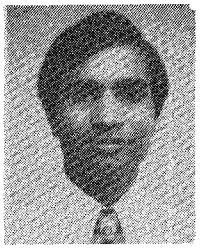
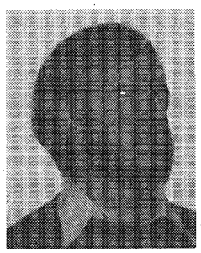
Contributors



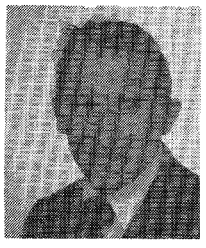
Sheel Aditya (S'75–M'80) was born in Delhi, India, on December 23, 1952. He received the B.Tech. and the Ph.D. degrees in electrical engineering from Indian Institute of Technology, Delhi (IIT Delhi), India, in 1974 and 1979, respectively.

In July 1974, he joined the Centre for Applied Research in Electronics, IIT Delhi, where he worked on ferrite phase shifters and MIC components. In July 1979, he joined the Department of Electrical Engineering, IIT Delhi, to work on a troposcatter communication project. Beginning December 1979, he spent a period of six months at Chalmers University of Technology, Gothenburg, Sweden. Since July 1980, he is a Member of the Teaching Staff of Electrical Engineering Department at IIT Delhi. His research interests have been in the areas of planar slow-wave structures, ferrite phase shifters, and microwave communication systems.



John W. Archer was born in Sydney, Australia, in 1950. He received the B.Sc., B.E. (Hons 1), and Ph.D. degrees from Sydney University, Sydney, Australia, in 1971, 1973, and 1978, respectively.

From 1974 to 1977 he was employed with CSIRO, Radiophysics Division, developing receiver and antenna systems for a radio interferometer operating at 100 GHz for high-resolution solar radio astronomy. From 1977 to 1979 he was with NRAO's VLA program as a systems development and evaluation engineer. Since September 1979, he has worked in the NRAO Electronics Research and Development group in Charlottesville, VA. His current research interests are the development of low-cost, efficient power sources at short millimeter wavelengths and the design of low-noise mixers to operate near 230 GHz.

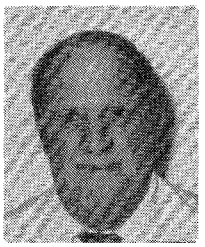


Harry A. Atwater (S'46–SM'59) was born in Boston, MA. He received the B.S. degree in engineering from Tufts University, Medford, MA, in 1940, and the M.S. and Ph.D. degrees from Harvard University, Cambridge, MA, in 1941 and 1956.

He taught physics at the University of Oregon, Eugene, from 1956 to 1959. From 1959 to 1978 he taught and conducted research in Electrical Engineering and Physics at Pennsylvania State University, University Park. In 1978 he joined the M.I.T. Lincoln Laboratory, Lexington, MA, where he is a member of the Experimental Systems Group.

Kenneth L. Carr (S'52–M'54) received the B.S. degree from Tufts University, Medford, MA, in 1953.

Early in his career he was employed by Philco, Sylvania Electric, and Airtron, Inc., and in 1958 co-founded Ferrotec, Inc., serving as Vice President in charge of Engineering and later as President and Technical Director. Shortly after the acquisition of Ferrotec by Microwave Associates in 1970, he became Senior Vice President of Engineering for Microwave Associates, Inc. Prior to joining Microwave Associates, he served on the Board of Directors for Micro-Dynamics of Danvers, MA, and served as Technical Consultant to Microwave Development Laboratories and Americon, Inc. He later served on the Board of Directors for Melabs, S.A. in Brussels, Belgium. He is presently serving as a Member of the Corporation of Wentworth Institute of Technology, Boston, MA, and on the Boards of Directors for Lawrence Laboratories of Chatsworth, CA, and Prodelin, Inc. of Hightstown, NJ. He is the author of eleven papers, recipient of a 1978 IR-100 Award, and holds eight patents with several pending.



Ernest M. Caloccia (M'60) was born in Worcester, MA, in 1935. He received the B.A. degree in physics at Clark University, Worchester, MA, in 1958.

