

1998 MTT-S Awards

Peter W. Staecker, *Fellow, IEEE*

OUR President, Professor Roger D. Pollard, hosted the annual IEEE MTT-S Awards presentations at the Plenary Session and the Awards Banquet during the 1998 International Microwave Symposium in Baltimore, MD. The members of the Awards Committee, and its two subcommittees: Fellows Evaluation and Microwave Prize, carefully evaluated an extensive list of outstanding candidates submitted via a membership-wide nomination process.¹

The selection process for the 1998 IEEE MTT-S Awards started after the nomination deadline of July 1, 1997, and the results of the selection process were first announced in the Fall AdCom meeting held in September 1997. The nominations for IEEE Fellows were due March 15, 1997, and IEEE announced the results of the Fellow Evaluation process on December 1, 1997. A listing of the annual Microwave Awards was published in the official Program of the 1998 International Microwave Symposium and in the *1998 International Microwave Symposium Digest*. In addition to the MTT-S Awards and Fellows, the Awards Committee and the President, in consultation with AdCom Committees, recognize the achievements of those key individuals who have given extraordinary service to the microwave profession by presenting them with Certificates of Recognition. These awards were announced during Microwave Week and were presented during the Symposium Plenary Session and the Awards Banquet by President Roger Pollard.

A tribute to Chuck Holmes, who died in 1997, and whose presence as a human being and fundamental contributor to computer-aided design of microwave circuits, was offered by Randall Rhea.

I. AWARDS SUMMARY

A. Technical Awards

Career Award: Dr. Harold Sobol

“FOR A CAREER OF LEADERSHIP, MERITORIOUS ACHIEVEMENT, CREATIVITY, AND OUTSTANDING CONTRIBUTIONS IN THE FIELD OF MICROWAVE THEORY AND TECHNIQUES.”

Plaque, Certificate, Honorarium of \$2000

Pioneer Award: Mr. G. Ross Kilgore

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¹The nomination processes for the IEEE MTT-S Awards and IEEE Fellows are publicized in the IEEE MTT-S Newsletter. Nomination forms are now available on the web (<http://www.mtt.org/Awards/>). Nominations can be made by any member to recognize deserving individuals for the various awards.



1998 MTT-S President Roger Pollard (Right) presents the 1997 President's Plaque to R. E. "Skip" Bryan (Left).

“FOR PIONEERING WORK IN 1931–1934 ON INTERNAL CIRCUIT MAGNETRON OSCILLATOR TUBES FOR THE GENERATION OF 9 CM WAVES.” Plaque, Honorarium of \$2000

Distinguished Educator Award: Dr. Robert J. Trew

“FOR OUTSTANDING ACHIEVEMENTS AS AN EDUCATOR, MENTOR, AND ROLE MODEL OF MICROWAVE ENGINEERS AND ENGINEERING STUDENTS.”

Plaque, Honorarium of \$1000

Microwave Prize: Dr. Tapani Närhi, for his paper:

“Frequency-Domain Analysis of Strongly Nonlinear Circuits Using a Consistent Large-Signal Model,” IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, vol. 44, no. 2, pp. 182–192, Feb. 1996. Certificate, Honorarium of \$1000

B. Fellow Awards (Certificates)

Prof. Masami Akaike

Dr. Mohammad Madihan

Dr. Denis Conrad Webb

Prof. Karl Sigfrid Yngvesson.

C. Service Awards

Distinguished Service Award: Dr. Martin V. Schneider

“FOR HIS OUTSTANDING AND DEDICATED SERVICE TO THE SOCIETY.” Plaque, Certificate

N. Walter Cox Award: Dr. Roger Kaul

"FOR EXEMPLARY SERVICE, GIVEN IN A SPIRIT OF SELFLESS DEDICATION AND COOPERATION."
Plaque.

Past President: Mr. R. E. "Skip" Bryan

"IN RECOGNITION OF DISTINGUISHED SERVICE AS 1997 PRESIDENT." Plaque.

D. Certificates of Recognition

Prof. Rolf H. Jansen, Member of AdCom 1989–1997.

