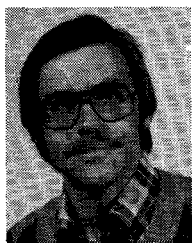


# Contributors



**Bernd Adelseck** was born in Düsseldorf, Federal Republic of Germany, on October 23, 1949. He received the Dipl.-Ing. degree in electrical engineering in 1976 from the Technische Hochschule, Aachen, Federal Republic of Germany.

In 1976 he joined the AEG-Telefunken Co., Ulm, Federal Republic of Germany. He is developing on micro- and millimeterwave integrated circuits and components, especially in planar and quasiplanar waveguiding structures.



**B. Mervyn Armstrong (M'79)** was born in Belfast, Northern Ireland, in December 1947. He received the B.Sc. and Ph.D. degrees in electronic engineering from The Queen's University of Belfast, in 1969 and 1973, respectively, the latter for work on the fabrication and performance of metal-silicon microwave diodes.

He is currently a Senior Research Officer in the Department of Electrical and Electronic Engineering at Queen's University where his research interests have lately been concerned with

techniques for implementing very-short-gate MOS transistors for VLSI digital circuits.

Dr. Armstrong is a member of the Institute of Physics, London, England.



**Mitsuaki Ashiki** was born in Aichi, Japan, on January 2, 1952. He graduated from the Junior College of Engineering, Shizuoka University, Hamamatsu, Japan, in 1973.

In 1970 he joined the Research Institute of Electronics, Shizuoka University, Hamamatsu, Japan. Since then he has been engaged in the development of microwave components and measuring instruments.



**I. J. Bahl**, for a photograph and biography please see page 154 of the February 1980 issue of this TRANSACTIONS.



**J. Mark Baird (M'69)** was born in Murrumbidgee, UT on June 4, 1936. He received both the B.S. degree in 1964 and the Ph.D. in 1970 in electrical engineering from the University of Utah, Salt Lake City.

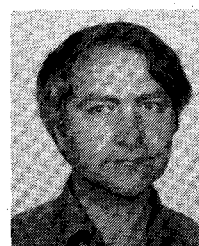
Since graduation, he has engaged in research and development of microwave and millimeter-wave tubes and components at Hughes Research Laboratories, Malibu, CA, and at B-K Dynamics, Inc., Rockville, MD. He is presently conducting research on high-power millimeter-wave gyrotron amplifiers and related devices. He is a Research Director at B-K Dynamics, Inc., a Washington based R & D consulting firm.



**Larry R. Barnett (M'78)** received the B. S. degree in electrical engineering from Tennessee Technological University, Cookeville, in 1972, and the M.S. and Ph.D. degrees in electrical engineering from the University of Tennessee, Knoxville, in 1975 and 1978, respectively.

He became a Research Associate with the National Research Council at the Naval Research Laboratory, Washington DC, and engaged in experimental research on gyrotron traveling-wave amplifiers. In 1979 he joined B-K

Dynamics, Inc. of Rockville, MD and is continuing gyro-TWT research under contract to the Naval Research Laboratory.



**Alain G. Bert** was born in Marseille, France, on September 6, 1937. He received the degree of engineer from the Ecole Nationale Supérieure des Télécommunications in 1959, the M.S. degree from Stanford University, Stanford, CA, in 1960, and the "Docteur Ingénieur" degree from the Paris University, Orsay, France in 1964.

From 1964 to 1970 he was in charge of microwave power tube development with Thomson-Variation then Thomson-CSF. In 1970, he joined the Microwave Research Laboratory of the tube

division where he worked on nonlinear surface-wave microwave acoustic devices. He is now with the Microwave Microelectronic Department of the Thomson-CSF Microwave Component Division.



**Robert Brown** received a first class honors degree in electrical and electronic engineering from the Queen's University of Belfast in 1976.