Since 1958 he has worked on active and passive microwave components and subsystems in stripline, microstrip, and waveguide transmission mediums at Raytheon Co., Sanders Associated, RCA, United Technology Labs, MDL, Brown, and NRAO on the waveguide transmission systems at "VLA" from 1975 to 1979. He is presently with Raytheon Company, Bedford, MA.

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.

Dr. Chatterjee is a member of Phi Kappa Phi.

Anas Morsi El-Mahdi was born in Cairo, Egypt, on July 7, 1935. He received the M.D. and B.Ch. degrees in medicine from Cairo University Medical School, Cairo, in 1959, and the D.M.R. degree in radiology from the same school in 1963. He received the Sc.D. degree in radiation biology in 1970 from Johns Hopkins University, Baltimore, MD.

He has served on the staff of the Cairo University Hospital, the Johns Hopkins University School of Medicine, and the University of Virginia Hospital and Medical School. Since January of 1976 he has been Professor and Chairman of the Department of Radiation Oncology and Biophysics, Eastern Virginia Medical School and Norfolk General Hospital, Norfolk, VA. He was certified by the American Board of Radiology (Therapy) in 1968. He is the author of 45 papers and several chapters in various books.

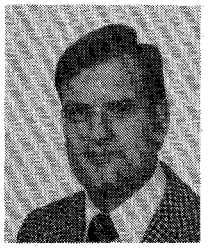
Patrick E. Ferguson received the BA degree in physics in 1962 from California State University at San Jose, the MS degree in physics from California State University, Northridge in 1970, and the Ph.D. in 1975 in electrical sciences from the University of California, Los Angeles, while on a Hughes Aircraft Company Doctoral Fellowship.

From 1962 to 1964 he worked in the design of digital circuits and the development of magnetic memories on contract to the IBM Development Laboratories, San Jose. In 1964 he joined the Advanced Development Department of the Magnavox Research Laboratories in Torrance, CA. He was engaged in fundamental research, being responsible for the improvement of the Kerr and Faraday magneto-optical effect in ferromagnetic materials as utilized in optical data processing and static magnetic tape readout. In 1967 he joined the High Power Tube Department at Hughes Aircraft Company, Electron Dynamics Division, Torrance, CA. His first assignment was in the development of two *S*-band high-power TWT's based on the folded-helix structure. This effort yielded an octave-bandwidth TWT exhibiting 20 kW at the band edges. His next assignment involved development of a high power TWT for airborne radar applications. He then joined the Solid State Device Department where he was responsible for development of TRAPATT amplifiers and oscillators for airborne radar. Complete characterization of TRAPATT amplifiers was accomplished on this program. His final assignment was the development of a high power–high duty received protector based on the principle of electronic multipacting for future generation airborne radar systems. In 1975 he accepted an appointment in fundamental research from the Atomic Energy Commission in France. He directed a research program in surface physics in ferromagnetic metals to determine the contribution of the electronic surface states to surface plasma and surface magneto-plasma excitation. In 1978 he accepted a position in the Electron Tube Division of Litton Industries, San Carlos, CA. His primary responsibility was in the development of wide-band ECM coupled-cavity TWT's. He constructed a TWT using for the first time semi-distributed in-band loss for stability. This modification resulted in a two-section TWT as opposed to a four-section TWT with greatly improved efficiency, bandwidth and bean transmission. In September, 1979 he joined the Gyrotron Engineering Department at Varian where he is engaged in development of gyro-TWT's.

Om P. Gandhi (S'57–M'58–F'79), photograph and biography not available at the time of publication.

Mark J. Hagmann (S'75–M'79) was born in Philadelphia, Pennsylvania, on February 14, 1939. He received the B.S. degree in physics from Brigham Young University, Provo, UT, in 1960, and 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, UT, during 1965–1967.

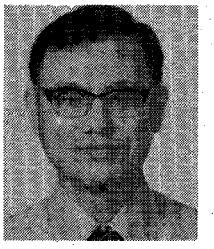
He worked as a Physics and Mathematics Teacher during 1961–1964. During 1968–1975, he worked in the research and development of explosives for IRECO Chemicals, West Jordan, UT. He was a Research Associate in the Departments of Electrical Engineering and Bioengineering at the University of Utah from 1978–1980. 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.



