

1986 MTT-S Awards

DON PARKER, FELLOW, IEEE

THE FOLLOWING AWARDS were presented at the Annual Symposium Banquet in Baltimore by MTT-S President, Reinhard Knerr:

Microwave Career Award—George L. Matthaei
Microwave Prize—Yalcin Ayasli

Leonard D. Reynolds, Jr.
James L. Vorhaus
Larry K. Hanes

Microwave Application Award—Clarence B. Swan
Distinguished Service Award—Harold Sobol

Distinguished Microwave Lecturer—Kenneth L. Carr

In addition to the above awards, Bruno Weinschel, IEEE President, presented Fellow Awards to seven members of MTT-S. President Knerr also presented the Past President's Pin to Harlan Howe, Jr. A Certificate of Meritorious Service was given to Richard A. Sparks for his many years of service to the Society. Certificates of Recognition were given to Fred J. Rosenbaum, Steering Committee Chairman, James Roe, Steering Committee Vice-Chairman, and William E. Hord and Stephen Honickman, Co-Chairmen, Technical Program Committee, 1985 International Microwave Symposium. George J. Jerinic, retiring AdCom member, was given a Certificate of Recognition for his past service to the Society. Certificates of Recognition were also presented to Rodger D. Kaul and Ted M. Nelson for coordinating lecture series and chapter records, respectively, on the Membership Services Committee.

MTT SOCIETY AWARDS

Microwave Career Award

The Microwave Career Award is presented aperiodically to an individual for a career of meritorious achievement and outstanding technical contributions in the field of microwave theory and techniques. The 1986 Career Award was presented to George L. Matthaei. He has made contributions to the microwave field for nearly 40 years and continues to be an active contributor today.

Professor Matthaei's professional specialities are microwave and acoustic devices and network synthesis. He has made contributions in the areas of wide-band impedance-matching structures, microwave filters, parametric amplifiers, quasi-optical filters, and acoustic bulk-wave and surface-wave devices. Recently, his research interests have been dielectric-waveguide filter and coupler techniques for millimeter-wave and optical integrated circuit applications. He is currently doing research in the area of millimeter-wave integrated circuits. He has published approximately 80 articles on his research.

In 1961, Professor Matthaei was awarded the Microwave

Prize for his paper "A Study of Optimum Design of Wide-Band Parametric Amplifiers and Up-Converters." He is coauthor or contributor to six books. The most widely known of these is *Microwave Filters, Impedance-Matching Networks and Coupling Structures*, which he coauthored with L. Young and E. M. T. Jones.

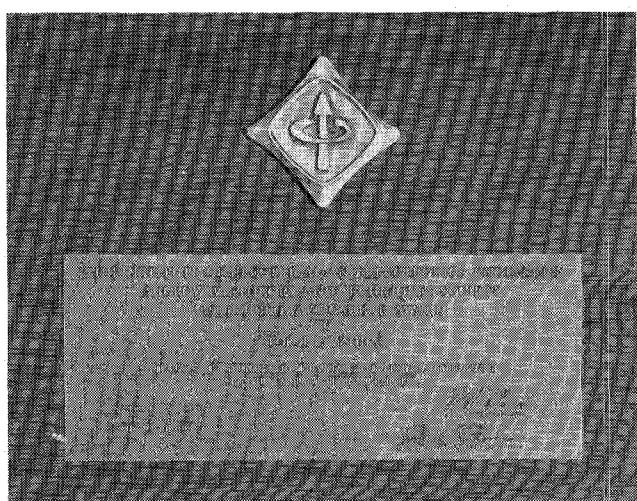
Professor Matthaei's Career Award Citation reads, "For a Career of Meritorious Achievement and Outstanding Technical Contributions in the Field of Microwave Theory and Techniques." The award includes a plaque, a certificate, and \$2000.



George L. Matthaei (S'49-A'52-M'57-F'65) was born on August 28, 1923, in Tacoma, WA. He received the B.S. degree in 1948 from the University of Washington. His college education was interrupted by three years of military service before he received the bachelor's degree. He obtained the M.S. degree in 1949 and Ph.D. degree in 1952 in electrical engineering from Stanford University. He was a research assistance in Stanford's Electronic Research Laboratory from 1949 to 1951.