He was employed for a short time by the University to work in collaboration with the Royal Victoria Hospital on computer-aided diagnosis and treatment of diabetes before returning to Queen's University to work towards the Ph.D. degree. He has been awarded Dunville and Foundation studentships. His main research interest is in the use of solid-state devices as

self-oscillating Doppler radars.



**Indira Chatterjee (S'78)** was born in Bangalore, India, on April 2, 1954. She received the B.Sc. (honors) and M.Sc. degrees in physics from Bangalore University, Bangalore, India, in 1973 and 1975, respectively, and the M.S. degree in physics from Case Western Reserve University, Cleveland, OH, in 1977.

Since 1977 she has been a graduate student in the Department of Electrical Engineering, University of Utah, Salt Lake City, where she is working towards the Ph.D. degree with emphasis on the interaction of electromagnetic radiation with biological systems.

Miss Chatterjee is a member of Phi Kappa Phi.

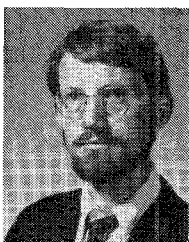


**Glenn F. Engen (SM'71)** was born in Battle Creek, MI, on April 26, 1925. He received the B.A. degree in physics and mathematics from Andrews University, Berrien Springs, MI, in 1947, and the Ph.D. degree in electrical engineering from the University of Colorado, Boulder, in 1969.

After employment with the U.S. Naval Ordnance Laboratory and Applied Physics Laboratory and The Johns Hopkins University, he joined the National Bureau of Standards, Boulder, CO, in 1954, where he is now Senior Research Scientist, Electromagnetics Division. His special field is microwave measurement standards and techniques. He is the author of numerous technical papers in the field of microwave measurements, and holds two patents.

Dr. Engen is a member of Commission I of the International Scientific Radio Union. In 1960 he was awarded the Department of Commerce Silver Medal for Meritorious Service.

+



**Arne W. Fliflet** was born in Aiken, SC in 1947. He received the B.S. degree in physics from Duke University, Durham, NC, in 1970, and the Ph.D. degree in physics from the University of Virginia, Charlottesville, in 1975. His thesis research was in atomic physics.

As a Research Fellow at the California Institute of Technology, Pasadena, from 1975 to 1979, he studied computational methods for electron-molecule collision processes. Since joining B-K Dynamics, Inc. in 1979 he has worked

on applications of intense relativistic electron beams and on the design of components for high-power microwave devices.

+

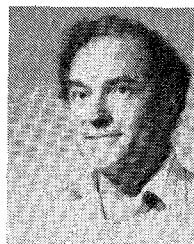


**Om P. Gandhi (S'57-M'58-SM'65-F'79)** received the B.Sc. (honors) degree in physics from Delhi University, Delhi, India, and the M.S.E. and Sc.D. degrees in electrical engineering from University of Michigan, Ann Arbor.

He is Professor of Electrical Engineering and Research Professor of Bioengineering at the University of Utah, Salt Lake City. He is an author or coauthor of one technical book and over 140 journal articles on microwave tubes, solid-state devices, and electromagnetic dosimetry, and is presently involved in writing a textbook, *Microwave Engineering and Applications*, to be published by Pergamon Press later this year.

He has done pioneering work in quantifying the electromagnetic absorption in man and animals including the whole-body and part-body resonance conditions—work that formed an important basis for the new ANSI C95 recommended safety level with respect to human exposure to RF fields. He has been a principal investigator on over a dozen federally funded research projects since 1970, and serves or has served as a Consultant to several government agencies and private industries.

Dr. Gandhi received the Distinguished Research award of the University of Utah for 1979–1980 and a special award for "Outstanding Technical Achievement" from the Institute of Electrical and Electronics Engineers, Utah Section, in 1975. He edited a PROCEEDINGS OF THE IEEE Special Issue (January 1980) on Biological Effects and Medical Applications of Electromagnetic Energy. In addition to his membership on numerous national professional committees, he is a member of the Board of Directors of the Bioelectromagnetics Society and serves on the Editorial Board of its journal "Bioelectromagnetics." He is currently serving as the Chairman of the Committee on Man and Radiation (COMAR). His name is listed in *Who's Who in Engineering* and *Who's Who in Technology Today*.