Mr. Daniel G. Swanson, Member of AdCom 1991–1997.

Dr. Denis C. Webb, Member of AdCom 1994–1997.

Prof. Eikichi Yamashita, Member of AdCom 1992–1997.

Dr. Michael B. Steer, Secretary of AdCom 1997.

Dr. Claude M. Weil, Chairman 1997 International Microwave Symposium.

Dr. Roger B. Marks, Vice-Chairman 1997 International Microwave Symposium.

Prof. K. C. Gupta, Co-Chairman Technical Program Committee, 1997 International Microwave Symposium.

Dr. Zoya Popovic, Co-Chairman Technical Program Committee, 1997 International Microwave Symposium.

Mr. Robert L. Seeley, Co-Chairman Local Arrangements Committee 1997 International Microwave Symposium.

Ms. Sharon L. Seeley, Co-Chairman Local Arrangements Committee 1997 International Microwave Symposium.

Dr. Louis C. T. Liu, General Chairman 1997 Radio Frequency Integrated Circuits Symposium.

Dr. Roger B. Marks, Conference Chair 1997 Automatic RF Techniques Group Conference.

Prof. Tsukasa Yoneyama, Organizer and Chair, 1996 International Topical Meeting on Microwave Photonics in Kyoto, Japan.

Prof. Dieter Jäger, Co-Chair 1997 International Topical Meeting on Microwave Photonics in Duisburg, Germany.

Prof. Alwyn Seeds, Co-Chair 1997 International Topical Meeting on Microwave Photonics in Duisburg, Germany.



Harold Sobol (S'57–M'59–SM'69–F'73–LF'95) received the B.S.E.E. from the City College of New York, Brooklyn, in 1952, and the M.S.E. and Ph.D. from the University of Michigan at Ann Arbor, in 1956 and 1960, respectively.

He joined the IBM T. J. Watson Research Center, Yorktown Heights, NY, in 1960 and conducted research on the application of thin-film superconductors for high-speed computers. This work keyed his later interests in planar microwave circuits and solid state devices. He joined RCA

Laboratories, Princeton, NJ, in 1962, to do research on microwave power tubes and plasmas. In 1963, he started the Microwave Integrated Circuits Group, and led the development of a wide range of thin-film microstrip and lumped-element circuits and functions, microstrip circulators, and solid-state devices. The initial work at RCA concentrated on hybrid circuits, but the groundwork for future monolithic circuits was established. This work in the early 1960's, in conjunction with efforts at TI and Microwave Associates, led to the establishment of major efforts in the area in the worldwide microwave industry. After spending two years in the RCA Solid State Division to transfer the technology to manufacturing, he returned to RCA Laboratories to head up the development activity on microwave power GaAs FET's, TRAPATT diodes, millimeter-wave IMPATTs, and served as a Consultant in the introduction of electronic tuning in RCA XL 100 TV receivers. He moved to Collins Radio, Dallas, TX, in 1973 to become Director of Engineering of the Microwave Systems Division. In 1974, after Collins was acquired by Rockwell International, he began a major expansion of the product line to include microwave analog FM and single sideband (SSB) radios, high-capacity digital radios, and high-capacity fiber-optic transmission systems. The division grew to be a worldwide leader and was the first to introduce commercial high-capacity 8PSK and 64QAM microwave digital radios and gigabit fiber optic systems. He was promoted to Vice President Engineering and Advanced Technology for Rockwell Telecommunications in 1985. He retired from Rockwell in 1988 to fulfill a long time goal of returning to academia and joined the University of Texas at Arlington as Professor of electrical engineering and Associate Dean for Research of the Engineering College. He started a graduate track in telecommunications, currently the major activity area in electrical engineering. He retired from full-time activities at the university in 1993, but still serves part-time at the university and consulting for industry.

