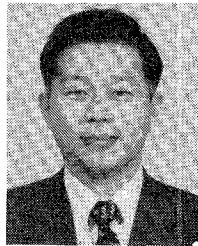


Contributors



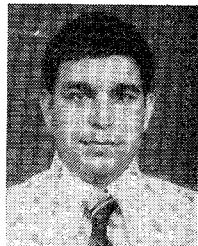
Masayoshi Aikawa (M'78) was born in Saga, Japan, on October 16, 1946. He received the B.S. and M.S. degrees in electrical engineering from the Kyushu University, Fukuoka, Japan, in 1969 and 1971, respectively.

He joined the Electrical Communication Laboratory, Nippon Telegraph and Telephone (NTT) Public Corporation, Tokyo, Japan, in 1971, and has since been engaged in researching and developing microwave-integrated-circuits for radio communication systems. He is now a staff engineer of the Yokosuka Electrical Communication Laboratory, N.T.T. Public Corporation, Yokosuka-shi, Japan. Recently, his major efforts have been directed toward millimeter-integrated circuits.

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



Reinhard D. Baars (S'58-M'59) photograph and biography not available at the time of publication.



I. J. Bahl was born in Sham Chaurasi, Punjab, India, on January 27, 1944. He received the M.Sc. degree in physics and M.Sc. (Tech.) degree in electronics from the Birla Institute of Technology and Science, Pilani, India, in 1967 and 1969, respectively. In 1975, he received Ph.D. degree in electrical engineering from the Indian Institute of Technology (IIT), Kanpur, India.

From 1969 to 1970, he worked in Tropo Scatter Communication Project, in the Department of Electrical Engineering at IIT, Kanpur. During 1971 to 1974, he was Senior Research Assistant in the same department. From 1974 to 1978 he was with the Advanced Centre for Electronic Systems, IIT, Kanpur, as a Research Engineer, where he was engaged in research on p-i-n diode phase shifters, microwave integrated circuits, printed antennas, phased-array radar, and industrial applications of microwaves. In January 1979, he joined the Department of Electrical Engineering, University of Ottawa, Ottawa, Ont., Canada, as a Post-Doctoral Fellow, where he is presently Research Associate. He is now working on microwaves in biological systems, microwave and millimeter-wave integrated circuits and millimeter-wave antennas. He coauthored the book *Microstrip Lines and Slotlines* (Dedham, MA: Artech House, 1979).



Michio Akiyama was born in Mito, Japan, on January 21, 1951. He received the B.S. and M.S. degrees in electrical engineering from Yokohama National University, Yokohama, Japan, in 1973 and 1975, respectively.

He joined the Fujikura Cable Works, Ltd. in 1975, where he is working on research and development on optical fibers.

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



Harry A. Atwater (S'46-SM'59) was born in Boston, MA, in 1921. He received the B.Sc. degree from Tufts University, Medford, MA, in 1940 and the M.Sc. and Ph.D. degrees from Harvard University, Cambridge, MA, in 1941 and 1956, respectively.

From 1956 to 1959 he taught physics at the University of Oregon. From 1959 to 1978 he was with the Pennsylvania State University, teaching and conducting research in the Department of Electrical Engineering and Physics, successively.

Since 1978 he has been with the M.I.T. Lincoln Laboratory, Lexington, MA, in the Experimental Systems Group.



David T. Auckland (S'78) was born in Seattle, WA, on June 21, 1949. He received the B.S. degree in electrical engineering from the University of Washington, Seattle, in June 1971. In 1974 he entered the Graduate School at Syracuse University, Syracuse, NY, received the M.S. degree in electrical engineering in 1976, and the Ph.D. degree in 1979.

He spent three years in the U.S. Army at Aberdeen Proving Ground, MD, developing test procedures for various types of mine detectors and electrooptical equipment. He is presently at Syracuse University engaged in research developing numerical solutions to electromagnetic field problems in the areas of scattering and transmission through apertures.



Prakash Bhartia (S'68-M'71-SM'76) was born in Calcutta, India, in 1944. He received the B.Tech (Hons) degree in electrical engineering from the Indian Institute of Technology, Bombay, in 1966 and the M.Sc. and Ph.D. degrees from the University of Manitoba, Winnipeg, Canada, in 1968 and 1971, respectively.

From 1971 to 1973 he was a Research Associate at the University of Manitoba and joined the faculty of Engineering at the University of Regina, Regina, Canada, in 1973. In 1977 he moved to the Defence Research Establishment, Ottawa and was simultaneously appointed a Non-Resident Professor at the University of Ottawa. He has conducted research in both theoretical and applied electromagnetics, scattering, diffraction etc. and is currently working in the area of radio, satellite and inertial navigation.

