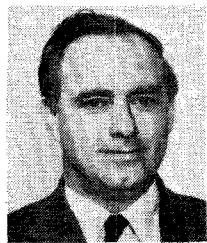


Contributors



Colin S. Aitchison was born in Morecambe, England, in 1933. He received the B.Sc. and ARCS degrees in physics from Imperial College, London, England, in 1955.

He worked for Mullard Research Laboratories, Redhill, Surrey, England, from 1955 to 1972, being initially concerned with the noise reduction properties of direct injection phase locked klystrons for use with Doppler radars. He led a group concerned with parametric amplifiers, mixers, ferrite limiters, lumped microwave components, and Gunn and avalanche oscillators. In 1972 he joined the Department of Electronics, Chelsea College, University of London, London, England, where he is Reader in Electronics. His research interests remain in the same field.

Mr. Aitchison is a Fellow of the Institute of Electrical Engineering and a member of the Institute of Physics.

tic electron beams; the basic theory of gyrotrons, and simulation of relativistic magnetrons. He is currently involved in the development of high-power diodes for producing intense ion beams. He is the Manager of the High Temperature Plasma Section in the Technological Systems Group at Science Applications, Inc.

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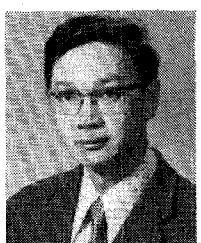
Chun Hsiung Chen was born in Taipei, Taiwan, Republic of China, on March 7, 1937. He received the B.S. degree in electrical engineering from National Taiwan University, Taipei, Taiwan, in 1960, the M.S. degree in electrical engineering from National Chiao Tung University, Hsinchu, Taiwan, in 1962, and the Ph.D. degree from National Taiwan University in 1972.

In 1963 he joined the faculty of the Department of Electrical Engineering, National Taiwan University, where he is now a Professor. In 1974 he was a Visiting Researcher for one year at the Department of Electrical Engineering and Computer Sciences, University of California, Berkeley. His areas of interest are antennas, waves in inhomogeneous media, and numerical techniques in electromagnetics.

Terry A. Enegren was born in New Westminister, B.C., Canada, on March 7, 1952. He received the B.Sc. and Ph.D. degrees from the University of British Columbia in 1974, 1975, and 1979, respectively.

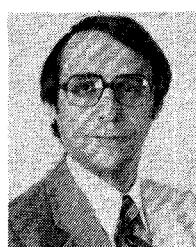
He is now with the MPB Technologies, Inc., in Ste-Anne-de-Bellevue, P.Q., Canada.

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Kwo Ray Chu was born in China on October 10, 1942. He received the B.S. degree in physics from National Taiwan University in 1965, the M.S. degree in physics from the University of Massachusetts, Amherst, in 1968, and the Ph.D. degree in applied physics from Cornell University, Ithaca, NY, in 1972.

From 1973 to 1977, he was a Research Physicist with Science Applications, Inc., McLean, VA, specializing in microwave theory, relativistic electron beam physics, plasma waves and instabilities, and anomalous heat transport in controlled fusion devices. In September 1977, he joined the Plasma Physics Division at Naval Research Laboratory, Washington, DC. He is currently a Principal Investigator for the NRL cyclotron maser (gyrotron) program.



Ronald M. Gilgenbach received the B.S.E.E. and M.S.E.E. degrees from the University of Wisconsin, Madison, where he performed microwave heating experiments on a magnetic mirror. He received the Ph.D. degree from Columbia University, New York, NY, in 1978, where his doctoral research examined the spectra of high-power millimeter waves generated from an intense relativistic electron beam.

He is currently a Visiting Scientist at the Massachusetts Institute of Technology, Cambridge, and is employed by JAYCOR, McLean, VA. He was recently involved in experiments at Oak Ridge National Laboratory, Oak Ridge, TN, which used the NRL gyrotron to perform the first U.S. electron cyclotron heating on a Tokamak. Prior to that he was engaged in gyrotron development at the Naval Research Laboratory, Washington, DC. His other past employments included a Technical Staff position at Bell Laboratories and Summer research at Culham Laboratory.