Dr. Sobol has served on numerous IEEE Institute and Society Committees. He was the general chairman of three major conferences, a member of the IEEE MTT-S IMS Technical Program Committee (TPC) for nearly 30 years, an elected member of IEEE MTT-S AdCom for eight years, and President in 1978. He has served numerous functions since his presidency and continues to serve at the current time. He has received many honors, including the IEEE Fellow (citation), IEEE Centennial Medal, IEEE MTT-S Distinguished Service Award, 1970 IEEE MTT-S National Lecturer, 1986 IMS Best Presented Paper Award, IEEE Dallas Section Outstanding Engineer Award, Industrial Research IR-100 Award, and the Distinguished Service to Engineering Award—the University of Texas at Arlington.

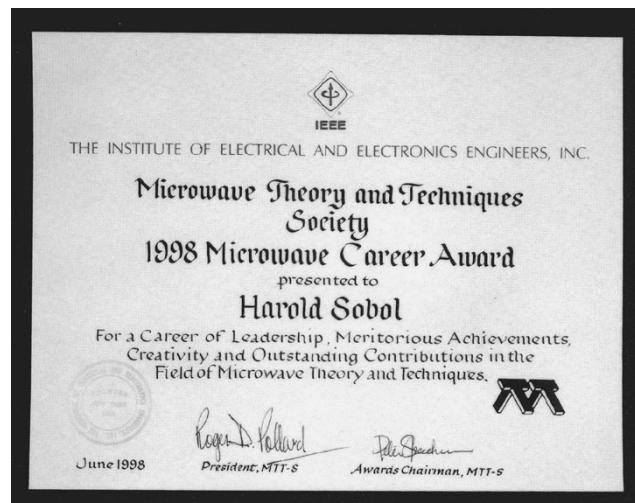
II. MICROWAVE CAREER AWARD

Dr. Harold Sobol

The Microwave Career Award is the highest honor bestowed by the IEEE MTT-S. It recognizes an individual for a lifetime career of meritorious service and technical excellence in the field. Our honored recipient is Dr. Harold Sobol, an internationally recognized technical leader, educator, and independent consultant in microwave integrated circuits, microwave communications systems, and fiber-optic transmission systems.

The award consists of a plaque, a certificate, and an honorarium of \$2000. Dr. Sobol's Career Award Citation reads:

"FOR A CAREER OF LEADERSHIP, MERITORIOUS ACHIEVEMENTS, CREATIVITY, AND OUTSTANDING CONTRIBUTIONS IN THE FIELD OF MICROWAVE THEORY AND TECHNIQUES."





Ted Saad (*Right*), Honorary Life Member, IEEE MTT-S, and Life Fellow, IEEE, presents the Career Award Plaque to Hal Sobol.

III. PIONEER AWARD

Mr. G. Ross Kilgore

The Pioneer Award recognizes contributions that have had a major impact on the microwave engineering field and have stood the test of time. The basis of nomination is an archival paper in the field of interest of IEEE MTT-S, published at least 20 years prior to the year of the award. The award consists of a plaque and an honorarium of \$1000.

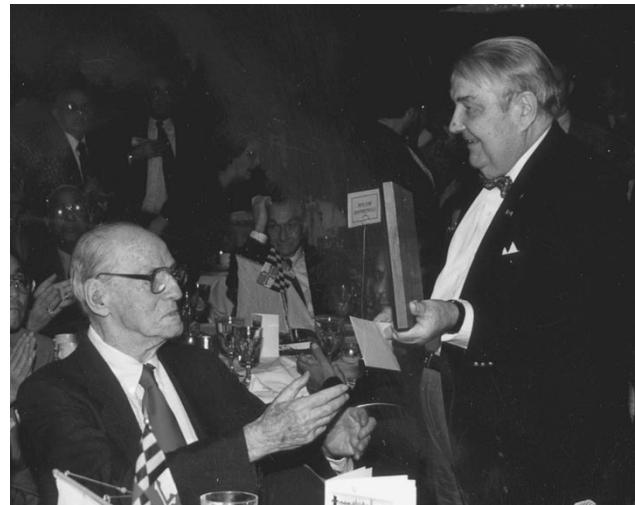
Mr. G. Ross Kilgore is the recipient of the 1997 MTT-S Pioneer Award. He developed the earliest U.S. microwave power tubes and received his Fellow Award in 1957 in recognition of his pioneering work in high frequency tubes. Mr. Kilgore's Pioneer Award citation reads:

"FOR PIONEERING WORK IN 1931-1934 ON INTERNAL CIRCUIT MAGNETRON OSCILLATOR TUBES FOR THE GENERATION OF 9 CM WAVES."