Dr. Bhartia is a member of The Institution of Electrical Engineers, The International Microwave Powers Institute, Professional Engineers in the Province of Saskatchewan and Commission B of URSI. He is on the Editorial Board of MTT and an Associate Editor for the *Journal of Microwave Power*.



Bharathi Bhat received the B.E. degree in electrical communication engineering and the M.E. degree in electronics from the Indian Institute of Science, Bangalore, India, in 1963 and 1965, respectively. She continued her graduate studies at Harvard University, Cambridge, MA, and received the M.S. and Ph.D. degrees in applied physics in 1967 and 1971, respectively.

From 1971 to 1972, she worked as a Post-Doctoral Research Fellow in the Division of Engineering and Applied Physics, Harvard Uni-

versity. In 1973, she joined the Indian Institute of Technology (I.I.T.), New Delhi, India, as Assistant Professor. Since 1977, she has been a Professor and is currently the Head of the Centre for Applied Research in Electronics (CARE) at I.I.T., New Delhi. She is the leader of the Microwave Group in CARE and has been directing experimental research projects on microstrip and slotline components, monopulse antenna, and electronic phase shifters. Currently, she is also engaged in research and development in the areas of printed antennas and millimeter wave circuits, specifically inverted microstrip, fin-line and insular image guide components.



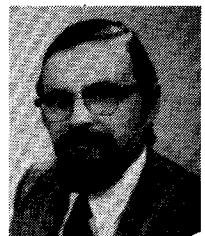
Ajoy Chakraborty, photograph and biography not available at the time of publication.



Edgar J. Denlinger (S'59-M'67) was born in Lancaster, PA, on June 17, 1939. He received the B.S. degree in engineering science from Pennsylvania State University, University Park, in 1961, and the M.S. and Ph.D. degrees in electrical engineering from the University of Pennsylvania, Philadelphia, in 1964 and 1969, respectively.

From 1961 to 1963, he was in the RCA Graduate Study Program while working in the RCA Applied Research Department, Camden, NJ. Until 1965, he was engaged in research on solid-state traveling wave masers, superconducting magnets and experimental transistors. From 1965 to 1967 he held a University of Pennsylvania Research Assistantship during which he did research on a bulk-effect oscillator. From 1967 to 1973 he was a Staff Member at Lincoln Laboratories, Massachusetts Institute of Technology, Lexington, working in the areas of microwave integrated circuits, phased array antennas and air traffic control. Since April 1973, he has been a Member of the Technical Staff at RCA Laboratories, Princeton, NJ, engaged in research on millimeter-wave avalanche diodes, microwave integrated circuits, p-i-n and mixer diodes, low-noise receivers, and avalanche diode amplifiers.

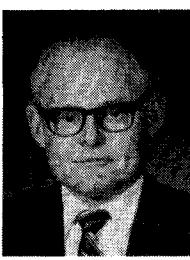
Dr. Denlinger is a member of Sigma Xi, Tau Beta Pi, Sigma Tau, and Phi Kappa Phi. He is on the Editorial Board for the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, and Chairman of the Princeton Chapter of the IEEE MTT/ED Group.



Pietro de Santis was born in Rome, Italy, on November 24, 1937. He received the "Dottore in Ingegneria Elettronica" degree with the highest honors from the University of Rome, Rome, Italy, in 1962, and the M.S. degree in electrophysics from the Polytechnic Institute of Brooklyn, Brooklyn, NY, in 1965. In 1971 he received the Libera Docenza in electromagnetic fields and circuits.

In 1962 he joined the Research Department of Selenia, S.p.A., Rome, where he was engaged in research work on microwave plasmas and ferrites. Since 1969, he has been Professor Incaricato of Microwaves at the University of Naples, Naples, Italy. From 1976 to 1977 he was a Visiting Professor at the Naval Research Laboratories, Washington, DC.

Dr. de Santis is a member of the Associazione Elettrotecnica Italiana, and a corresponding member of the SMAG/TCHFM. He was the representative to the Management Committee of the European Microwave Conference in 1976.



Elmer Freibergs (S'57-M'59) received the B.S. degree in electrical engineering from Drexel University, Philadelphia, PA, in 1958, the M.S. degree in electrical engineering from the Polytechnic Institute of Brooklyn, Brooklyn, NY, in 1973, and the M.S. degree in management science from Fairleigh Dickinson University, Teaneck, NJ, in 1978.

Since 1973 he has been engaged in applied research and development of microwave and millimeter-wave signal control devices and subsystems with the U.S. Army Electronics Research and Development Command, Fort Monmouth, NJ.



Osamu Fukuda was born in Tokyo, Japan, in 1942. He received the B. S. and M. S. degrees in electrical engineering from Yokohama National University, Yokohama, Japan, in 1967 and 1969, respectively.

He joined in the Fujikura Cable Works, Ltd., Sakura, Chiba, Japan, in 1969, and has been engaged in research and development of pair cables, coaxial and leaky coaxial cables, and optical fibers.