E. R. Bertil Hansson was born in Strömstad, Sweden, on June 20, 1945. He received the M.Sc. and Ph.D. degrees in electrical engineering from Chalmers University of Technology, Göteborg, Sweden, in 1970 and 1979, respectively.

From 1970 to 1980 he was a Research Assistant at the Division of Network Theory, Chalmers University of Technology. His field of interest at that time was planar microwave ferrite components, in particular junction circulators and phase shifters. In 1979 he received a scholarship from the Sweden America foundation for studies in the United States, and is currently with Microwave Development Laboratories, Inc., Natick, MA. At MDL he has been engaged in theoretical and experimental investigations in the field of computerized test measurements.

S. J. Hegji (S'76–M'76), photograph and biography not available at the time of publication



Ho-Chung Huang (M'68) received the B.S. degree from National Taiwan University, Tiaway, Republic of China, in 1959, and the M.S. and Ph.D. degrees from Cornell University, Ithaca, N. Y., in 1965 and 1967, respectively. As a graduate student at Cornell, he discovered the hybrid mode of transferred electron devices.

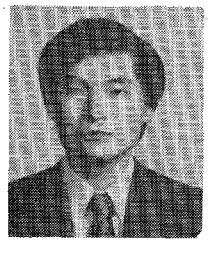
From 1967 to 1969, he was a Senior Research Physicist with Monsanto company in St. Louis, MO, where he was engaged in the research and development of the transferred electron oscilla-

tors operating in the hybrid mode and LSA mode. He joined RCA Laboratories, Princeton, NJ, in 1969. Since then he has been heavily engaged in the device fabrication technology, device physics and device circuit interaction. He initiated the GaAs IMPATT program at RCA and proposed a high–low junction IMPATT structure for the improvement of dc-to-RF conversion efficiency. In parallel to the design and fabrication of GaAs IMPATT's, he was also responsible for the fabrication of Si and GaAs electron beam semiconductor (EBS) diodes, and multioctave $LiNbO_3$/spinel acoustic delay lines. In 1975, he was a team leader responsible for the development of GaAs FET's. He is presently Head of Microwave Processing Technology in the Microwave Technology Center of the RCA Laboratories. He has the responsibility for the modeling and processing technology of microwave devices such as GaAs FETs, Si double drift IMPATT diodes at over 100-GHz ranges and Si p-i-n diodes. In addition, he has the responsibility for development of high reliability GaAs FET amplifiers as TWTA replacements for INTELSAT and RCA SATCOM applications. He has published and presented numerous papers on transferred electron effect, IMPATT's, TRAPATT's, EBS, acoustic delay lines, and GaAs FET's.

Masatoshi Ikeuchi was born in Hyogo, Japan, in 1950. He received the B.E. and M.E. degrees in electronic engineering from Tottori University, Tottori, Japan, in 1974 and 1976, respectively, and the D.E. degree in electrical engineering from Ritsumeikan University, Kyoto, Japan, in 1979.

He was a Research Associate at the Graduate School, Ritsumeikan University from 1979 to 1980. At present he is an Assistant Professor at the Graduate School of Applied Mathematics, Okayama University of Science, Okayama, Japan. He has worked on numerical analysis for electromagnetic field problems.

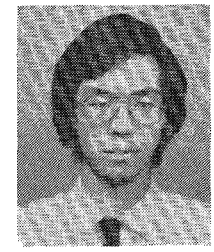
Dr. Ikeuchi is a member of the Institute of Electronics and Communication Engineers of Japan, the Information Processing Society of Japan, the Japan Society for Simulation Technology, and the Mathematical Society of Japan.



Tadao Imai was born in Niigata Prefecture, Japan, on July 2, 1954. He graduated from Department of Electrical Engineering, Science University of Tokyo in 1977, and received the Master of Engineering degree from the same university in 1979.

In 1979, he joined as a research student the Department of Electronic Engineering, University of Tokyo, where he performed the research on microwave planar circuit. He transferred to Oki Electric Industry Company, Tokyo, Japan in 1980 and is now engaged in the development of electronic telephone exchange systems.