G. Ross Kilgore (A'30-M'40-SM'43-F'57-LF'72) was born January 31, 1907, in Fremont, NB. He received the B.S. degree from the University of Nebraska, Omaha, in 1928, and an M.S. degree from the University of Pittsburgh, Pittsburgh, PA, in 1931, both in electrical engineering. He joined Westinghouse Research Laboratories, East Pittsburgh, PA, in 1928 as a Research Engineer, where he worked until 1934. In 1933, he developed the earliest microwave tube in the U.S. and applied it to microwave beam transmission and radio detection. He demonstrated this equipment at the Chicago World's Fair in 1933 and 1934 and supplied two models to the Army Signal Corps Laboratory at Ft. Monmouth for early radio detection experiments. In 1934, he joined RCA as a Research Engineer, first at RCA Radiotron, Harrison, NJ, and later at the newly formed RCA Laboratories, Princeton, NJ. From 1934 to 1947, he developed high-power magnetrons developing 100 W, at 500 MHz in 1935. He developed beam deflection tubes for microwave receivers and a magnetron for FM radar. In 1947, he joined the U.S. Army Signal Corps Laboratory, Belmar, NJ, as Chief, Vacuum Tube Development Section, and later advanced to Director for the Electron Devices Division, in 1953. This Division was responsible for the Army program of research and development of electron tubes and semiconductor devices. In 1957, he joined Westinghouse to set up an Electron Tube Development Laboratory for the Westinghouse Defense and Space Center. He has published 12 technical papers on microwave tubes, from 1932 to 1984, and holds 18 patents on microwave magnetrons and beam deflection tubes.

Mr. Kilgore was elected Fellow of the IRE in 1957, "for pioneering work in high frequency electron tubes and for leadership in the field of military electronic devices." He retired in 1971 as manager, Technical Program Services. He became a Life Fellow of the IEEE in 1972. He received the IEEE Centennial Medal in 1984.



Warren Cooper (*Right*), Life Fellow, IEEE, presents the Pioneer Award Plaque to Ross Kilgore.

IV. DISTINGUISHED EDUCATOR AWARD

Dr. Robert J. Trew

This Award was inspired by the untimely death of Prof. F. J. Rosenbaum (1937-1992), an outstanding teacher of microwave science and a dedicated IEEE MTT-S AdCom member/contributor. The award is given to a distinguished educator in the field of microwave engineering and science who exemplifies the special human qualities of the late Fred J. Rosenbaum. Rosenbaum considered teaching a high calling and demonstrated his dedication to IEEE MTT-S through years of tireless service.

The awardee must be a distinguished educator, recognized, in general, by an academic career coupled to many years of service to the microwave profession. The effectiveness of the educator should be supported by a list of graduates in the field of microwave science who have become recognized in the field. The candidate shall also have an outstanding record of research contributions documented in archival publications. The candidate shall also have a record of many years of service to IEEE MTT-S. The award consists of a plaque and an honorarium of \$1000.

The recipient of this year's award is Dr. Robert J. Trew, Director of Research at the U.S. Department of Defense. Dr. Trew's citation reads:

"FOR OUTSTANDING ACHIEVEMENTS AS AN EDUCATOR, MENTOR, AND ROLE MODEL OF MICROWAVE ENGINEERS AND ENGINEERING STUDENTS."



Robert J. Trew (S'71-M'74-SM'87-F'91) received the Ph.D. degree from the University of Michigan at Ann Arbor, in 1975.