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



Lucian Gruner (M'57) received the B.E. degree in electrical engineering with honors from the University of New Zealand, Christchurch, New Zealand, in 1953, the degree of Master of Engineering from the University of New South Wales, Sydney, Australia, in 1963, and a Ph.D. from Monash University, Clayton, Victoria, Australia, in 1968.

In 1953, he joined the staff of Standard Telephones and Cables Pty. Ltd. in Liverpool, N.S.W., Australia; from 1956 to 1958 he was with the Canadian Marconi Co. in Montreal, Canada, and from 1958 until 1959 he was with Standard Telephones and Cables Ltd. in London, England, continuing to work on the design of microwave radio relay link equipment. In 1960 he joined the Radiophysics Division of CSIRO in Sydney, Australia, participating in the design of microwave equipment used on the Parkes radiotelescope. Since 1963, he has been at Monash University, where he is a Senior Lecturer in the Department of Electrical Engineering. During 1969-1970, during his study leave, he was with the Department of Electrical Engineering of the Imperial College of Science and Technology in London, England, and in addition spent four months

with the Post Office Research Department, Dollis Hill, London. During 1974-1975, he was a Visiting Professor at the Federal Institute of Technology in Zurich, Switzerland and again in 1977-1978 held Visiting Professorships at the Federal Institute of Technology in Lausanne, Switzerland, as well as the Federal Institute of Technology in Zurich, Switzerland. His main research interests are in the fields of microwaves and circuit theory.

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Elmer H. Hara (S'67-M'68) was born in Vancouver, B.C., Canada, in 1933. After graduating from Seiryo High School, Kobe, Japan, in 1952, he attended the University of British Columbia, Vancouver, B.C., Canada, and received the B.Sc. (Honours) and M.Sc. degrees in physics in 1959 and 1960. During the period of 1963 to 1968, he attended the University of Toronto, Toronto, Ont., Canada, on a Defence Research Board Scholarship and received his Ph.D. in physics in 1970.

He joined the Defence Research Telecommunications Establishment, the present Communications Research Centre, Department of Communications, Canada in 1960. At present, he is engaged in optical communications research with particular interest in the development of centrally switched systems for integrated delivery of subscriber services. He is currently spending a year at the NTT Yokosuka Electrical Communication Laboratory in Japan as an Exchange Scientist.

Dr. Hara is a member of the Canadian Association of Physicists, the Institute of Electronics and Communications Engineers of Japan.

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Roger F. Harrington (S'48-A'53-M'57-SM'62-F'68) was born in Buffalo, NY, on December 24, 1925. He received the B.E.E. and M.E.E. degrees from Syracuse University, Syracuse, NY, in 1948 and 1950, respectively, and the Ph.D. degree from Ohio State University, Columbus, in 1952.

From 1945 to 1946 he served as an Instructor at the U.S. Naval Radio Material School, Dearborn, MI, and from 1948 to 1950 he was employed as an Instructor and Research Assistant at Syracuse University. While studying at Ohio State University, he served as a Research Fellow in the Antenna Laboratory. Since 1952 he has been on the faculty of Syracuse University, where he is presently Professor of Electrical Engineering. During 1959-1960 he was Visiting Associate Professor at the University of Illinois, Urbana, in 1964 he was Visiting Professor at the University of California Berkeley, and in 1969 he was Guest Professor at the Technical University of Denmark, Lyngby, Denmark.

Dr. Harrington is a member of Tau Beta Pi, Sigma Xi, and the American Association of University Professors.

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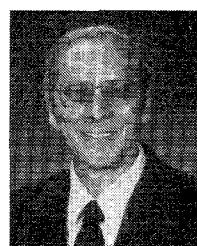
Joseph Helszajn (M'64) was born in Brussels, Belgium, in 1934. He received the Full Technological Certificate of the City and Guilds of London Institute from Northern Polytechnic, London, England, in 1955, the M. S. E. E. degree from the University of Santa Clara, Santa Clara, CA, in 1964, the Ph. D. degree from the University of Leeds, Leeds, England, in 1969, and the D.Sc. degree from Heriot-Watt University, Edinburgh, Scotland, in 1976.

He has held a number of positions in the

microwave industry. From 1964 to 1966, he was Product Line Manager at Microwave Associates, Inc., Burlington, MA. He is currently a Reader at Heriot-Watt University. He is the author of the books *Principles of Microwave Ferrite Engineering* (New York: Wiley, 1969), *Nonreciprocal Microwave Junctions and Circulators* (New York: Wiley, 1975), and *Passive and Active Microwave Circuits* (New York: Wiley, 1978).

Dr. Helszajn is a fellow of the Institution of Electronic and Radio Engineers (England). In 1968, he was awarded the Insignia Award of the City and Guilds of London Institute.

