

2001 MTT-S Awards

Peter W. Staecker, *Fellow, IEEE*

THE International Microwave Symposium (IMS) of the IEEE Microwave Theory and Techniques Society (IEEE MTT-S) attracted over 12 000 participants to its Phoenix, AZ, venue in May 2001, and was an appropriate site to recognize the service and technical excellence of its members. IEEE Microwave Theory and Techniques Society (IEEE MTT-S) President Charlie Jackson and IEEE Past President Bruce Eisenstein shared the responsibility of presiding over awards ceremonies at a number of venues, including the Awards Banquet and Plenary Session. The following summarizes the awards and recognition activities, which were held in Boston, MA, on 20-25 May 2001.

AWARDS SUMMARY

IEEE Technical Field Award

The IEEE Technical Field Awards are publicized in the *IEEE Spectrum* and *The Institute*. The process and nomination forms are also available on the World Wide Web.¹ Nominations can be made by anyone to recognize deserving individuals for the various awards. The selection process for the 2001 IEEE Technical Field Awards started after the nomination deadline of 1 January 2000.

At the Plenary Session of the 2001 IEEE MTT-S IMS, Boston, MA, 15 June 2001, IEEE Past President Bruce Eisenstein recognized the 2001 IEEE Electromagnetics Award recipient, Professor Fawwaz Ulaby.

2001 IEEE ELECTROMAGNETICS AWARD

Fawwaz Ulaby

The IEEE Electromagnetics Award was established in 1996 and is presented to an individual for outstanding contributions to electromagnetics in the areas of theory, application, or education. The Award consists of a bronze medal, certificate, and a cash prize. This years recipient is Fawwaz Ulaby, whose citation reads:

FOR CONTRIBUTIONS TO MICROWAVE REMOTE SENSING AND TECHNOLOGY, ITS GEOSCIENTIFIC APPLICATIONS, AND RELATED EDUCATION.



2001 IEEE MTT-S President Charlie Jackson presents 2000 IEEE MTT-S Presidents Plaque to Roger Sudbury (*left*).



IEEE Past President Bruce Eisenstein with Fawwaz Ulaby, 2001 IEEE Electromagnetics Award Recipient.



Fawwaz Ulaby (M'68–SM'74–F'80) was born in Damascus, Syria, on February 4, 1943, and grew up in Beirut, Lebanon. He received the B.S. degree in physics from the American University of Beirut, Beirut, Lebanon, in 1964, and the Ph.D. degree from the University of Texas, Austin.

He joined the faculty of the University of Kansas in 1968. In 1984, after serving as a Distinguished Professor and Director of the Remote Sensing Laboratory, he left the University of Kansas to join The University of Michigan at Ann Arbor, where he has been the Director of the Radiation Laboratory and Director of the NASA Center for Space Terahertz Technology. He has supervised over 100 M.S. and Ph.D. students and is currently the Williams Professor of Engineering and Vice President for Research of the University. His research applies theoretical modeling, experimental verification, and numerical simulation to increase understanding of the nature of microwave emission and scattering by terrain. His integrated approach led to the development of a number of radar measurement techniques and created the knowledge base underlying many of today's radar and radiometric geoscientific applications and retrieval algorithms. A prolific researcher, his work has been chronicled in some 650 scientific papers, symposia proceedings, encyclopedia articles, book chapters, and technical reports. He has authored or co-authored numerous volumes, including *Microwave Remote Sensing*, *Radar Scattering Statistics of Terrain*, and *Radar Polarimetry*. More recently, he developed the widely used undergraduate textbook *Applied Electromagnetics*.

Prof. Ulaby is a Fellow of the IEEE and a member of the National Academy of Engineering. His extensive service to the IEEE includes past president of the IEEE Geoscience Electronics Society, which he renamed with its current name. He also upgraded the IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING and pioneered the International Geoscience and Remote Sensing Symposia. He served as an associate editor for the IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION, and the MIT Society as chair of its Millimeter-Wave Technical Committee. More recently, he has served in numerous key roles at the IEEE, including his current position as editor-in-chief of the PROCEEDINGS OF THE IEEE. His numerous awards include the Eta Kappa Nu Award, the IEEE Geoscience and Remote Sensing Distinguished Achievement Award, the IEEE Centennial Medal, The American Society of Photogrammetry's Presidential Citation for Meritorious Service, the Kuwait Prize in applied science, the NASA Group Achievement Award, and the Distinguished Faculty Achievement Award and Regents Medal of The University of Michigan.

Class of 2001 IEEE Fellows

The member grade of Fellow is conferred in recognition of unusual and outstanding professional distinction. It is awarded at the initiative of the IEEE Board of Directors following 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 elected.

Fifteen IEEE MTT-S members who were evaluated by the IEEE MTT-S were elected to the grade of Fellow, effective 1 January 2001. These Fellows and their citations are as follows.

Charles Howard Cox, III: *For contributions to the analysis, design, and implementation of analog optical links.*

Samir M. El-Ghazaly: *For contributions to the analysis and simulations of microwave devices and circuits.*

Pierre Guillon: *For contributions to the theory and applications of dielectric resonators and to computer-aided design of microwave passive and active devices.*

Aditya Kumar Gupta: *For contributions to the advance-*



IEEE MTT-S Class of 2001 Fellows at the Plenary Session.

ment of microwave monolithic integrated circuit technology and leadership in the development of manufacturable processes.