He was appointed Director of Research, U.S. Department of Defense, Office of the Director, Defense Research and Engineering, in August 1997. In that position, he was responsible for providing scientific leadership, management oversight, policy guidance, and coordination of the basic research programs of the military services and defense agencies. He worked for General Motors and

Watkins-Johnson Company, and has served as Consultant for a number of aerospace and electronics companies. From 1976 to 1993, he was Professor of electrical and computer engineering at North Carolina State University, and from 1993 to 1997, he was George S. Dively Professor of engineering and Chair of the Department of Electrical Engineering and Applied Physics at Case Western Reserve University. He was a Visiting Professor at the University of Duisburg, Duisburg, Germany, in 1985. He has directed 13 Ph.D. students and 35 M.S. students. He served as a part-time Program Manager in the electronics division of the U.S. Army Research Office from 1992 to 1997. He has published more than 130 technical articles, 13 book chapters, and has given over 180 scientific and technical presentations. He holds two patents and has two pending. He also served as guest editor for the *Materials Research Society Bulletin* and the *International Journal of Microwave and Millimeter-Wave Computer-Aided Engineering*.

Dr. Trew is a Fellow of the IEEE. He is a member of Eta Kappa Nu, Sigma Xi, Tau Beta Pi, the American Association for the Advancement of Science, the American Society for Engineering Education, Commission D of the International Union of Radio Science, and the Electromagnetics Academy. He serves on the IEEE MTT-S AdCom and was the editor of the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES from 1995 to 1997. He was elected to the Editorial Board of the *IEEE Proceedings* for 1998, and was named to a three-year term as an IEEE MTT-S Microwave Distinguished Lecturer for the period 1998-2001. He received the 1992 Alcoa Foundation Distinguished Engineering Research Award and a 1992 Distinguished Scholarly Achievement Award from North Carolina State University.

The recipients of the 1998 Microwave Application Award are Dr. Randall E. Lehmann and Mr. David D. Heston. Their award citations read:

"FOR INVENTION AND APPLICATION OF SERIES INDUCTIVE FEEDBACK TO MONOLITHIC LOW-NOISE AMPLIFIERS."

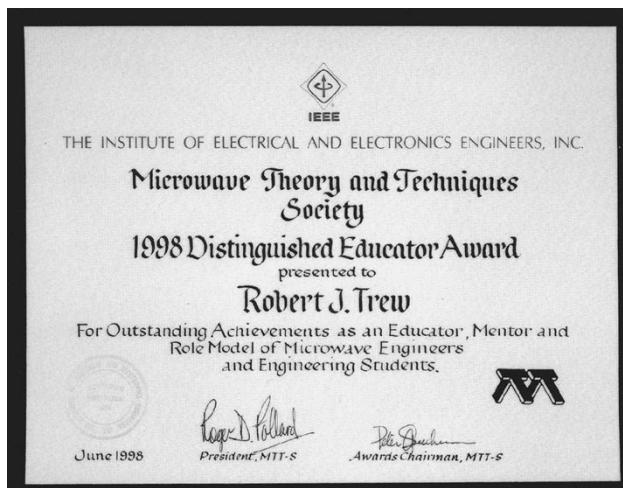


Randall E. Lehmann (S'73-M'76-SM'83) received the B.S. and M.S. degrees in electrical engineering from the University of Illinois at Urbana-Champaign, and the Ph.D. degree in electrical engineering from Southern Methodist University, Dallas, TX.

He is the Manager of Microwave Gallium Arsenide Products (MGP) for TriQuint Semiconductor Texas, where he is responsible for development and marketing of GaAs products and foundry services to commercial and military customers worldwide.

With 22 years of experience in the microwave industry, he has published and presented over 25 technical papers and holds four patents.

Dr. Lehmann is a Registered Professional Engineer in the State of Texas. He is active in the IEEE MTT-S, both at the local and national level. In the Dallas MTT-S chapter, he has held the offices of chairman, vice-chairman, and secretary. At the national level, he served on the IEEE MTT-S Awards Committee from 1992 to 1995 and as secretary for the IEEE MTT-S Administrative Committee in 1996. He served on the Symposium Steering Committee and was co-chairman of the Technical Program Committee for the 1990 International Microwave Symposium held in Dallas. In 1996, he received the "Engineer of the Year" Award from the Dallas Section of IEEE.