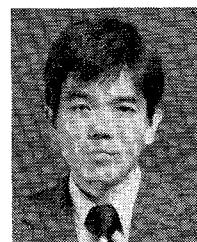
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Robert E. Horn (S'62-M'63) was born in New Philadelphia, OH. He received the B.S. degree from Monmouth College, West Long Branch, NJ, in 1962, and the M.S. degree in electrical engineering from Newark College of Engineering, Newark, NJ, in 1966.

Since 1967 he has been engaged in solid-state and millimeter-wave research and development with the U.S. Army Electronics Research and Development Command at Fort Monmouth, NJ.

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Masayuki Ino was born in Aichi, Japan, on July 22, 1948. He received the B.S. degree in electronic engineering from Nagoya Institute of Technology, Nagoya, Japan, in 1971.

Since joining the Electrical Communication Laboratory, Nippon Telegraph and Telephone (NTT) Public Corporation, Tokyo, Japan, in 1971, he has been engaged in the research works on millimeter-wave IMPATT diodes.

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

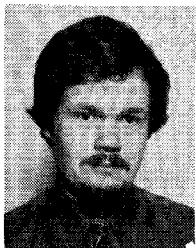
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Harold Jacobs (SM'59-F'68) was born in Port Chester, NY, on November 21, 1917. He received the B.A. degree from the John Hopkins University, Baltimore, MD, and the M.S. and Ph.D. degrees from New York University, New York, NY.

He joined the U.S. Army Signal Corps Laboratory at Ft. Monmouth, NJ, in 1949, with previous experience at RCA Mgn. Company, Lancaster, PA, and Sylvania Electric Products, Kew Gardens, NY. He has worked in the areas of electron tubes, solid-state devices, lasers, and microwave and millimeter-wave devices. He is currently employed with the U.S. Army Electronics Research and Development Command at Fort Monmouth, and teaches electronic engineering at Monmouth College, West Long Branch, NJ.

He received the IEEE Fellow Award in 1967 for his semiconductor devices contributions and the Army's decoration for Exceptional Civilian Service in 1969 for millimeter-wave imaging investigations. In 1973 he was the recipient of the IEEE's Harry Diamond Award for identification of bulk semiconductor effects at millimeter waves with applications to imaging and surveillance.



Kari T. Jokela (A'77) was born in Helsinki, Finland, on November 11, 1949. He received the Dipl. Eng. degree in 1974 and the Lic. Tech. degree in 1977 from Helsinki University of Technology, Helsinki, Finland.

From 1973 to 1977 he was as a research assistant in the Radio Laboratory, Helsinki University of Technology, working with microwave filters and microwave measurement applications. Since 1977 he has been engaged in the control of nonionizing radiation in the Institute of Radiation Protection, Finland.

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Yasuyuki Kato was born in Yamagata Prefecture, Japan, on July 20, 1954. He received the B. S. degree in electrical engineering from the University of Yamagata, Yamagata, Japan, in 1977.

In 1977 he joined the Ibaraki Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Tokai, Ibaraki, Japan. His current interest is in the transmission characteristics of low-order mode optical fiber cables.

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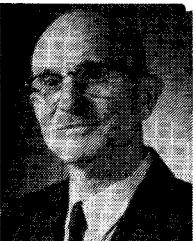
M. M. Z. Kharadly received the B.Sc. degree in electrical engineering from Cairo University, Cairo, Egypt, in 1948, and the Ph.D. degree from the University of London (Imperial College), London, England, in 1953.

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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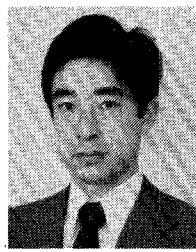
Ronald W. P. King (A'30-SM'43-F'53-LF'71) was born in Williamstown, MA, on September 19, 1905. He received the B.A. and M.S. degrees in physics from the University of Rochester, Rochester, NY, in 1927 and 1929, respectively, and the Ph.D. degree from the University of Wisconsin, Madison, in 1932, after having done graduate work at the University of Munich, Munich, Germany, and at Cornell University, Ithaca, NY.

He served as a Teaching and Research Assistant at the University of Wisconsin from 1932 to 1934, and as an Instructor and Assistant Professor of Physics at Lafayette College, Easton, PA, from 1934 to 1937. During the academic year 1937-1938 he

was a Guggenheim Fellow in Germany. In 1938 he joined the faculty of Harvard University, Cambridge, MA.

Dr. King has been Gordon McKay Professor of Applied Physics at Harvard from 1946 to 1972, when he became Gordon McKay Professor of Applied Physics, Emeritus. He was again a Guggenheim Fellow in 1958. He is a fellow of the American Physical Society and the American Academy of Arts and Sciences, a corresponding member of the Bavarian Academy of Sciences, and a member of the American Association of University Professors, the American Association for the Advancement of Science, Commission 6 of the International Scientific Radio Union, Phi Beta Kappa, and Sigma Xi.