From 1951 to 1955, he was first an instructor and then Assistant Professor in the Division of Electrical Engineering at the University of California at Berkeley. His specialty was network synthesis. He was on the Technical Staff of the Ramo-Wooldridge Corporation from 1955 to 1959, where he was engaged in system analysis and research in microwave components. In 1958, he joined the Stanford Research Institute, where he conducted research on microwave devices. He served as Project Leader and in 1962 became Manager of the Electromagnetic Techniques Laboratory of SRI. While at SRI, he taught part-time at Stanford University. In July 1964, Dr. Matthaei joined the Department of Electrical Engineering of the University of California at Santa Barbara, where he is a Professor.

Dr. Matthaei is a member of MTT-S, AP-S, Sonics and Ultrasonics, Sigma XI, and Tau Beta Pi. He has served a term on the Administrative Committee (AdCom) of the MTT-S and also on the AdCom of Circuit Theory. He is on the Editorial Board of the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES and the journal *Wave Electronics*. Dr. Matthaei received an IEEE Centennial Medal at the 1984 International Microwave Symposium, in San Francisco.





Microwave Theory and Techniques Society
1986 Microwave Career Award
 to
George L. Matthaei

for a career of meritorious achievement and outstanding technical contributions in the field of Microwave Theory and Techniques.



June 3, 1986

President, MTT

Chairman, MTT Awards Committee

MICROWAVE THEORY
AND TECHNIQUES**Microwave Prize**

The Microwave Prize is awarded annually for the paper making the most significant contribution in the field of interest to the Society among those appearing in an IEEE publication during the calendar year preceding the year of selection. The 1986 Microwave Prize was awarded for the paper "2-20-GHz GaAs Traveling-Wave Amplifier," published in the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, vol. 32, January 1984.

The authors of the paper are Yalcin Ayasli, Leonard D. Reynolds, Jr., James L. Vorhaus, and Larry K. Hanes. Each received a certificate and a check for \$500. A biography of each author and copies of the certificates follow.

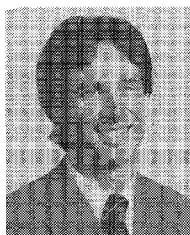


Yalcin Ayasli (M'79-SM'84) received the B.S. degree in electrical engineering in 1968 from the Middle East Technical University, Ankara, Turkey. He received the M.S. degree in 1970 and the Sc.D. degree in 1973 in electrical engineering from the Massachusetts Institute of Technology.

He was a member of the faculty of engineering at the Middle East Technical University from 1973 to 1979. While there, he also served as assistant chairman of the Electrical Engineering Department. From 1979 to 1985, Dr. Ayasli

worked at the Research Division of the Raytheon Company, leading a design, measurement, and wafer-fabrication group for development of GaAs microwave monolithic integrated-circuit (MMIC) technology. In 1985, he founded the Hittite Microwave Corporation, in Woburn, MA, to develop GaAs MMIC components and subsystems.

Dr. Ayasli is the author of a number of technical papers and patents. He was the Chairman of the Technical Program Committee of the 1986 IEEE Microwave and Millimeter-Wave Monolithic Circuits Symposium.



Leonard D. Reynolds, Jr. (M'84) received the B.S. degree in 1975 and the M.S. degree in 1978 in electrical and computer engineering from Clemson University. His undergraduate and graduate studies were concentrated in solid-state circuits and communication theory, respectively.

In 1978, he joined the Special Microwave Devices Operation of the Raytheon Company to assist in FET evaluation, modeling, and design. In 1980, he joined the Research Division of the Raytheon Company as a member of the GaAs monolithic circuit group. Since then, he has developed various monolithic microwave circuits including wide-band amplifiers, T/R modules, and

ECM circuits. Most recently, he has been responsible for design of multi-octave-bandwidth distributed amplifiers for low-noise, small-signal applications and distributed amplifiers having output power levels up to one watt.

Mr. Reynolds is a member of Eta Kappa Nu and Tau Beta Pi. He is the author of a number of published technical papers.