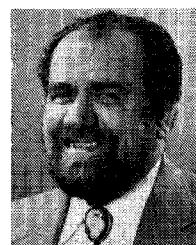
Dr. Gilgenbach is a member of the American Physical Society, Sigma Xi, and Phi Kappa Phi.

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Adam T. Drobot was born in Zakopane, Poland, on May 13, 1947. He received the B.S. degree in engineering physics from Cornell University, Ithaca, NY, in 1968, and the Ph.D. degree in physics from the University of Texas, Austin in 1974.

He has been working at Science Applications, Inc., McLean, VA, specializing in the application of computer-simulation methods to high-voltage pulsed power devices. He is a contributor to recent work on: collective ion acceleration; stimulated backscattering of electromagnetic radiation by relativis-



Charles A. Goben (S'58-M'62) was born in Lucas, IA, on November 12, 1934. He attended Iowa State University where he received the B.S., M.S., Ph.D. degrees, all in Electrical Engineering. From 1962 to 1965, he worked at Sandia Laboratory in Albuquerque, NM. Since 1965, he has been engaged in teaching and research on the faculty of the University of Missouri-Rolla where he is a Professor of Electrical Engineering and Senior Research Investigator in the Engineering Research Laboratory. His areas

of interest include semiconductor materials, surface electromagnetic wave propagation, and transportation safety studies.

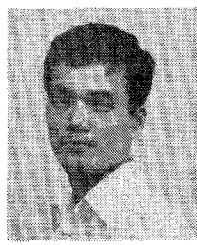
Dr. Goben is a member of the American Physical Society, the American Society for Engineering Education, Tau Beta Pi, Eta Kappa Nu, Pi Mu Epsilon, Pi Kappa Phi, Sigma Xi, and the Missouri Academy of Science.



Victor L. Granatstein was born in Toronto, Ont., Canada, on February 8, 1935. He received the B.S. and Ph.D. degrees in electrical engineering from Columbia University, New York, NY, in 1960 and 1963, respectively.

From 1964 to 1972, he worked at Bell Laboratories, doing research on the interaction of microwaves with turbulent plasma. Since 1972, he has been with the Plasma Physics Division, the Naval Research Laboratory, Washington, DC, where he is currently Head of the Electron

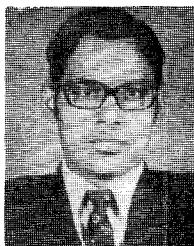
Beam Applications Branch. From 1969 to 1970, he was a Visiting Lecturer in Plasma Physics at the Hebrew University, Jerusalem, Israel. His current research interests include generation of ultrahigh power microwave pulses with intense relativistic electron beams, the development of electron cyclotron masers (gyrotrons) at millimeter and submillimeter wavelengths, and collective processes in free electron lasers.



Osamu Ishihara was born in Chiba, Japan, on July 2, 1944. He received the B.S. degree in physics from Tohoku University, Sendai, Japan, in 1968.

He joined the Mitsubishi Electric Corporation, Hyogo, Japan, in 1968, and has been engaged in the development of microwave semiconductor devices including Gunn diodes, GaAs IMPATT diodes, and GaAs FET's. He is now with the Technical Staff of the Semiconductor Laboratory, Mitsubishi Electric Corporation.

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Shanti S. Gupta was born in Bachh-Gaon, Agra, India, on April 12, 1947. He received the B.Sc. and M.Sc. degrees from Agra University, Agra, India, in 1966 and 1968, respectively, both with first class honors. He has recently submitted his Ph.D. dissertation.

Since 1968, he is a Lecturer in the Department of Physics, Ganjdundwara College, Ganjdundwara, Etah, India. In 1977, he joined the Department of Physics, Indian Institute of Technology, New Delhi, India, under the Faculty Improvement Programme of University Grants Commission of India to undertake research work.

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Claes E. Hagström was born in Stockholm, Sweden, on February 12, 1946. He received the M.Sc. and Ph.D. degrees in electrical engineering from Chalmers University of Technology, Gothenburg, Sweden, in 1971 and 1979, respectively.

From 1971 to 1979 he was employed at the Research Laboratory of Electronics, Chalmers University of Technology, where he worked on masers, travelling-wave tubes and millimeter-wave mixers. Since 1979 he is with the L. M. Ericsson Co., MI division, Mölndal, Sweden.