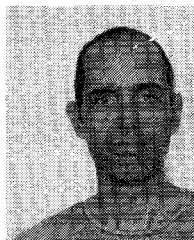


**Victor L. Granatstein** was born in Toronto, Ont., Canada, on February 8, 1935. He received the B.S. and Ph.D. degrees in electrical engineering from Columbia University, New York, NY, in 1960 and 1963, respectively.

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 of 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 of Jerusalem, Jerusalem, Israel. His current research interests include generation of ultra-high 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.

+



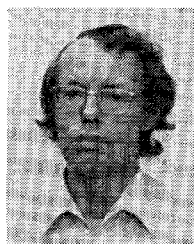
**Mark J. Hagmann (S'75-M'79)** was born in Philadelphia, PA, on February 14, 1939. He received the B.S. degree in physics from Brigham Young University, Provo, UT, in 1960, the M.Sci.Ed., and the Ph.D. degree in electrical engineering from the University of Utah, Salt Lake City, in 1966 and 1978, respectively. He did additional graduate studies in physics at Brigham Young University, Provo, during 1965–1967.

He worked as a Physics and Mathematics teacher during 1961–1964. During 1968–1975, he worked in the research and development of explosives for IRECO Chemicals, West Jordan, UT. He was a Research Associate in the Departments of Electrical Engineering and Bioengineering at the University of Utah from 1978 to 1980. He was recently appointed as a Research Assistant Professor of Electrical Engineering at the University of Utah where his main research interests are electromagnetics and microwave biological effects.

+

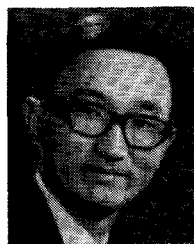
**Wolfgang J. R. Hoefer (M'71-SM'78)**, for a photograph and biography please see page 812 of the July 1980 issue of this TRANSACTIONS.

+



**Wolfgang Hoppe** was born in Stettin, Germany, on September 7, 1939. He received the Ing. grad. degree in physics 1968 from the Staatliche Ingenieurschule Lübeck, Lübeck, Germany.

Since 1969 he has been with the Philips Forschungslaboratorium Hamburg, Hamburg, Germany. As a member of the Microwave Application Group, he has mainly been engaged in developing microwave components and systems.



**Chia-lun J. Hu** received the B.S.E.E. degree from the National Taiwan University, Taipei, in 1958, the M.S.E.E. degree from the National Chiao-Tung University, Hsinchu, Taiwan, in 1960, and the Ph.D. degree from the University of Colorado, Boulder, in 1966.

From 1960 to 1963, he was an Engineer at the Broadcasting Corporation of China and, subsequently, an Instructor at the Chiao-Tung Graduate School. In 1963 he received a NASA-Chinese Government Scholarship to pursue his doctoral studies at the University of Colorado, Boulder. Since 1966, he has assumed various research and teaching positions at the University of Colorado, the Jet Propulsion Laboratory, and the Chiao-Tung University. He is currently a Professor at the Electrical Engineering Department, University of Colorado. His research interests include electro-optics, bioengineering, air pollutant detection, and microwave retortion of oil shale. He published twenty nine papers in these and other fields. He has been either a principal or a coprincipal investigator under five government grants supporting his research in these fields.

+

**Tatsuo Itoh** (S'69-M'69-SM'74), for a photograph and biography please see page 812 of the July 1980 issue of this TRANSACTIONS.

+



**Didier Kaminsky** was born in Paris, France, on March 26, 1946. He received the M.Sc. degree in 1967 and the Doctor's degree from the Paris VI University, Paris, in 1972.