James L. Vorhaus (M'85) received the B.S. degree in engineering physics from Lehigh University in 1972 and the M.S. and Ph.D. degrees in physics from the University of Illinois at Urbana-Champaign in 1974 and 1976, respectively.

From 1973 to 1976, he was a research assistant in the low-temperature physics laboratory at the University of Illinois. His work involved state-of-the-art measurements of the specific heat and thermal conductivity of various materials at temperatures below 4 degrees Kelvin. In 1976, he joined the Research Division of the Raytheon Company as a member of the Semiconductor Laboratory. His work involved GaAs device processing technology and the design and fabrication of monolithic microwave integrated circuits (MMIC's). His most recent position at Raytheon was that of Manager of the MMIC pilot production line. In 1985, he joined the Microwave Division of Epsco, Inc. He is presently Director of Operations of the Solid-State Components Group, which is responsible for designing and fabricating high-power GaAs microwave integrated-circuit amplifiers.

Dr. Vorhaus is a member of the IEEE Antennas and Propagation Society, Phi Beta Kappa, and Tau Beta Pi. He has published extensively and holds several patents in the area of GaAs device technology. He is a past chairman of the GaAs Integrated Circuits Symposium.



Larry K. Hanes received the B.S. degree in 1976 and the Ph.D. degree in 1982 from the North Texas State University.

He joined the Research Division of the Raytheon Company in 1980. His work included the establishment of a GaAs monolithic microwave integrated-circuit (MMIC) layout design center and the development of CAD tools for MMIC mask layout design. He was responsible for the design of GaAs MMIC mask layouts and also worked on the development of GaAs process technology.

Dr. Hanes is now at Raytheon's Special Microwave Devices Operation, where he is responsible for the GaAs direct-write electron-beam lithography center.



Microwave Theory and Techniques Society
1986 Microwave Prize

to
Yalcin Ayasli

for a significant contribution to the field of endeavor of the IEEE MTT Society in the paper entitled "2-20 GHz GaAs Traveling-Wave Amplifier," published in the IEEE Transactions on Microwave Theory and Techniques, Volume MTT-32, Number 1, January 1984.



June 3, 1986

President, MTT

Chairman, MTT Awards Committee

MICROWAVE THEORY
AND TECHNIQUES



**Microwave Theory and Techniques Society
1986 Microwave Prize**

to
Leonard D. Reynolds, Jr.

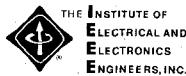
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MICROWAVE THEORY
AND TECHNIQUES

Microwave Application Award

The Microwave Application Award is presented aperiodically to an individual for an outstanding application of microwave theory and techniques. The eligibility requirements are creation of a new device, component, or technique, novel use of components, or both. Clarence Burke Swan was named recipient of the 1986 Microwave Application Award for pioneering the application of diamond heat sinks useful for high-thermal-power-density semiconductor devices. Dr. Swan introduced the use of diamond to conduct the heat away from high-power microwave IMPATT oscillator diodes. Type IIA diamond is three to five times as effective as copper in conducting heat away from small intense heat sources. The recognition of the importance of optimizing the heat sink design, and the combination of other contributions resulted in Dr. Swan achieving record power levels and efficiencies for IMPATT diodes over the frequency range 6 to 49 GHz. His pioneering work helped spark the worldwide thrust on IMPATT development, which made these diodes the most important solid-state microwave source in communications and radar until the introductions of GaAs FET's in the 1970's.

Dr. Swan received a certificate and a check for \$1000. A brief biography of Dr. Swan and a photograph of the certificate follow.



C. Burke Swan (A'55-M'57- SM'74) was born in New Brunswick, Canada, on November 9, 1932. He received the B.Sc. degree in electrical engineering from the University of New Brunswick and the M.A.Sc. degree and Ph.D. degree from the University of Toronto.

He joined the AT&T Bell Laboratories in 1962. His early work included research on high-power harmonic generation with microwave gaseous plasmas, and the first experiments with stacked varactors for higher power and better efficiency.

In 1969 he became supervisor of the Microwave Integrated Circuits group at Allentown, PA. Since 1978, he has supervised the development of high-bit-rate lightwave transmitters for both terrestrial applications and the TAT-8 undersea system.