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Ken-Ichi Kitayama (S'75-M'76) was born in Kobe, Japan, on October 28, 1950. He received the B. E. and M. E. degrees in communication engineering from Osaka University, Osaka, Japan, in 1974 and 1976, respectively.

In 1976 he joined the Ibaraki Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Tokai, Ibaraki, Japan, where he has been engaged in the research work of transmission characteristics of optical fiber cables. His current interests are on the graded index fiber, single-mode, and two-mode fibers.

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

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Kenneth L. Klohn (M'68) was born in Milwaukee, WI, on May 30, 1935. He received the B.S. degree in chemical engineering from the University of Wisconsin, Madison, in 1958, and the M.S. degree in Physics from Monmouth College, West Long Branch, NJ, in 1970.

After serving two years in the U.S. Army Signal Corps as a First Lieutenant, he joined the U.S. Army Electronics Laboratories, Fort Monmouth, NJ, in 1960. Since that time he has been engaged in research and development programs involving semiconductor lasers and microwave and millimeter-wave devices and associated technology. He is presently with the Electronics Technology and Devices Laboratory of the Electronics Research and Development Command, Fort Monmouth, NJ.

Mr. Klohn is a member of Sigma Pi Sigma.

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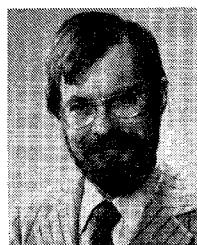


Nobuaki Kumagai (M'59-SM'72) was born in Ryojun, Japan, on May 19, 1929. He received the B. Eng. and D. Eng. degrees both from Osaka University, Osaka, Japan, in 1953 and 1959, respectively.

From 1958 to 1960 he was a Visiting Senior Research Fellow at the Electronics Research Laboratory of the University of California, Berkeley, where he was engaged in research on electromagnetic wave scattering and parametric amplifiers. From 1960 to 1970, he was an Associate Professor of Communication Engineering at Osaka University. In 1966, he was invited to the 11th G-MTT International Symposium as an invited speaker. Since 1971, he has been a Professor of Communica-

tion Engineering at Osaka University, Osaka, Japan, where he is engaged in research and education in electromagnetic theory, microwave and millimeter-wave engineering, optical waveguides and devices, and lasers and their applications. He is president of the Microwave Theory and Techniques Society of the Institute of Electronics and Communication Engineers of Japan. He is the coauthor of *Microwave Circuits* (OHM-sha, Tokyo, 1963) and *Introduction to Relativistic Electromagnetic Field Theory* (Corona Publishing Company, Tokyo, 1971).

Dr. Kumagai is a member of the Institute of Electronics and Communication Engineers of Japan, the Institute of Electrical Engineers of Japan, the Japan Society of Applied Physics, and the Physical Society of Japan.



R. Ian MacDonald was born in Marlborough, England, in 1943. He received the B.Sc. degree in engineering physics from Queen's University, Kingston, Ont., Canada, in 1965, and the M.Sc. and Ph.D. degrees in electrical engineering from Carleton University, Ottawa, Ont., Canada, in the fields of holography and of guided-wave optics, respectively. He joined the Northern Electric Research and Development Laboratories in 1965 to work on microcircuits. He subsequently held positions at Microsystems Interna-

tional and the research laboratories of the Societa Generale Semiconduttori in Milan, Italy and also served as Observatory Engineer at the Churchill Research Range. He joined the Communications Research Centre, Department of Communications, to work on optical communications systems and devices following the completion of his Ph.D. degree.

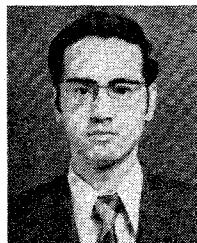
Dr. MacDonald is a member of the Association of Professional Engineers of Ontario and of the Optical Society of America.



Osamu Kurita (M'78) was born in Shizuoka, Japan, on June 22, 1942. He received the B.S. degree from Shizuoka University, Shizuoka, in 1968, and the M.S. and Ph.D. degrees from Tokyo University, Tokyo, Japan, in 1970 and 1973, respectively.

He joined the Yokosuka Electrical Communication Laboratory, NTT, Japan, in 1973. He was engaged in research on microwave and millimeter-wave circuits and components, such as Gunn and IMPATT diode amplifier, oscillator, FET mixer, and direct phase regenerator using FET. He is currently responsible for research and development of the digital radio transmission system above 20 GHz as Staff Engineer in the Radio Transmission Section, Trunk Transmission System Development Division, Yokosuka Electrical Communication Laboratory, NTT.

Dr. Kurita is a member of the Institute of Electronics and Communication Engineers of Japan.