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



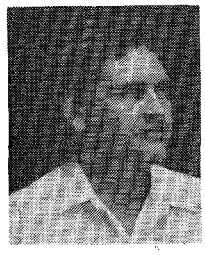
Kazuya Ito was born in Nagoya City, Japan, on February 10, 1957. In 1979, he graduated from the Department of Electrical Engineering, University of Tokyo, Tokyo, where he worked on the analysis and synthesis of microwave planar circuits for the B.S. Degree. At present, he is studying toward the M.S. degree in the Graduate school of the University of Tokyo, specializing in Josephson junction devices.

Mr. Ito is a member of Japan Society of Applied Physics.

Howard R. Jory (S'54–M'60) received the BSEE degree from the University of California in 1954, an MS in 1955, and a PhD in 1960.

From 1960 to 1962 he served as a First Lieutenant in the U.S. Army Signal Corps. He was assigned to the U.S. Army Signal Research and Development Laboratories at Fort Monmouth, NJ, as Project Officer for microwave tube research and development. This assignment involved work on high-power klystrons and traveling wave tubes, crossed-field traveling wave tubes, masers, and plasma devices. In 1962, he became a member of the Varian Tube Division Research Department responsible for theoretical and experimental investigations of novel super power configurations and the incorporation of magnetic tuning in microwave devices. He was Project Engineer for a research program which demonstrated the generation of extremely high-power nanosecond microwave pulses using a linear accelerator as a microwave storage element. From July 1965 through October 1968, he was a member of the Varian Central Research Laboratories as a research group manager responsible for projects involving interactions between electron beams and optical type resonators at millimeter and sub-millimeter frequencies, and on projects relating to the generation of megavolt-megampere electron beams. From 1968 to 1972 he was a member of the Varian Radiation Division's Research Department working with industrial applications of microwaves, with the design of accelerator systems, and with nuclear medicine equipment. In 1972, he rejoined the Palo Alto Microwave Tube Division as a project engineer on several PPM-focused coupled-cavity TWT programs. Since March 1976, he has been Manager of gyrotron development projects, cyclotron resonance devices being developed as high power millimeter wave sources. He is the author of numerous publications and holds five patents in the field.

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



Semyon A. Kheifets was born in Minsk, USSR, on April 17, 1928. He received the M.S. degree in physics from Moscow State University, Moscow, USSR, and the Ph.D. degree in physics from the Institute for Theoretical and Experimental Physics, Moscow, in 1952 and 1961, respectively.

In 1953 he joined Yerevan Physics Institute and worked there until 1973. Here he took leading part in the design, construction, and putting into operation of the 6-GeV Yerevan Synchrotron. During this period of time he has done mainly theoretical work on particle dynamics in circular accelerators, including such problems as longitudinal instabilities of particle motion due to coupling to RF cavities and losses of particles due to quantum

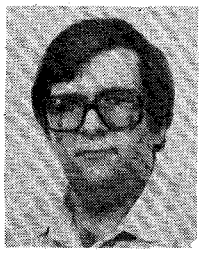
fluctuations of synchrotron radiation. At the time he also served as a part-time Lecturer in Physics at Yerevan State University. In 1975 he emigrated from the USSR. During the years 1975–1977 he worked at DESY (German Electron Synchrotron Laboratory) in Hamburg, West Germany. Since 1978 he has been a Staff Member of Stanford Linear Accelerator Center (SLAC), Stanford University, Stanford, CA. His main occupation is the study of accelerator physics with respect to development of positron-electron storage ring at SLAC and other projects.

Dr. Kheifets is a member of the American Physical Society.

Mahesh Kumar (S'75–M'77) was born in Mathura, India, on December 1951. He received the M.S. degree from Agra University, India, in 1971, the M.S. degree in electronics from Birla Institute of Technology and Science, India, in 1973, and the Ph.D. degree in Electronics from the Indian Institute of Technology in 1977.

From 1976 to 1978, he was a Lecturer at the Radar and Communication Center, Indian Institute of Technology, where he was involved in the development of Stripline Components for Phased Array Radar. In October 1978, he joined the Microwave Technology Center at RCA Laboratories in Princeton, NJ, as a Member of the Technical Staff, where he is engaged in the research and development of GaAs Monolithic Microwave Integrated Circuits.

Dr. Kumar is Chairman of the Princeton Chapter of the IEEE MTT/ED group.