Dr. Swan has been granted eight patents and has published more than 20 papers. He is a member of the American Optical Society, the Association of Professional Engineers of Ontario, and the American Association for the Advancement of Science.



**Microwave Theory and Techniques Society
1986 Microwave Applications Award**

to
Clarence Burke Swan

for pioneering the application of diamond heat sinks useful for high-thermal-power-density semiconductor devices.



June 3, 1986

President, MTT

Chairman, MTT-Awards Committee

MICROWAVE THEORY
AND TECHNIQUES

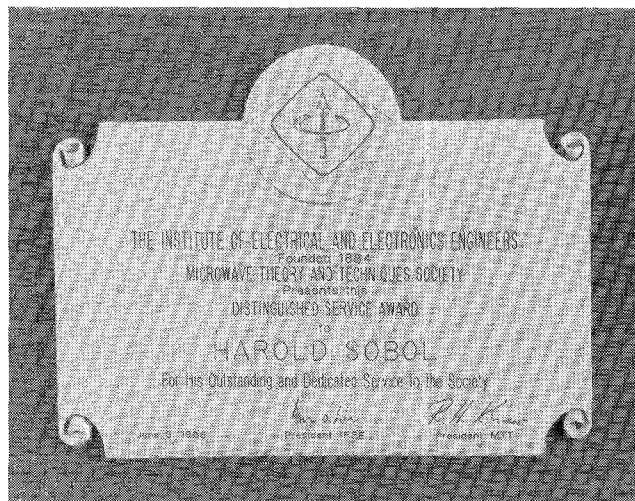
Distinguished Service Award

The Distinguished Service Award honors an individual who has given outstanding service over a sustained period for the benefit and advancement of the Microwave Theory and Techniques Society. The 1986 recipient of the Distinguished Service Award is Harold Sobol, Director of Engineering for Rockwell International's Telecommunications Divisions.

Dr. Sobol has distinguished himself in meaningful service to MTT-S and the IEEE since 1969. In every aspect, Dr. Sobol's work for the MTT-S Administrative Committee has been highly professional and has set a standard for all to follow. His extensive and detailed efforts in long-range planning while Vice President were outstanding. A note of interest is that while chairman of the Awards Committee, he implemented the MTT-S Distinguished Service Award.

Dr. Sobol was the Microwave National Lecturer in 1970. He was elected to the MTT-S AdCom in 1972 and served as Chairman of Technical Committees, Vice-President in 1977, and President in 1978. He was Chairman of the MTT-S Awards Committee for three years and currently heads a committee to review various AdCom standing committees. He has served on the IEEE Awards Planning and Policy Committee and was Chairman of the Dallas Section of the Student Activities Committee for the past two years. Dr. Sobol was a member of the editorial board of *Spectrum* for five years. He served as General Chairman of the 1974 Electronic Components Conference and of the 1975 International Solid-State Circuits Conference. He has been a program committee member of the above conference and of many MTT-S symposia. He was Vice-Chairman of the 1973 IEEE INTERCON.

Dr. Sobol's citation reads "For his Outstanding and Dedicated Service to the Society." He received a plaque and a certificate.



Microwave Theory and Techniques Society
Presents this
Distinguished Service Award
to
Harold Sobol

for his Outstanding and Dedicated Service to the Society



June 3, 1986

H. Sobol *R.H. Kraus*

MICROWAVE THEORY
AND TECHNIQUES



Harold Sobol (S'57-M'59-SM'69-F'73) received the B.S.E.E. degree from City College of New York and the M.S.E. and Ph.D. degrees from the University of Michigan. He has worked on radar, missile guidance, superconducting devices, microwave tubes, plasmas, solid-state devices, microwave integrated circuits, and microwave and lightwave communication systems.

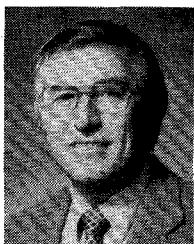
He was with the University of Michigan's Willow Run and Electron Physics Laboratories from 1952 to 1959, the IBM Watson Research Laboratory from 1960 to 1962, and RCA Laboratories from 1962 to 1973. He joined Collins Radio, which was subsequently acquired by Rockwell International in 1973. He served as Director of Product Development for the Collins Transmission Systems Division until May 1985, when he was promoted to Director of Engineering for all of Rockwell's Telecommunications Divisions.