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M. M. Z. Kharadly received the B.Sc. degree in electrical engineering from Cairo University, Cairo, Egypt, in 1948, and the Ph.D. degree from the University of London (Imperial College), London, England, in 1953.

He has held faculty positions at Ein-Shams University, the University of Manchester, Manchester, England, and the University of Alberta, Edmonton, Alta, Canada. Currently, he is Professor of Electrical Engineering, University of British Columbia, Vancouver, B.C., Canada. His early research was concerned with artificial dielectrics and microwave plasma diagnostics. His current research includes work on surface waveguides, inhomogeneous and nonreciprocal lines, and microwave and millimeter-wave propagation in the lower atmosphere with special emphasis on the effect of precipitation.

Dr. Kharadly is a member of the Institution of Electrical Engineers, London, England.

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Moshe Kisliuk (M'76) received the Engineer Diploma from the Polytechnic Institute, Odessa, USSR, in 1950, and the Ph.D. degree from the Institute of Electrical Communications, Leningrad, USSR, in 1960, both in electrical engineering.

During 1950-1957, he worked as a Senior Engineer at a naval development office. In 1960 he was appointed senior lecturer, and in 1962, Associate Professor in the Department of Theoretical Electrical Engineering of the Institute of Electrical Communications, Leningrad, USSR, which position he held until 1973. In 1975 he emigrated to Israel and joined the Tel-Aviv University, Ramat-Aviv, Israel, where he is currently Associate Professor of Electrical Engineering. Since 1950 he has worked in different areas of electromagnetics, including static fields, waveguide components, coupled cavities and circuits, waveguide and cavity excitation, electric and magnetic field integral equations, and partially filled waveguides and cavities.

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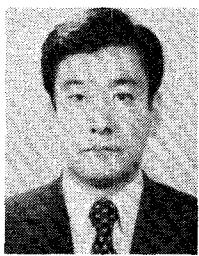
Junzi Huruya was born in Koriyama City, Fukushima, Japan, on December 14, 1936. He received the B.E. and Ph.D. degrees from Tohoku University, Sendai, Japan in 1960 and 1980, respectively.

From 1960 to 1969, he was employed at Hokushin Electrical Manufactory, Tokyo, and from 1969 to 1971 at Tokyo Shibaura Electrical Corporation, Kawasaki, Japan. From 1971 to 1973, he was a Lecturer in the Department of Education, Yamaguchi University, Yamaguchi, Japan, and since 1974 he has been an Associate Professor at the same university. His research interests include lumped networks, distributed networks, and communication systems. Dr. Huruya is a member of the Institute of Electronics and Communication Engineers of Japan.



Erik L. Kollberg was born in Stockholm, Sweden, in 1937. He received the civilingenjör (M.Sc.) degree in electrical engineering in 1961 and the Ph.D. degree in 1970 from Chalmers University of Technology, Göteborg, Sweden.

Since 1961 he has been a Member of the Research and Technical Staff of the Research Laboratory of Electronics and of the Onsala Space Observatory, Göteborg, Sweden. He was appointed Assistant Professor in 1971 and Professor in 1979. His research interest is primarily in the area of millimeter wave mixers, masers and receiver systems.



Hiroaki Kunieda was born in Yokohama, Japan, in 1951. He received the B.S. (Eng.) degree in 1973, and the M. Eng. degree in 1975, and the Dr. Eng. degree in 1978 from Tokyo Institute of Technology, Tokyo, Japan.

He is now a Research Associate at Tokyo Institute of Technology. His main research interests are in lumped-type equivalent representations of several multiwire line systems, and the design of the coupled-line filters in microwave systems.

Dr. Kunieda is a member of the Institute of Electronic and Communication Engineers of Japan.



Robert F. Lucey, Jr., was born in Riverdale, MD, on June 23, 1953. He received the B.S. degree in engineering physics from Cornell University, Ithaca, NY, in 1976.

During 1977, he worked at Bell Laboratories, Holmdel, NJ, on Josephson junction devices. Since 1978, he has been working at JAYCOR, Inc., Alexandria, VA and is presently working on collective ion acceleration.

