D.C. Malocha
Membership Chair

MEMBERSHIP OUTREACH

Three members of the UFFC Society traveling aboard in September presented free memberships to engineers and scientist interested in joining IEEE and our Society. Bruce McAvoy who hopped all over Europe (London, Prague, Frankfurt, Wurpetal, Salsburg, Munich, and Budapest) in search of worthy recipients, passed along four memberships to academic and industrial colleagues in Germany. Tom Parker, who attended the URSI conference with Bruce passed along memberships to colleagues in Czechoslovakia (2) and India (2). Jim Greenleaf, this years Distinguished Lecturer, extended complimentary membership to local IEEE chapters in Brazil, Uruguay, Argentina and Chile. (See Distinguished Lecturer report in this issue). All of the recipients were very surprised and very grateful to our UFFC society for the gifts.

DISTINGUISHED LECTURER REPORT

The trip to South America was very successful. In South America I gave talks in Sao Paulo, Brazil; Buenos Aires, Argentine; Montevideo, Uruguay; and Santiago, Chile. The various presidents of the local IEEE chapters were extremely happy to receive free memberships in IEEE and UFFC. I distributed four in Brazil and two each in Uruguay, Argentina, and Chile. Each of the four chapters presidents were extremely happy to receive these memberships. Ours was the only society to have presented complimentary memberships giving real weight to the introduction of my talks in which I stated that I brought greetings from the UFFC Society.

Listed below is a current schedule of my lectures. Some of them are scheduled as to the place and time and others are merely regions of the country or world. I am still open in the winter and spring months of 1991, which are not completely planned yet.

DISTINGUISHED LECTURER TRIPS FOR FALL, 1990

October 23, 1990	Massachusetts of Institute of Technology, Lincoln Laboratory, Boston, MA
October 24, 1990	University of Pennsylvania, Philadelphia, PA
October 25, 1990	Defense Research Establishment Atlantic, Dartmouth, Nova Scotia, Canada
November 20-22, 1990	Give several lectures at the 11th Symposium on Ultrasonic Electronics, Tokyo, Japan, and other cities in Japan.
November 26-30, 1990	Give several lectures at KAIST (Korea Advanced Institute of Science and Technology), Seoul, Korea, and other cities in Korea.

Jim Greenleaf
UFFC-S Distinguished Lecturer

NEWSLETTER EDITOR'S NOTE

The editor wishes to thank all those who submitted articles and photographs for this issue of the UFFC-S Newsletter. Also a special thank you to Kathy Nolan for typing the manuscript. Articles of interest to UFFC-S members are welcome. For inclusion in the Spring issue, please send by March 15, 1991, to Fred Hickernell, Motorola Inc., Government Electronics Group, 8201 E. McDowell Road, Scottsdale, Arizona 85252.

ADCOM BRIEFS

The Administrative Committee (ADCOM) Meeting of the Ultrasonics, Ferroelectrics and Frequency Control Society (UFFC-S) was called to order at 9:10 a.m., July 24, 1990, by President Jan Brown.

Jan Brown announced the following appointments:

L.E. Cross	Ferroelectrics
D.C. Malocha	Membership Chairman
J. Lee	Journal of Lightwave Technology Representative
D. Hecht	Journal of Lightwave Technology Representative
M. Schafer	Transactions on Medical Imaging Representative

These appointments were approved by the ADCOM. President Brown announced that at the next ADCOM meeting there will be a discussion on changes to the bylaws. In particular, she mentioned the section on the Finance and Operations Committee and the possibility of transferring the Distinguished Lecture from the Membership Committee to the Awards Committee.

J. Brown reported that IEEE has been receiving reimbursement requests directly from individuals. These requests have to go through the Society's Treasurer in order to be honored.

As a procedural change, J. Brown announced that all budgets be reviewed and submitted by the Finance committee. In addition all items to be brought before ADCOM for funds should be sent to the Finance Committee for review prior to presentation.

J. Brown reported that IEEE would like to bid on conference services. IEEE feels they can provide competitive services.

Also, IEEE has a reciprocal fee arrangement with ACE, AICHE, ASME and AIME. We must grant member rates at our conferences to members of these Societies who identify themselves.