Dr. Sobol has more than 40 publications and has presented more than 50 papers at professional meetings. He is the author and editor of an Academic Press volume on Microwave Integrated Circuits. Dr. Sobol received an IR-100 Award in 1969 for his work on microwave integrated circuits. He received the Dallas IEEE Section Award for outstanding Engineer of 1975 and was awarded an IEEE Centennial Medal in 1984.

Distinguished Microwave Lecturer

The Distinguished Microwave Lecturer is selected annually by AdCom to present a lecture to MTT-S chapters on a subject of importance and current interest to members. The recipient must be an individual who has made significant contributions in the field of his talk. Kenneth L. Carr was the 1985-86 Distinguished Microwave Lecturer. The title of his talk was "The Application of Microwave Technology to the Detection and Treatment of Cancer." He has presented his lecture over 60 times to various chapters in the United States and is scheduled to visit several chapters in Europe and Asia.

The award consists of a bronze plaque. A brief biography of Mr. Carr along with a photograph of his plaque follows.



Kenneth L. Carr (S'53-A'54-M'59-SM'81-F'86) was born on February 15, 1932, in Cambridge, MA. He received the B.S. degree in electrical engineering from Tufts University in 1953. He has worked at Philco, Sylvania, and Airtron, and in 1958 he cofounded Ferrotec, Inc., serving initially as Technical Director and later as President. Following the acquisition of Ferrotec in 1970 by M/A-COM, Mr. Carr became Senior Vice-President and Technical Director. Much of his recent work has been in the development and application of microwave techniques to medicine, in particular, to the detection and treatment of cancer.

Mr. Carr is currently a trustee of Wentworth Institute of Technology, Boston, MA; a member of the staff of the Eastern Virginia Medical School, Norfolk, Virginia; and a member of the Engineering Advisory Council for Southeastern Massachusetts University, in North Dartmouth. Mr. Carr is a member of MTT-S, AAPM, BEMS, IMPI, and the Radiation Research Society. He received NASA's Certificate for Recognition in 1980 and in 1983 for his technical innovations and his scientific contributions.



IEEE Fellows

The IEEE Board of Directors elected nine distinguished Senior Members to the grade of Fellow in 1985. Of these, nine were endorsed by the Microwave Theory and Techniques Society. Eleven other members of MTT-S who also hold membership in other societies of the IEEE were elected to the rank of Fellow based on their other Societies' endorsement.

The grade of Fellow is conferred in recognition of unusual professional distinction. It is awarded only at the initiative of the IEEE Board of Directors after a rigorous nomination and evaluation process. Fellow grade is one of unusual professional distinction and is conferred only by the Board of Directors upon a person of extraordinary qualification and experience who has made important individual contributions to one or more of the fields of electrical engineering, electronics, computer engineering and science, allied branches of engineering, and related arts and sciences. This grade is not conferred automatically upon nomination; only a fraction of those nominated are honored by elevation to Fellow.

The following members of MTT-S were elected Fellows of IEEE and chose to have their Fellow Certificates presented at the 1986 International Microwave Symposium banquet. Bruno Weinschel, IEEE President, presented the Fellow Awards.



Kenneth L. Carr

"For contributions to the application of microwave technology in medicine."



James E. Degenford

"For contributions to hybrid and monolithic microwave integrated circuits."



John B. Horton

"For leadership in the design of military millimeter-wave systems."



James Chih-I. Lin

"For contributions to understanding the biological effects of pulsed microwaves in the inner ear of humans."



Barry S. Perlman

"For contributions to microwave solid-state device and circuit design, and leadership in computer-aided methods for microwave engineering."



David N. McQuiddy, Jr.

"For leadership in the development of solid-state modules for phased arrays."



Jorg E. Raue

"For contributions to the development of millimeter-wave components."

The following were elected Fellows with the endorsement of MTT-S but were presented their Fellow Awards elsewhere.

Timothy Ting-Jau Fong, "For contributions to the development of millimeter-wave technology."

Robert J. Mattauch, "For contributions to the development of low-noise millimeter-wave diode technology."