V. MICROWAVE APPLICATION AWARD

Dr. Randall E. Lehmann and Mr. David D. Heston

The Microwave Application Award is presented aperiodically to individuals for an outstanding application of microwave theory and techniques. The eligibility requirements are creation of a new device, component or technique, or a novel use of components, or both. The award consists of a plaque, certificate, and a shared honorarium of \$1000.



David D. Heston (S'82-M'83) received the M.S.E.E. and B.S.E.E. degrees from the University of South Florida, Tampa, in 1983.

He is a Senior Member of the Technical Staff in the RF/Microwave Department, Raytheon TI Systems (RTIS). He joined Texas Instruments in 1981 as a summer fellowship student. He has designed a wide variety of monolithic microwave integrated circuits including: 2-, 3-, and 4-stage low-noise amplifiers (LNA's), high-efficiency amplifiers (from 0.25- to 5-W output power levels), broadband single-pole 2-, 3-, and 4-throw switch circuits (both MESFET and p-i-n diode technologies), distributed amplifiers (both low noise and medium power), phase shifters, p-i-n diode switched limiter circuits, and attenuators (both digital and variable). From 1983 to 1993, he worked closely with the Central Research Laboratory, Texas Instruments Incorporated (now part of TriQuint Semiconductor Texas), in the development of a number of advanced microwave devices: low noise FET's/pHEMT's, GaAs p-i-n diodes, and heterostructure power devices. His work with low-noise devices led to two patents involving series feedback for LNA amplifier designs. His work with GaAs p-i-n diodes led to two patents in the area of limiters and switched limiters. He has co-authored over 20 technical articles and holds four U.S. patents.



John Wassel (Center), 1996 MTT-S President congratulates Applications Award recipients Randy Lehmann (Left) and David Heston (Right).



VI. MICROWAVE PRIZE Dr. Tapani Närhi

The Microwave Prize is awarded annually to the author or authors of a paper published in the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES (or any other IEEE publication) that is judged to be the most significant contribution in the field of interest to the Society in the calendar year preceding that in which the selection is made.

The 1998 Microwave Prize is awarded to Tapani Närhi for his paper entitled "Frequency-Domain Analysis of Strongly Nonlinear Circuits Using a Consistent Large-Signal Model," IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, vol. 44, no. 2, pp. 182-192, Feb. 1996.



Tapani Närhi (S'78-M'80) received the M.S. and D.Tech. degrees in electrical engineering from the Helsinki University of Technology, Espoo, Finland, in 1978 and 1993, respectively.

From 1978 to 1981, he was a Research Engineer at the Telecommunications Laboratory of the Technical Research Centre of Finland (VTT), where his work involved design and characterization of solid-state microwave circuits. From 1981 to 1984, he worked as a Communications Engineering Instructor at the Civil Aviation Training Centre, Dhaka, Bangladesh, for the International Civil Aviation Organization (ICAO). After returning to VTT in 1984, he worked as a Project Manager in several R&D projects dealing with communications applications of microwave technology, concentrating on mobile communications. In 1991, he was employed by the European Space Agency (ESA). Since then, he has been with the space applications of microwave and millimeter-wave technology at the European Space Research and Technology Centre (ESTEC), Noordwijk, The Netherlands. His research interests include linear and nonlinear microwave and millimeter-wave circuits and computer-aided design (CAD) methods.

VII. DISTINGUISHED SERVICE AWARD

Dr. Martin V. Schneider

The Distinguished Service Award is presented to honor an individual who has given outstanding service over a period of years for the benefit and advancement of IEEE MTT-S.

This year's honoree is Dr. Martin V. Schneider, IEEE Fellow and former member of IEEE MTT-S AdCom. Dr. Schneider's citation reads:

"FOR HIS OUTSTANDING DEDICATED SERVICE
TO THE SOCIETY."