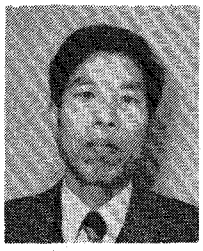
Mats A. Larsson was born in Mölndal, Sweden, on November 15, 1954. He received the M.Sc. degree in electrical engineering from Chalmers University of Technology, Göteborg, Sweden, in 1978.

Since 1978 he has been a Research and Teaching Assistant at the Division of Network Theory, Chalmers University of Technology. His field of interest is mainly phase shifters.

W. Meyer, photograph and biography not available at the time of publication.

Brian J. Minnis was born in Sheffield, England, in 1953. He received the B.Sc. (Honours) degree from the University of Kent at Canterbury in 1973.

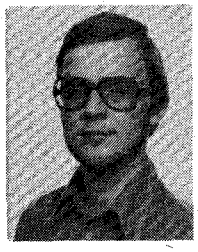
After graduating, he joined MEL at Crawley and worked on the design and development of microwave components. At the end of 1974 he took up a post as Lecturer in telecommunications at a college of further education in Hertfordshire. After two years he joined MSDS at Stanmore and worked on the design of microwave antennas and radomes. In 1978 he joined the Microwave Systems Group with Philips Research Laboratories, in Redhill, and since then his main field of interest has been in microwave filter design.



Hiroshi Niki was born in Okayama, Japan, in 1932. He received the B.E. degree in electrical engineering from Ritsumeikan University, Kyoto, Japan, in 1957.

From 1959 to 1970, he was a Research Assistant in the Department of Electrical Engineering at Osaka University, Osaka, Japan. He is currently a Professor in the Department of Applied Mathematics, Okayama University of Science, Okayama, Japan. He has worked on numerical analysis for boundary value problems, iterative solution of large linear systems, and nonlinear programming.

Mr. Niki is a member of the Institute of Electronics and Communication Engineers of Japan, the Information Processing Society of Japan, and the Association for Computing Machinery.



G. Lennart Nyström was born in Linköping, Sweden on September 23, 1950. He received the M.S.E.E. degree and Ph.D. degree from Chalmers University of Technology, Gothenburg, Sweden, in 1973 and 1980 respectively.

From 1974 to 1980 he was employed as a Research and Teaching Assistant at the Division of Network Theory, Chalmers University of Technology. Since April 1980 he has been employed at the Telephone Company, L M Ericsson, M1-division, Mölndal, Sweden. For the time being he has a scholarship and works at Anaren Microwave, Inc., Syracuse, N. Y. His research interest are in the area of broadband microwave components as power dividers, couplers, filters and also about FET amplifiers.

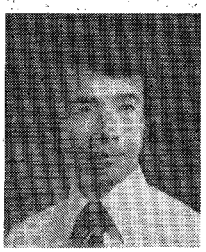
Mikio Ogai (M'75) was born in Japan in 1948. He received a bachelors degree in electrical engineering from Tokyo University, Tokyo, Japan, in 1970.

From 1970 to 1975 he was with Furukawa Electric Co. working on circular waveguide systems. From 1975 to 1977 he was on leave of absence from Furukawa, working with NRAO, to assist in the installation and testing of the waveguide network at the Very Large Array Project. In 1977 he returned to Furukawa, where he has recently been engaged in research into the application of optical fibers to communication systems.

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 from the University of Tokyo, Tokyo, Japan, in 1955, 1957, and 1960, respectively, all in electrical engineering.

In 1960 he was appointed a Lecturer, 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 from Academic Press). He has been awarded eight Prizes from three Japanese academic institutions.

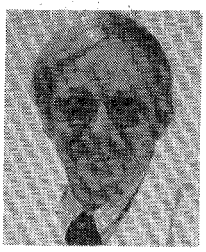
Dr. Okoshi is a Guest Research Fellow of Radio Research Laboratories of Japanese Government and the Secretary of Japanese National Committee for URSI.



Hideo Sawami was born in Hyogo, Japan, in 1949. He received the B.E. degree in electrical engineering from Tottori University, Tottori, Japan, in 1972.