J. Brown reported that the general fund of the IEEE is running out of money, and IEEE wants to tax the societies a 7% G&A fee. This fee would be 7% of our expenses minus what they charge us direct now. J. Brown reported that they did not present any other options or plans to bring expenses under control. The UFFC-S President was directed by the ADCOM to vote against any proposal to tax the societies as a means of increasing the IEEE general fund.

In attendance at the ADCOM meeting was the Director of Division IX, H.W. Cooper. After he introduced himself and offered his help with any problems we are having, he made comments on some of the issues effecting the division.

W.D. O'Brien reported that there is no backlog of papers for the Transactions. The number of papers seem to be increasing but this is very preliminary data. He has received the first "letter" for the Transactions which will appear in the September issue.

He is planning two special issues for 1991. The first is on "Thin Film Ferroelectrics". The second is on "Ferroelectrics" with R. Tancrèl serving as the guest editor.

He appointed three new Associate Editors having terms of January 1, 1990, to December 31, 1994. They are:

K.F. Etzold	Ferroelectricity Fundamentals
S. Stein	Frequency and Time
E.M. Garber	Nonresonant SAW Devices

H. Van de Vaart presented the Operating Financial report. He reported that for 1989 the Transactions was the biggest money maker with surplus of \$75K. This was due to publishing only 700 pages with a page budget of 1000. Our net worth at the end of 1989 was \$204.1K. For the first six months of 1990 our net worth is \$339.8K.

ADCOM approved the 1991 budget. The major item is the Transactions page budget which is set at 1000. The budget has a \$72.5K surplus.

S. Jang, standing in for L.E. Cross, reported that attendance at the 1990 ISAF was approximately 400 from 20 countries. He also reported that the 1992 ISAF will be held early September to avoid conflict with the European meeting on Polar Dielectrics scheduled for early 1992.

T.E. Parker gave the report on the 1990 Frequency Control Symposium. He reported that one of the highlights was the attendance by Norman Ramsey and Hans Dehmelt who were Noble Laureates from 1989. Attendance was again down at 278, but a surplus of \$6,000 should be realized.

H. Van de Vaart reported on the 1989 Ultrasonics Symposium. The attendance was 534 with 391 full registrants. 352 abstracts were received with 266 papers accepted. Financially, the Symposium was a success with a surplus of \$37,101.17.

H.L. Salvo reported that 450 abstracts have been received for the 1990 Ultrasonics Symposium. If the technical program is to fit into the current mandated format of only 4 parallel oral sessions, the technical program committee would have to reject 42% of the abstracts.

The ADCOM passed a motion to allow five parallel oral sessions at the 1990 Ultrasonics Symposium.

G.W. Farnell reported that Q. Gerard has looked into Nice, France, as the site of the 1994 Ultrasonics Symposium running back to back with the Federation of Acoustical Societies of Europe conference.

The ADCOM voted that the 1994 Ultrasonics Symposium be held in either Nice or Caan, France, with Q. Gerard as General Chairman.

B.R. Tittmann presented the slate of nominees for election to ADCOM. These nominees are:

R. Michael Garvey
Gary K. Montress
Kevin J. Parker
Gene Haertling
Helmut Hellwig
Errol P. EerNisse
Kengi Uchino
Hiroshi Takeuchi

The ADCOM accepted the slate of nominees for election to ADCOM. The next ADCOM meeting will held on December 4, 1990, at 9:00 a.m. in Honolulu, Hawaii.

PRESIDENT'S MESSAGE

ORGANIZATIONAL ISSUES:

Work is continuing on helping the three standing committees which represent the main technical areas of our society, namely, ultrasonics, ferroelectrics, and frequency control, to operate in a more parallel fashion. Since all three committees are responsible for a major symposium each year (or every other year), it is important that the financial reporting, at the least, follow the same guidelines. Coordinating with each other and other IEEE entities and planning ahead, establishing the general chairs and meeting sites several years in advanced, and providing a uniform reporting and review process with ADCOM are some of the other areas we feel are important and on which we are working.

INTERNATIONAL INITIATIVE:

In recognition of the international scope of our society and the IEEE, and of the economic conditions in Regions 8 - 10, we have made several thousand dollars available to offer memberships in our society to our colleagues in these regions. For more information, please contact Don Malocha, your membership chair. (His number is listed below.)