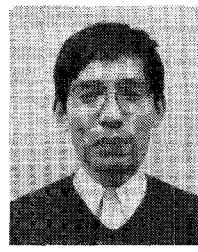
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Brian C. H. Lai was born in Taipei, Taiwan, China, on November 20, 1939, received the B.S.E.E. and M.E.E.E. degrees from Tokyo University, Tokyo, Japan, in 1972 and 1974, respectively, the M.S.E.E. degree from the University of Missouri-Rolla, Rolla, in 1978 and was a Ph.D. candidate in Physics at the same university thereafter.

During the period 1972-1974, he worked in Murayama's Laboratory and collaborated with Japanese companies on the RF Ion Plating Process for surface treatment and semiconductor metalization while working on his degrees. In 1974-1975, he was a Process Engineer in Suzuki Precision Electroplating Company, Japan and a Visiting Professor of Electrical Engineering, Chung Yuan Christian College of Science and Engineering, Taiwan, China. He was a Research and Teaching Assistant and was part of a group conducting surface electromagnetic wave research for the U.S. Department of Transportation, at the Engineering Research Laboratory, University of Missouri-Rolla, from 1976 to 1978. He is now a Product Engineer at Communications Transistor Corporation, Varian Associates, San Carlos, CA.

Mr. Lai is a member of the IEEE Society of Power Apparatus and Systems, IEEE Society on Microwave Theory and Techniques, the Missouri Academy of Sciences, the Japan Society of Applied Physics, the Institute of Electronics and Communication Engineers of Japan, the Institute of Chinese Engineers Club, Sigma Xi, and Eta Kappa Nu.



Corporation.

Mr. Mori is a member of the Institute of Electronics and Communication Engineers of Japan.

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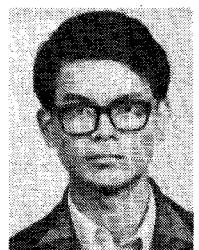


Masaaki Nakatani was born in Okayama, Japan, on July 27, 1942. He received the B.S. and M.S. degrees in physics from Osaka University, Osaka, Japan, in 1965 and 1967, respectively.

He joined the Mitsubishi Electric Corporation, in 1970, and has been working on the development of microwave semiconductor devices and circuits including GaAs FET's and MIC's. He is now with the Technical Staff in the Semiconductor Laboratory, Mitsubishi Electric Corporation.

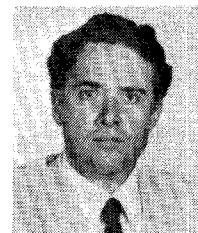
Mr. Nakatani is a member of the Japan Society of Applied Physics and Institute of Electronics and Communication Engineers of Japan.

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Chuen-Der Lien was born in Taipei, Taiwan, Republic of China, on March 8, 1956. He received the B.S. degree in electrical engineering from National Taiwan University, Taipei, Republic of China, in 1978.

Since September of 1976 he has been working with Prof. Chun Hsiung Chen in the area of numerical techniques for electromagnetic problems. His areas of interest include mathematics, electromagnetic theory, and solid-state physics.



Manuel S. Navarro (S'74-M'77) received the B.S.E.E. degree from Universidad Católica de Valparaíso, Chile, in 1966, the M.S.E.E. degree from the Massachusetts Institute of Technology, Cambridge, MA, in 1972, and the Ph.D degree from the University of Illinois, Urbana, in 1976.

He held teaching positions at the Universidad Católica de Valparaíso and is presently a staff member of the Electronics Department of Universidad Simón Bolívar, Venezuela. His research interests include waveguides with corrugated and anisotropic boundaries and analytical and numerical methods for field problems.

John D. Nordgård (M'80) was born in Charleston, SC, on September 11, 1943. He received the B.S. degree in electrical engineering from the Georgia Institute of Technology, Atlanta, in 1966 as a cooperative student with the Charleston Naval Shipyard, Charleston, SC. He received the M.S. and Ph.D. degrees in applied physics from the California Institute of Technology, Pasadena, CA, in 1967 and 1969, respectively.