Takashi Makimura was born in Tokyo, Japan, on October 6, 1950. He graduated from Karasuyama Technical High School in 1969.

In 1969, he joined the Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Musashino, Japan, where he has been engaged in the research of millimeter-wave and submillimeter-wave diodes.

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



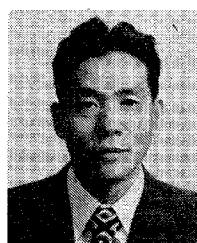
Patricio A. A. Laura was born on June 13, 1935, in Lincoln, Buenos Aires Province, Argentina. He received the Civil Engineer degree from the University of Buenos Aires, in 1959, and the Ph.D. degree in applied mechanics and mathematics from The Catholic University of America (C.U.A.), Washington, DC, in 1965.

He was appointed Associate Professor of Mechanical Engineering at C.U.A. in 1965 and Ordinary Professor in 1969. He was Consultant on a part time basis from 1963 to 1968 to the

U.S. Bureau of Mines and from 1965 to 1970 to the Structural Acoustics Branch of the David Taylor Model Basin of the U.S. Navy. He has published over 100 papers on vibrations of structural elements, diffusion problems, dynamics of cable systems and eigenvalue problems in acoustical and electromagnetic waveguides. He founded the Instituto de Mecánica Aplicada at the Naval Base of Puerto Belgrano, Argentina in 1975, where research and development on mechanical vibrations and applied bioengineering is conducted.

Dr. Laura is a member of Sigma Xi, Tau Beta Pi and Phi Kappa Theta. He is a Fellow of the American Academy of Mechanics and of the Acoustical Society of America.

Mitsunobu Miyagi, for a photograph and biography please see page 438 of the April 1980 issue of this TRANSACTIONS.

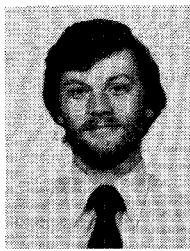


Kosuke Nagaya was born in Wakkanai, Japan, on April 2, 1942. He received the B.S. degree from Yamagata University, Yonezawa, Japan, and the M.S. and Dr. Eng. degrees from Tohoku University, Sendai, Japan, all in mechanical engineering, in 1967, 1969 and 1972, respectively.

From 1972 to 1977 he was a Lecturer on the Faculty of Engineering Science, Yamagata University. Since 1977 he has been with the same university as an Associate Professor of the Department of Mechanical Engineering. His research work since 1967 has been on wave propagation, vibration and shock problems in the fields of mechanical and electronic engineering sciences.

Dr. Nagaya is a member of the Institute of Applied Physics of Japan and the Japan Society of Mechanical Engineers.

Ralph Levy (SM'64-F'73), for photograph and biography please see page 437 of the April issue of this TRANSACTIONS.



W. Terence Nisbet (S'78-M'79) was born in St. Andrews, Scotland, on October 25, 1954. In 1976, he received the B. Sc. degree in electrical and electronic engineering from Heriot-Watt University, Edinburgh, Scotland, where he is currently pursuing the Ph. D. degree.

His research interest include ferrite junction circulators at high- and low-signal levels and microstrip circuits. He is the coauthor of *Micro-wave Transistor Amplifier Design in Active and Passive Microwave Circuits* (New York: Wiley, 1978) with J. Helszajn.

Mr. Nisbet was awarded the First Degree Prize by the Institute of Electrical Engineers (London) in 1976.



Sheila Prasad was born in Bangalore, India. She received her B.Sc. from the University of Mysore, Mysore, India, and the S.M. and Ph.D. degrees in applied physics from Harvard University Cambridge, MA.

She has been a Research Fellow in Applied Physics at Harvard University, and Assistant and Associate Professor of Electrical Engineering at New Mexico State University, Las Cruces, NM. She has also been on the faculty at the American University, Cairo, Egypt; Birla Institute of Technology, Pilani, India; and the University of Riyadh, Riyadh, Saudi Arabia. She is currently Associate Professor of Electrical Engineering at Northeastern University, Boston, MA.

Dr. Prasad is a member of Sigma Xi.

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Shigeo Nishida (SM'59) for a photograph and biography please see page 438 of the April 1980 issue of this TRANSACTIONS.

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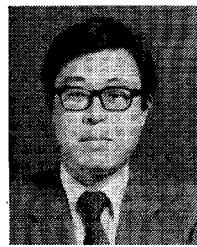


Hiroyo Ogawa was born in Sapporo, Japan, in 1951. He received the B.S. and M.S. degrees in electrical engineering from Hokkaido University, Sapporo, Japan, in 1974 and 1976, respectively.

He joined Yokosuka Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, in 1976, and has been engaged in the research of microwave integrated circuits. He is presently engaged in the research of millimeter-wave integrated circuits.