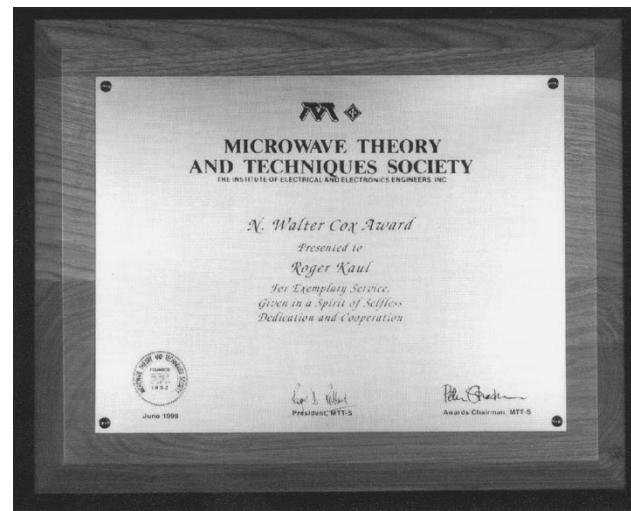
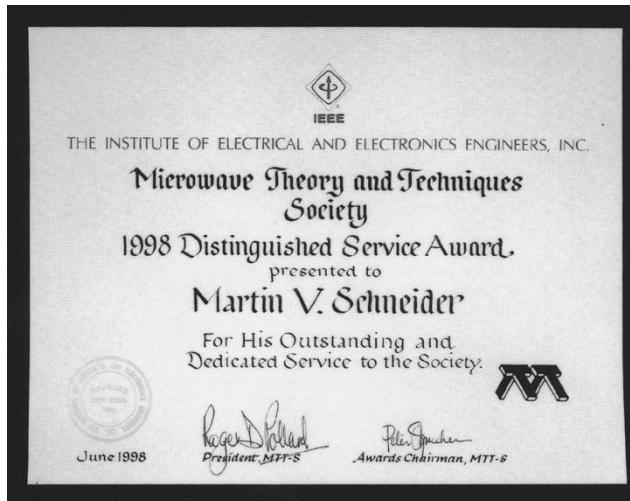


Martin V. Schneider (M'56-SM'71-F'76-LF'95) received the M.S. degree in physics and the Ph.D. (Dr.sc.nat) degree from the Swiss Federal Institute of Technology, Zurich, Switzerland, in 1955 and 1959, respectively.

At the Institute, where he had Wolfgang Pauli as a teacher, he was involved in research on the properties of thin metallic films and their applications at microwave frequencies. In 1961, he joined the group of John Pierce and Rudolf Kompfner, AT&T Bell Laboratories, Holmdel, NJ, and began work on active microwave devices and circuits need for short-hop radio systems at 11 and 18 GHz. Subsequently, he made contributions to the emerging area of microstrip components and planar transmission-line elements, which he applied to the realization of compact filters and heterodyne mixers at microwave and millimeter-wave frequencies ranging up to 230 GHz. As a member of the research team of Arno Penzias and Robert Wilson, he developed low-noise mixer diodes, which were used in microwave systems for radio-astronomical experiments and on the space shuttle *Atlantis*. In this NASA mission, performed jointly with the University of Bern, Switzerland, both his devices and circuits served as sensitive detectors and low-noise receivers for mapping the concentration and distribution of trace molecules and regular constituents (H_2O , O_3 , and ClO) in the upper atmosphere. He expanded his work into the optical field by devising and constructing the first-high-speed photodiode consisting of a thin-film Schottky diode with an optimized dielectric matching layer. He also analyzed the noise characteristics of lightwave receivers and found that the spectral noise density of optical receivers can be computed directly from the physical parameters of the photodiode and the high electron-mobility transistor (HEMT) device, which performs the preamplification of the signal. He extended his work on microwave frequency converters, devising a subharmonically pumped homodyne mixer, which he and his team used for gigabit rate digital modulators and demodulators in the LuckyNet system, a wide area network pioneered by Robert Lucky. He retired in 1997 as a Technical Manager in the Wireless Technology Research Department, Bell Laboratories, Holmdel, NJ.