VOLUNTEERING:

While we are talking about standing committees, if you have comments, suggestions, or wish to become a working member of one of these committees please feel free to contact any of the society officers or the following Standing Committee Chairs:

AWARDS	Roger Tancrell	(617) 860-3072
MEMBERSHIP	Don Malocha	(407) 823-2414
FERRO-ELECTRICS	Eric Cross	(814) 865-1811
FREQUENCY CONTROL	Tom Parker	(617) 860-3054
FINANCE	Herm van de Vaart	(201) 455-2482
NEWSLETTER	Fred Hickernell	(602) 441-2923
NOMINATIONS	Bernie Tittmann	(805) 373-4187
STANDARDS	Art Ballato	(201) 544-2773
TRANSACTIONS	Bill O'Brien	(217) 333-2407
ULTRASONICS	Gerry Farnell	(514) 398-7118

Please do not be shy. The Society can only function as well as its volunteers have time and energy to contribute. This is your Society and we encourage you to participate in any way you desire. We look forward to hearing from you.

There are a number of IEEE committees that are looking for more volunteers. Two in particular that may be of interest to our membership are:

PROGRAM EVALUATORS:

IEEE Educational Activities Board is looking for Program Evaluators for accreditation visits to Engineering Programs. Participation in the accreditation process for Engineering Programs is an important responsibility of the IEEE. This activity depends on the volunteer efforts of motivated and qualified Program Evaluators and on the support provided by their employers. It is IEEE policy that at least one half of the people on each Program Evaluator list be currently employed in industry or government.

ELF STANDARDS:

The Standards Coordinating Committee 28 on non-ionizing radiation is looking for members for a sub-committee to develop standards in the ELF sub-committee, please contact me at your earliest convenience so that I may give you additional information and submit your name to the appropriate chairs.

NEW NAME?

I have heard many comments that we need a new name because the present one is so long and cumbersome. Is there a ground swell out there? If so, please let me know. While you are at it, please suggest what new name you would like.

ADCOM MEETING:

The next ADCOM meeting will be held Tuesday, December 4, 1990 from 9:00 a.m. to 6:00 p.m. at the Sheraton Waikiki, Honolulu, Hawaii which is the hotel for the 1990 Ultrasonics Symposium. UFFC Society members are always welcome at the ADCOM meetings.

Jan Brown
President, UFFC-S

Meeting Announcement

19th International Symposium on Acoustical Imaging (Acoustical Imaging '91)

Ruhr-Universität Bochum
Bochum, Federal Republic of Germany
April 3-5, 1991

meeting information from

Professor H. Ermert
Institut für Hoch- und Höchstfrequenztechnik
Ruhr-Universität Bochum
P.O. Box 10 21 48
D-4630 Bochum, FRG
Telephone: +49 234 700 - 2842
Telefax : +49 234 700 - 2339

45th Annual Frequency Control Symposium

The 45th Annual Frequency Control Symposium will be held May 29-31, 1991 in Los Angeles, CA. This symposium is the leading technical conference addressing all aspects of frequency control and precision timekeeping. Authors are invited to submit papers dealing with recent progress in research, development, and applications in areas represented by the following topics:

- * Fundamental properties of piezoelectric crystals
- * Theory and design of piezoelectric resonators
- * Resonator processing techniques
- * Surface acoustic wave devices (SAW)
- * 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
- * Measurement and specifications

Sponsors: IEEE-UFFC and the U.S. Army Electronics Technology and Devices Laboratory (LABCOM).
 Place: Los Angeles Airport Marriott, CA.
 Contact: Clark Wardrip, P.O. Box 6147, Vandenberg AFB, CA 93437 (805) 865-3214.

FORTHCOMING FREQUENCY CONTROL SYMPOSIA as of August 1990

Year	Dates	Location	Hotel	General Chairman	Technical Program Chairman	Local Arrangements Chairman
1991	May 29 - 31	Los Angeles	Airport Marriott	R. Filler	T. Parker	V. Reinhardt
1992	May 27 - 29	Hershey, PA	Hershey Lodge & Convention Center	R. Filler	J. Kusters	C. Jensik
1993	June 2 - 4	Salt Lake City	Salt Lake City Marriott	J. Vig	J. Kusters	E. EerNisse

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