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

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Masamichi Ohmori (M'77) was born in Ibaragi, Japan, on March 28, 1941. He received the B.S., M.S., and Ph.D. degrees in electronic engineering from Tohoku University, Sendai, Japan, in 1963, 1965, and 1976, respectively.

Since joining the Electrical Communication Laboratory, Nippon Telegraph and Telephone (NTT) Public Corporation, Tokyo, Japan, in 1965, he has been engaged in the research works on millimeter-wave IMPATT diodes and frequency multipliers, and GaAs logic circuits.

He is currently a Staff Engineer of the Semiconductor Device Section, Musashino Electrical Communication Laboratory, NTT.

Dr. Ohmori is a member of the Institute of Electronics and Communication Engineers of Japan, and the Japan Society of Applied Physics.



Adel A. M. Saleh (M'70-SM'76) was born in Alexandria, Egypt, on July 8, 1942. He received the B.Sc. degree in electrical engineering from the University of Alexandria, Alexandria, Egypt, in 1963, and the M.S. and Ph.D. degrees in electrical engineering from the Massachusetts Institute of Technology, Cambridge, in 1967 and 1970, respectively.

From 1963 to 1965 he worked as an Instructor at the University of Alexandria. In 1970, he joined Bell Laboratories, Holmdel, NJ, where he is engaged in research on microwave circuits, components and systems. His main interest is in the areas of power combiners, FET power amplifiers, quasi-optical components, and microwave mixers.

Dr. Saleh is a Member of Sigma Xi.

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Barbara H. Sandler received the A.B. degree in music from Indiana University, Bloomington, IN, in 1953 and the M.S. degree in applied mathematics from Radcliffe College, Cambridge, MA, in 1958.

From 1953 to 1956, she was employed by the Dow Chemical Company, and was a Staff Member at the M.I.T. Instrumentation Laboratory, Cambridge, MA, from 1957 to 1958. From 1964 to 1965 she worked on numerical methods at the Institut fur Angewandte Mathematik at the Eidgenossische Technische Hochschule, Zurich, Switzerland, and from 1969 to 1970 she worked on computerized crystallographic reconstructions at the M.R.C. Laboratory for Molecular Biology, Cambridge, England. From 1967 to 1969 and since 1971, she has been employed by the Electromagnetic Theory Group at Harvard University, Cambridge, MA, to work on various antenna and scattering problems, especially in the area of the numerical evaluation of integrals and, in particular, those of the Sommerfeld type.

Ms. Sandler was awarded a Fellowship by the Radcliffe Institute in 1967 and is a member of Sigma Xi.

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Gitindra S. Sanyal, photograph and biography not available at the time of publication.



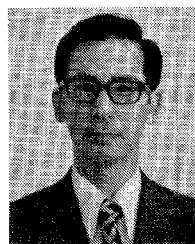
Gustavo Sanchez Sarmiento was born on January 10, 1947, in Córdoba, Argentina. In 1973 he graduated as "Licenciado en Física" in the "Instituto Balseiro", San Carlos de Bariloche, Argentina.

Since 1974 he has worked in the Centro Atómico Bariloche, Comisión Nacional de Energía Atómica, Argentina, and taught in the Instituto Balseiro. His present line of work deals in mathematical modeling of thermomechanical behavior of materials, and numerical treatment of heat transfer and vibrations problems, using mainly the finite element method. He has been a reviewer of the *Applied Mechanics Reviews* since 1978, and he is a member of the Editorial Board of the *International Journal of Structural Mechanics and Material Science (RES MECHANICA)*, published in the United Kingdom.

wave region. He is currently engaged in research and development of mobile radio transmission systems.

Mr. Suzuki is a member of the Institute of Electronics and Communications Engineers (IECE) of Japan.

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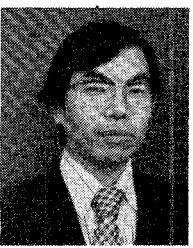


Akio Takaoka was born in Osaka, Japan, on November 13, 1943. He received the B.E., M.E. and D.E. degrees in electronic engineering from Osaka University, Osaka, Japan, in 1966, 1968 and 1973, respectively.

Since April 1971, he has been a Research Associate at the Electron Beam Laboratory of Osaka University, Osaka, Japan. He is engaged in research on superconducting LINAC and stroboscopic electron microscopy.

Dr. Takaoka is a member of the Institute of Electronics and Communication Engineers of Japan and Japanese Society of Electron Microscopy.

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Shigeyuki Seikai was born in Nara, Japan, on September 19, 1945. He received the B. Eng., M. Eng., and Ph. D. degrees in communication engineering from Osaka University, Osaka, Japan, in 1969, 1971, and 1974, respectively.

After he joined the Ibaraki Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Tokai, Ibaraki, Japan, in 1974, he was engaged in developmental research on millimeter-waveguide line. Since 1976, he has been working on design of optical fiber and cable. He is also working on optical fiber splice. Since November 1979, he has been with Heinrich Hertz Institut, Berlin, B. R. D.