From 1972 to 1980, he was a Research Assistant in the Department of Applied Mathematics, Okayama University of Science, Okayama, Japan. He is currently an Assistant Professor in the Department of Applied Mathematics, Okayama University of Science, Okayama, Japan. He has worked on numerical analysis for boundary value problems and iterative solution of large linear systems.

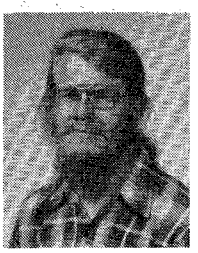
Mr. Sawami is a member of the Physical Society of Japan, the Institute of Electrical Engineers of Japan, and the Information Processing Society of Japan.



James Shaeffer was born in Philadelphia, PA, on March 11, 1943. He received the B.S. degree in biology from King's College, Wilkes-Barre, PA, in 1965, the M.S. degree in radiological health in 1967 from Temple University, Philadelphia, PA, and the Ph.D. degree in 1970 from Johns Hopkins University, Baltimore, MD. He also did additional postdoctoral work at Johns Hopkins University between 1970 and 1971.

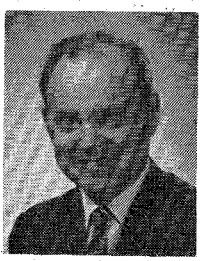
He has served as an Instructor in Radiology at the University of Virginia School of Medicine, Charlottesville, working his way to Assistant Professor and Associate Professor of Radiology at that institution in 1976. He is presently an Associate Professor at the Eastern Virginia Medical School, Department of Radiation Oncology and Biophysics, Norfolk. He is the author of over 36 papers.

Dr. Shaeffer is a member of Sigma Xi.



Eric W. Strid was born in Whitefish, MN on June 25, 1952. He received the SBEE degree from the Massachusetts Institute of Technology, Cambridge, MA, in 1974, and the MSEE degree from the University of California at Berkeley in 1975.

From 1976 to 1979 he was with Farinon Transmission Systems in San Carlos, CA, developing low-noise and linear power GaAs FET amplifiers. He is currently researching analog and digital GaAs integrated circuits at Tektronix, Inc. in Beaverton, OR.



Robert S. Symons (A'52–M'58–F'72) received the BSEE degree with distinction in 1946 and the MSEE degree in 1948, both from Stanford University, Stanford, CA.

In 1946, he joined Eitel-McCullough, Inc., as a development engineer. In 1948, he worked first for Heintz and Kaufman, Ltd., then for Pacific Electronics. In 1950, he became a development engineer at Varian Associates, Inc. Shortly thereafter he joined the U.S. Army Ordnance Corps, where he served at first on the staff of the Ordnance Guided Missile School and later as Liaison Officer to the U.S. Army Signal Corps Laboratories. Returning to Varian in 1954, he worked on the development engineering staff. In October 1961, he was appointed Manager, Super Power Tube Development. In March 1967, he was appointed Manager of the then newly organized Super Power Tube Operation of Varian's Palo Alto Tube Division. In this capacity he was responsible for the development and manufacture of all high-power pulse linear-beam tubes and supervised about 125 people of whom 30 were professional engineers. From January 1974 until October 1977, he was Manager of Energy Programs in Varian's Corporate Research Division. He had responsibility for the initiation and execution of research programs related to energy production and distribution and was involved in gyrotron development. From October 1977 until March 1980 he worked exclusively on gyrotron development. He is presently Program Manager for UHF Television Products in the Palo Alto Microwave Tube Division of Varian Associates. In this capacity he is responsible for product planning and the coordination of manufacturing, engineering and marketing for these products. His experience includes work with diodes, triodes and tetrodes, floating drift tube klystrons, reflex oscillators, high power CW klystron amplifiers, radar klystrons and TWT's, and gyro devices. Programs he managed produced the tubes for the Ballistic Missile Early Warning System, the various ABM systems, the Los Alamos High Current Proton Linear Accelerator and the present FAA Air Route and Airport Surveillance Radars; all were technological advances over prior art. He has been grated seventeen U.S. patents. He has authored a number of papers relating to broadband and very high power klystrons, gyrotrons for plasma heating and electron beam power transmission.

Mr. Symons is a member of Phi Beta Kappa and Tau Beta Pi.