In 1973, he joined the Microwave Research Laboratory of the Thomson-CSF electron tube division where he worked on multipactor in magnetrons. He is now with the Microwave Microelectronic Department of Thomson-CSF Component Division where he is working on solid-state combiner amplifiers.

+



**Gideon Kantor** (S'46-M'50-SM'69) received the B.E.E. degree from New York University, NY, in 1948, the M.E.E. degree from Polytechnic Institute of Brooklyn, NY, in 1950, and the Ph.D. in electrical engineering from Cornell University, Ithaca, NY, in 1963.

He is a Physicist at the Bureau of Radiological Health, Food and Drug Administration Bethesda, MD. His primary responsibility is to evaluate the safety and effectiveness of electronic products. Presently, he is providing technical support to the proposed microwave diathermy standard by studying the thermographic heating patterns and the associated leakage induced by direct contact applicators in simulated tissue. He is also involved in the evaluation of equipment used for microwave-induced

hyperthermia treatments of cancer. His previous experience includes being a member of Technical Staff at the MITRE Corporation, Senior Staff Scientist at the AVCO Corporation, Physicist at the Air Force Cambridge Laboratories, and Research Associate at the Microwave Research Institute, Polytechnic Institute of Brooklyn. The areas of interest were radar system studies and research in radiowave propagation as well as microwave components.

Dr. Kantor was Chairman of the Washington MTT-S Chapter during 1977-1978 and Member of the Steering and Technical Program Committees of the 1980 International Microwave Symposium. He is presently Treasurer of the IEEE Washington Section. He is a Member of the FDA Sigma Xi Club.

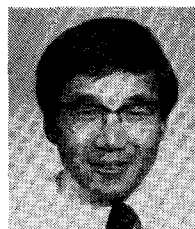
+



**Hiroshi Kondoh** was born in Nagoya, Japan, on February 18, 1951. He received the B.S. and M.S. degrees from Shizuoka University, Japan, in 1973 and 1975, respectively.

In 1975 he joined the Research Institute of Electronics, Shizuoka University, Japan, as a full-time Research Assistant, where he worked on microwave-biased photodetectors, wide-band Gunn and IMPATT oscillators. Since 1978, on leave of absence from Shizuoka University, he has been with the School of Electrical Engineering, Cornell University, Ithaca, NY, where he is engaged in development of high-power 20-GHz IMPATT amplifiers and their characterization.

+



**Young-El Ma** (S'71-M'75) received the B.S. degree in electrical engineering from Yonsei University, Seoul, Korea, in 1966, and the M.S. and Ph.D degrees from the University of Michigan, Ann Arbor, MI, in 1970 and 1975, respectively.

From 1969 to 1975, he was with Cooley Electronics Laboratory, the University of Michigan, as a Research Assistant and a Post-Doctoral Scholar, where he worked on research programs on microwave solid-state circuit analysis and development. In 1975, he joined ITT Gilfillan, Van Nuys, CA, and was involved with the analysis and development of various microwave components and subsystems for microwave antennas. Since joining Hughes Aircraft Company, Torrance, CA, in 1977, he has been engaged in research and development of millimeter-wave solid-state devices and circuits.

Dr. Ma is a member of Tau Beta Pi and Eta Kappa Nu.

+



**Mitsuo Makimoto** was born in Kagoshima, Japan, on September 19, 1944. He received the B.S. and M.S. degrees in electrical engineering from Yokohama National University, Yokohama, Japan, in 1968 and 1970, respectively.

After graduation he joined Matsushita Research Institute Tokyo, Inc., Kawasaki, Japan. He has been engaged in research and development of microwave integrated circuits, and is currently concerned with miniaturization of

filters in UHF band.