Dr. Seikai is a member of the Institute of Electronics and Communication Engineers of Japan.

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Makoto Tsutsumi (M'71) was born in Tokyo, Japan, on February 25, 1937. He received the B.S. degree in electrical engineering from Ritsumeikan University, Kyoto, in 1961, and the M.S. and Ph.D. degrees in electrical communication engineering from Osaka University, Osaka, Japan, in 1963 and 1971, respectively.

Since 1964 he has been working as a Research Associate at the Department of Electrical Communication Engineering, Osaka University. At present he is a Lecturer in the Department of Electrical Communication Engineering. His current research areas include elastic, magnetoelastic, and magnetostatic surface wave devices for signal processing.

Dr. Tsutsumi is a member of the Institute of Electronics and Communication Engineers of Japan and the Japan Society of Applied Physics.

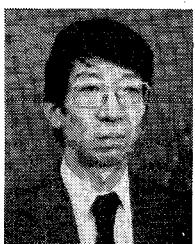
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Arvind K. Sharma (S'74) was born in Jodhpur, Rajasthan, India, on December 4, 1951. He received the B.E. (Hons.) degree in electronics from Birla Institute of Technology and Science, Pilani, Rajasthan, in 1973, the M.Tech. degree in electronics and communication engineering from Indian Institute of Technology, New Delhi, India, in 1975, where he is presently pursuing the Ph.D. degree in electrical engineering.

His areas of research interest include microwave and millimeter-wave integrated circuits and analytical and numerical methods in electromagnetics. He received the best paper award in the Student Paper Contest organized by the IEEE India Section in 1975. He was awarded the IEEE Outstanding Student Member Award in 1975.

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Naoya Uchida was born in Nishinomiya, Japan, on May 1, 1939. He received the B. S. degree in electronics engineering from Kyoto University, Kyoto, Japan, in 1962. He received the Ph. D. degree from the University of Tokyo, Tokyo, Japan, on acoustooptic light deflector using TeO_2 , operating in the frequency region from several tens to several hundreds of megahertz with resolvable spot numbers as large as 1000.

In 1963 he joined the Musashino Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan, where he studied the physical properties of ferroelectric ceramics until 1967. Since 1968 he has been engaged in research on optical devices such as the laser beam deflector and waveguide modulator using acoustooptic and electrooptic effects in dielectric crystals. Since 1976, he has been engaged in developmental study on optical fiber cable telecommunication systems, in Ibaraki Electrical Communication Laboratory, Tokai, Ibaraki, Japan. He is currently Director of Optical Transmission Line Section, Outside



Hiroshi Suzuki (M'78) was born in Tokyo, Japan, on October 4, 1949. He received the B.S. and M.S. degrees in electronics engineering from Tokyo Institute of Technology, Tokyo, Japan, in 1972 and 1974, respectively.

He has been with Yokosuka Electrical Communication Laboratory, Nippon Telegraph and Telephone (NTT) Public Corporation, Kanagawa, Japan, in 1974, where he has been engaged in the research works on amplifiers and oscillators in the microwave and millimeter-

Plant Development Division, Ibaraki ECL, and is responsible for optical cable, splice, installation, measurement and so on for trunk-line optical transmission systems.

Dr. Uchida is a member of the Institute of Electronics and Communication Engineers of Japan and the Japan Society of Applied Physics.

Dr. Ura is a member of the Institute of Electronics and Communication Engineers of Japan, the Japan Society of Applied Physics, and Japanese Society of Electron Microscopy. He received the Okabe Memorial Award from the Institute of Electrical communication Engineers of Japan in 1962.



Katsumi Ura (M'58) was born in Kyoto Prefecture, Japan, on April 1, 1930. He received the B.E. and D.E. degrees in electrical communication engineering from Osaka University, Osaka, Japan, in 1953 and 1962.

He was a Research Associate at Osaka University from 1958 to 1962, and engaged in research on beam-type microwave tubes and electron beams. He was an Associate Professor of Electronic Engineering at Osaka University from 1962 to 1965, and is now a Professor at the Electron Beam Laboratory of Osaka University. He is engaged in research on stroboscopic electron microscopy and improvement of 3-MV electron microscope.



Kazuyuki Yamamoto (M'76) was born in Kyoto, Japan, on July 13, 1946. He received the B.S. and M.S. degrees in electrical engineering, both from the University of Kyoto, Kyoto, Japan, in 1969 and 1971, respectively.

Since joining the Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan, in 1971, he has been engaged in the research of filters, solid state circuits, and transmission lines for millimeter and submillimeter wavelengths. He is currently a Staff Engineer of the Radio Transmission Section, Trunk Transmission System Development Division, Yokosuka Electrical Communication Laboratory, NTT.

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