During his graduate studies, he was associated part time with the Jet Propulsion Laboratory, Pasadena. After completing his studies, he received a post-doctoral fellowship at the University of Oslo, Oslo, Norway. Currently, he is Professor of Electrical Engineering, Georgia Institute of Technology. He has been associated part time with the Bell Laboratories, Atlanta, GA. He is currently interested in wave propagation and cable coupling problems.

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Takanori Okoshi (S'56-M'60) was born in Tokyo, Japan, on September 16, 1932. He received the B.S., M.S., and Ph.D. degrees, all from the University of Tokyo, Tokyo, Japan, in 1955, 1957, and 1960, respectively, all in electrical engineering.

In 1960 he was appointed an Instructor, and in 1961, became an Associate Professor in the Department of Electronic Engineering, University of Tokyo, where he worked primarily in the field of microwave circuits, microwave measurements, and microwave electron devices. From 1963 through 1964, on leave of absence from the University of Tokyo, he joined Bell Laboratories, Murray Hill, NJ, where he was engaged in research on electron guns. In 1972 he joined the Technical University of Munich on a temporary basis as a Guest Professor. In January 1977 he became a Professor at the University of Tokyo. At present, his main fields of interest are three-dimensional imaging, microwave planar (two-dimensional) circuits, optical fibers, optical fiber communications, and holographic memories. He has written nine books including two in English entitled *Three-Dimensional Imaging Techniques* (New York: Academic Press, 1976), and *Optical Fibers* (to be published by Academic Press).

Dr. Okoshi has been awarded eight prizes from three Japanese academic institutions. He is an Associate Editor of the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES and the secretary of Japanese National committee for URSI.

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Kimiyuki Oyamada (S'79) was born in Yokohama City, Japan, on October 14, 1954. He received the B.S. and M.S. degree in electrical engineering, from the University of Tokyo, Tokyo, Japan, in 1977 and 1979, respectively. At present, he is studying toward the Ph.D. degree in the Graduate School of the University of Tokyo, specializing in transmission characteristics of optical fibers.

Mr. Oyamada is a member of the Institute of Electronics and Communication Engineers of Japan.

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Michael E. Read received the B.S., the M.S., and Ph.D. degrees, all in electrical engineering, from Cornell University, Ithaca, NY. The Ph.D. was awarded in 1975.

His graduate work was in the physics and applications on intense relativistic electron beams, including the problems of beam transport, microwave production, and collective ion acceleration. He is currently with the Naval Research Laboratory, Washington, DC, where his research is concentrated on the gyrotron.



Tullio E. Rozzi (M'66-SM'74), for a photograph and biography please see page 155 of the February 1980 issue of this TRANSACTIONS.

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Risaburo Sato (SM'62-F'77) was born in Furukawa City, Miyagiken, Japan, on September 23, 1921. He received the B.E. and Ph.D degrees from Tohoku University, Sendai, Japan in 1944 and 1952, respectively.

From 1949 to 1961, he was an Associated Professor at Tohoku University, and in 1961 he became a Professor in the Department of Electrical Communications at the same university. Since 1973 he has been a Professor of Information Sciences at Tohoku University. From 1969 to 1970, he was an International Research Fellow at Stanford Research Institute, Menlo Park, CA. His research activities include studies of multiconductor transmission systems, distributed transmission circuits, antennas, communication systems, active transmission lines, magnetic and ferroelectric recording, neural information processing, computer networks, and electromagnetic compatibility. He has published a number of technical papers and some books in these fields, including *Transmission Circuit*.

Dr. Sato was Vice President of the Institute of Electronics and Communication Engineers of Japan from 1974 to 1976. He has been Radio Technical Council Commissioner of the Ministry of the Post and Telecommunications of Japan since 1974, a member of the Telecommunication Technology Consultative Committee at NTT since 1976, and a member of Science Council of Japan since 1978. He is also a member of the Institute of Electronics and Communication Engineers of Japan, the Institute of Electrical Engineers of Japan, and the Institute of Television Engineers of Japan.

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Hiroshi Sawano was born in Hyogo, Japan on February 18, 1952. He was graduated from Ono Industrial Engineering High School in 1970.