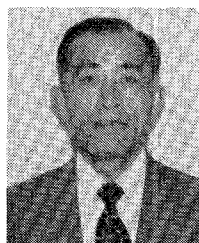
Mr. Makimoto is a member of the Institute of Electronics and Communication Engineers of Japan.



**Wolfgang Meyer** was born in Hamburg, West Germany, on January 25, 1948. He received the Diplom-Ingenieur degree on electrical engineering and the Doktor-Ingenieur degree from Technische Universität Braunschweig, Braunschweig, West Germany, in 1973 and 1977, respectively.

From 1973 to 1978 he has been working at the Institut für Hochfrequenztechnik of the Technische Universität Braunschweig, first engaged in theoretical and experimental investigations on microwave measurements, superconductivity, and low-temperature dielectric loss mechanisms, then concerned with the development of multimode optical-fiber communication systems. In 1978 he joined the Microwaves and Measurements Group at Philips GmbH Forschungslaboratorium Hamburg, Hamburg, West Germany where he was responsible for the development of microwave measurement equipment for industrial purposes. Since 1980 he has lead the research group.

+



**Shizuo Mizushima** (S'60-M'66) was born in Hamamatsu, Japan, on August 10, 1933. He received the B.Eng. degree from Shizuoka University, Hamamatsu, in 1957, and the M.Sc. and Ph.D. degrees from The Ohio State University, Columbus, in 1962 and 1964, respectively.

From 1957 to 1960 he was a Research Assistant and Lecturer at Shizuoka University. From 1964 to 1965 he was a Member of Technical Staff at the Bell Telephone Laboratories, Murray Hill, NJ. In 1965 he returned to Shizuoka University where he is a Professor at the Research Institute of Electronics. He has worked on millimeter-wave magnetrons, gigabit-pulse regenerators, solid-state oscillators, and device-circuit interaction problems. His current research interests are concerned with microwave power-combining techniques, microwave thermography, and medical electronics.

Dr. Mizushima is a member of the Institute of Electronics and Communication Engineers of Japan, the Medical Electronics and Biological Engineering Society of Japan, and Sigma Xi.

+



**Fred Rix** received the B.Sc. degree (with honors) in electrical and electronic engineering from the Queen's University of Belfast in 1978.

He worked for a short period with Medical and Scientific Computer Services before returning to Queen's University to work towards the Ph.D. degree. He is supported by a Northern Ireland Department of Education post-graduate studentship. His research topic for the past two years has been the characterization and design of microstrip circuits based on a computer-aided network analyzer system.

+



**Wolfram M. Schilz** received the Diploma degree in physics and the Dr. rer. nat. degree from the University of Göttingen, Göttingen, West Germany, in 1959 and 1960, respectively.

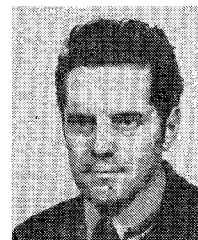
From 1960 to 1966 he was a Research Assistant at the Physikalische Institut Göttingen, Göttingen. In 1966, he joined the Philips GmbH Forschungslaboratorium Hamburg, Hamburg, West Germany, and during the next four years he worked on electronic processes in narrow-gap semiconductors. Since 1970, he has led the re-

search group on microwave applications and is engaged in microwave integration techniques and microwave measuring systems. In 1980 he took over the Information Systems Department of the Research Lab.

+

**Yi-Chi Shih** (S'80), for a photograph and biography please see page 815 of the July 1980 issue of this TRANSACTIONS.

+



**J. A. Carson Stewart** was born near Belfast, Northern Ireland, on March 9, 1937. He received the B.Sc. degree in physics in 1959, and the Ph.D. degree in electrical engineering in 1963, both from Queen's University, Belfast.

From 1963 to 1964 he worked at Short Brothers and Harland Ltd., Belfast, on a microwave radio altimeter. From 1964 to 1965 he was a Postdoctoral Fellow at the Queen's University, Kingston, Ont., Canada, working on a microwave radiometer for Radio Astronomy applications. In 1966 he became a Lecturer in the Department of Electrical Engineering, Queen's University, where he has recently been appointed to the post of Reader. His research interests have lately been concerned with modeling of BARITT diodes.