Dr. Schneider served on the IEEE Board of Directors in 1991–1992, where he was in charge of the Electromagnetics and Radiation Division and where he held the IEEE Committee on New Technology Directions. As a member of the IEEE MTT-S AdCom from 1984 to 1990, he made contributions to improved membership services and to publications and was instrumental in organizing a number of scientific workshops. His technical and professional leadership has been recognized by a number of awards, including the Microwave Prize in 1979, the IEEE Centennial Medal in 1984, the IEEE Region I Award in 1984, the IEEE/MTT Meritorious Service Award in 1989, and the Microwave Application Award in 1994.

Dr. Kaul has been very active for the past 23 years in the Washington DC/NV Chapter of IEEE MTT-S. During this time, he has been program co-chair (1975–1977), secretary, vice-chair, and chair (1979–1980). Since 1980, he has been involved with many chapter activities, including publicity, speaker coordination, program planning, officer nominations, and other activities. Since 1979, he has also been a supportive member of the IEEE MTT-S Technical Committee on Microwave Systems (MTT-16). In recent years, he organized a workshop (1995), and a symposium special session (1996) on microwave chaos, and a special session (1997) on microwave applications of SiC. He was publicity co-chair of the 1980 International Microwave Symposium in Washington, DC, and was vice chair of the 1998 International Microwave Symposium sponsored by the Baltimore and Washington DC/Northern Virginia, Chapters of IEEE MTT-S.



VIII. 1998 N. WALTER COX AWARD

Dr. Roger Kaul

The N. Walter Cox Award has been established in recognition of the qualities of N. Walter Cox and his service to the IEEE MTT-S prior to his untimely death in 1988. It is given aperiodically to a Society volunteer whose efforts on behalf of IEEE MTT-S best exemplify Cox's spirit and dedication.

The 1998 recipient is Dr. Roger Kaul, and his citation reads:

“FOR EXEMPLARY SERVICE, GIVEN IN A SPIRIT OF SELFLESS DEDICATION AND COOPERATION.”



Roger Kaul (S'60–M'62–SM'88) received the B.S.E.E. and M.S.E.E. degrees from Case Institute of Technology, in 1962 and 1964, respectively, and the Ph.D. degree from Case Western Reserve University, Cleveland, OH, in 1969.

He is an Electronics Engineer at the Army Research Laboratory, Adelphi, MD. For the last decade, he has developed microwave-hardening technology for DoD systems to protect them from high-power microwave sources. His primary contribution is the development of GaAs monolithic-microwave integrated-circuit limiters which are compatible with the sensitive devices that they protect. In phased-array radar applications, these limiters offer significant cost savings.

IX. 1998 IEEE FELLOW AWARDS

Twelve IEEE MTT-S members who were evaluated by our Society were elected to the grade of Fellow, effective January 1, 1998. The grade of Fellow is conferred in recognition of unusual professional distinction. It is awarded at the initiative of the IEEE Board of Directors after a rigorous nomination and evaluation process. Individuals receiving this distinction have demonstrated extraordinary contributions to one or more fields of electrical engineering, electronics, computer engineering, and related sciences. This grade is not conferred automatically on nomination; only a fraction of those nominated are honored by elevation to the grade of IEEE Fellow.

Fellow Awards were presented by Ted Saad (Honorary Life Member of the IEEE MTT-S AdCom) to four of the six Fellows evaluated by the IEEE MTT-Society who had elected to receive their awards at the banquet. A fifth who was present at the banquet was recognized, but elected to receive his award elsewhere. The Fellows and their citations are as follows.

Masami Akaike: For contributions to nonlinear analysis and design of millimeter-wave and microwave solid-state devices.

Mohammad Madhian: For contributions to the design and development of microwave as well as millimeter-wave solid-state monolithic integrated circuits for personal computing and wireless networking systems.

Denis Conrad Webb: For leadership in the development and application of microwave ferrite devices.

Karl Sigfrid Yngvesson: For contributions to the development of millimeter-wave devices and systems.