In the same year, he joined the Mitsubishi Electric Corporation, Hyogo, Japan. After being engaged in developing Gunn diodes and GaAs IMPATT diodes, he is now engaged in the applications of GaAs FET's. He is now with the Technical Staff of the Semiconductor Laboratory, Mitsubishi Electric Corporation.

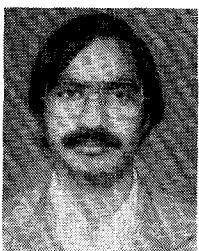
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Glenn S. Smith (S'65-M'72) was born in Salem, MA, on June 1, 1945. He received the B.S.E.E. degree from Tufts University, Medford, MA, in 1967, and the S. M. and Ph.D. degrees in applied physics from Harvard University, Cambridge, MA, in 1968 and 1972, respectively.

From 1969 to 1972 he was Teaching Fellow and Research Assistant in Applied Physics at Harvard University. From 1972 to 1975 he served as a Postdoctoral Research Fellow at Harvard University and also as a part-time Research Associate and Instructor at Northeastern University, Boston, MA. He is presently an Associate Professor of Electrical Engineering at Georgia Institute of Technology, Atlanta, GA.

Dr. Smith is a member of Tau Beta Pi, Eta Kappa Nu, and Sigma Xi.

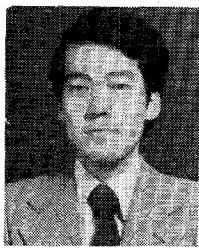


Neeraj C. Srivastava (S'77-M'78) was born in Jodhpur, India, on September 29, 1953. He received the B.Sc. degree with highest honors from the University of Jodhpur, Jodhpur, India, in 1972, the M.Sc. with the highest honours and Ph.D. degrees from the Indian Institute of Technology, New Delhi, in 1974 and 1977, respectively.

He joined the Department of Physics, Indian Institute of Technology, New Delhi, India, as Senior Scientific Officer in 1977; he is currently a Lecturer in the same Department. He has authored numerous research papers on microwave ferrimagnetics and is also Coauthor of the book *Microwave Propagation in Ferrimagnetics: Theory and Applications* (New York: Plenum).

Dr. Srivastava is a member of the IEEE Magnetics Society of India and the Plasma Physics Society of India. He was honored with gold medal in 1970 by Vigyan Bal Parishad, Jaipur, India. Upon graduation from the University of Jodhpur, he was also awarded the university gold medal for his accomplishment.

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Jiro Temmyo was born in Tokyo, Japan, on January 31, 1949. He received the B.S., M.S., and Ph.D. degrees in electrical engineering from Waseda University, Tokyo, Japan, in 1971, 1973, and 1979, respectively.

In 1973 he joined the Musashino Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan, where he has been engaged in research and development of surface acoustic wave devices for communications applications. In

March 1979, he received the Young Engineer Awards from the Institute of Electronics and Communication Engineers of Japan. His current research interests include Josephson computer technology.

Dr. Temmyo is a member of the Institute of Electronics and Communication Engineers of Japan and the Acoustical Society of Japan.

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A. Wong, photograph and biography not available at the time of publication.

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Shokichiro Yoshikawa was born in Tokyo, Japan, on March 17, 1927. He received the B.S. and Ph.D. degrees in electrical communication from Tohoku University, Sendai, Japan, in 1951 and 1962, respectively.

In 1951 he joined the Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation (N.T.T.), Tokyo, Japan. His special fields of interest include electroacoustic transducers, ultrasonics and its application, and microwave devices. He is currently chief of Second Research Section, Research Division, Musashino Electrical Communication Laboratory, N.T.T. His work has included the study of electroacoustic transducers, sonics, ultrasonics, and the development of surface acoustic waves devices. Since April 1980 he has been a Professor of the Electric and Electronics Systems Engineering Course at the Technological University of Nagaoka, Nagaoka, Niigata.

Dr. Yoshikawa is a member of the Acoustical Society of America, the Institute of Electronics and Communication Engineers of Japan, the Acoustical Society of Japan, and the Japan Society of Applied Physics. He received the Satoh Memorial Paper Awards in 1965, 1973, and 1980, respectively, from the Acoustical Society of Japan. He is currently the vice president of the Acoustical C Society of Japan.