+



**Maria A. Stuchly** (M'71-SM'76) received the M.S. and Ph.D. degrees in electrical engineering from Warsaw Technical University and Polish Academy of Sciences, Warsaw, Poland, in 1962 and 1970, respectively.

From 1962 to 1970 she was employed as a senior R&D engineer in a subsidiary of the Polish Academy of Sciences in Warsaw. Between 1970 and 1976 she was engaged in research in the field of microwave instrumentation and measurements, and microwave power applications at the Departments of Electrical Engineering and Food Science at the University of Manitoba. Since 1976 she has been with the Non-Ionizing Radiation Section, Radiation Protection Bureau, Health and Welfare Canada, Ottawa, where she is responsible for the development of microwave radiation protection standards and carries out research in the field of biological effects of microwave radiation. She is also nonresident Professor of electrical engineering at the University of Ottawa.

Dr. Stuchly is a member of the Board of Directors of the Bioelectromagnetics Society and a member of IEEE Technical Committee of Man and Radiation.

+

**Stanislaw S. Stuchly** (M'70-SM'72), for a photograph and biography please see page 156 of the February 1980 issue of this TRANSACTIONS.



**Cheng Sun** (S'63-M'65) received the B.S. degree in electrical engineering from National Taiwan University, Taipei, in 1958, and the M.S. and Ph.D. degrees from Cornell University, Ithaca, NY, in 1962 and 1965, respectively.

In 1964, he joined the RCA Corporation in Princeton, NJ, where he was engaged in the development of various microwave solid state sources and laser devices. Since 1971, he has been with the Hughes Aircraft Company, Electron Dynamics Division, Torrance, CA, where

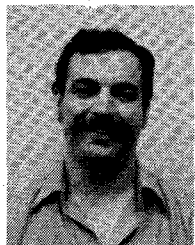
he is currently supervising a group engaged in the research and development of millimeter-wave circuits. He is now with TRW Defense and Space Systems Group, Redondo Beach, CA, as an Assistant Manager in the Millimeter-Wave-Technology Department.

Dr. Sun is a member of Sigma Xi.

miniature *E*-field dipole/diode detector probe with optically linked readout system. Currently, he is involved in the evaluation of various microwave oven survey instruments and the development of a microwave diathermy performance standard. This work involves such aspects as the mapping of electric near-field patterns of microwave diathermy and correlation of these maps with thermographic camera heating patterns of planar muscle slabs.

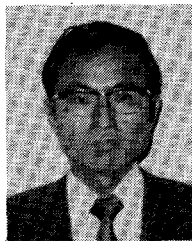
✦

✦



**Donald M. Witters, Jr.**, was born in Bethesda, MD, March 12, 1953. He received a Bachelor's Degree in the physical sciences from the University of Maryland, College Park, in 1975.

As a senior in college, he worked part-time at the Bureau of Radiological Health's Division of Electronic Products. Presently, he is a Staff Physicist at the Bureau in charge of the calibration of all Food and Drug Administration microwave oven survey instruments. He has worked closely on the development of an implantable



**Sadahiko Yamashita** (M'78) was born in Sendai, Japan, on March 18, 1940. He received the B.E. degree in electronics engineering from Tohoku University, Sendai, Japan, in 1962.

In 1962, he joined Matsushita Research Institute Tokyo, Inc., Japan, where he has been engaged in the research and development of electron-beam semiconductor devices and GaAs microwave devices. He is currently concerned with the area of microwave integrated circuits and the application to the receivers for mobile

communications or consumer electronics.

Mr. Yamashita is a member of the Institute of Television engineering of Japan and the Institute of Electronics and Communications Engineers of Japan.