Wojciech Kazimierz Gwarek: *For contributions to the theory and applications of electromagnetic modeling.*

Dieter Stefan Jäger: *For contributions to the development of device concepts in microwaves and photonics.*

Raafat R. Mansour: *For contributions to the development of high-temperature superconductive filters and multiplexers.*

Wolfgang S. Menzel: *For contributions to the development of microwave fin-line circuits.*

Jozef Wieslaw Modelski: *For contributions to microwave semiconductor phase modulators and phase shifters.*

Martin Nisenoff: *For leadership in the application of high-temperature superconductivity and cryogenics to microwave components and systems.*

Edward Anthony Rezek: *For contributions to GaAs and InP monolithic microwave integrated circuits and optoelectronic devices.*

Arvind Kumar Sharma: *For contributions to active device and passive component modeling, and design of high-power monolithic millimeter-wave integrated circuits.*

Peter H. Siegel: *For contributions to the field of millimeter and submillimeter-wave radiometry, technology, and spaceborne instruments.*

Wai-Cheung Tang: *For contributions to the miniaturization of microwave filters and multiplexers for satellite applications.*

Ke Wu: *For contributions to hybrid integration of planar and non-planar microwave and millimeter-wave circuits and guided-wave structures.*

In addition, the following 12 IEEE MTT-S members of the Class of 2001 Fellows were evaluated by other Societies.

John D. Cressler: *For contributions to the understanding and optimization of silicon and silicon-germanium bipolar transistors.*

Daniel De Zutter: *For the application of Maxwell's equations and for the development of numerical solution methods in electromagnetic scattering, antennas, and microwave circuits.*

Ronald Dale Esman: *For contributions to the development of fiber-optic systems for microwave applications and optical fiber research.*

Peter S. Hall: *For contributions to the development and application of microstrip antennas and active integrated antenna*

arrays.

Jian-Ming Jin: *For contributions to computational electromagnetics and its applications to antennas, radar scattering, microwave circuits, and biomedical technology.*

Kei May Lau: *For contributions to III-V compound semiconductor heterostructure materials and devices.*

Krzysztof A. Michalski: *For the development of numerical solution methods in electromagnetic scattering, antennas, and microwave circuits.*

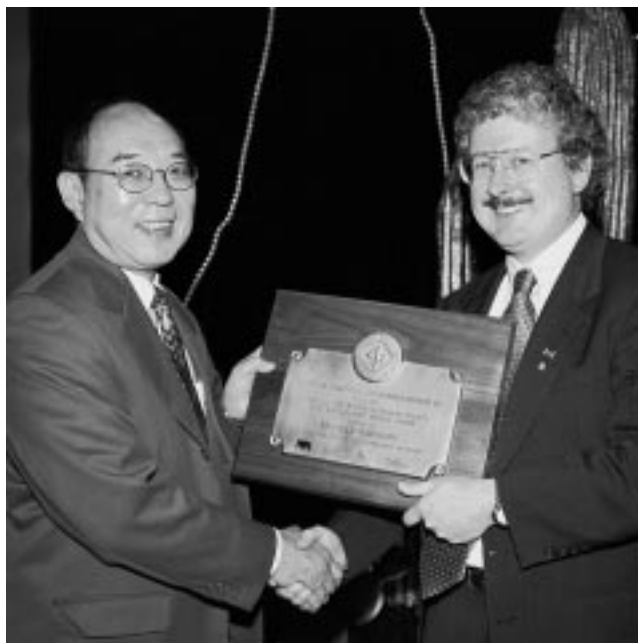
Donald Ralph Pflug: *For contributions to the development and promotion of electromagnetic analysis code validation.*

Roberto G. Rojas: *For contributions to the understanding of high-frequency electromagnetic radiation and scattering.*

Krishna Shenai: *For contributions to the understanding, development, and application of power semiconductor devices and circuits.*

Toshiyuki Shiozawa: *For contributions to engineering-oriented relativistic electromagnetic theory and theoretical study of free-electron lasers.*

Winston I. Way: *For contributions in applying subcarrier multiplexing techniques to lightwave technologies for hybrid fiber-coax access systems.*



Charlie Jackson presents the 2001 IEEE MTT-S Distinguished Service Award to Reynold Kagiwada (left).

IEEE MTT-S Technical Awards

The nomination processes for the IEEE MTT-S Awards are publicized in *IEEE Microwave Magazine*, a publication of the IEEE MTT-S. Nomination Forms for the IEEE MTT-S Awards are available on the World Wide Web,² and nominations may be submitted by anyone to recognize deserving individuals for the various awards. The selection process for the 2001 IEEE MTT-S Awards started after the nomination deadline of 1 July 2000 and the results of the selection process were first announced in the IEEE MTT-S Fall Administrative Committee Meeting. A listing of the annual IEEE MTT-S Awards was published in the official program of the 2001 IEEE MTT-S IMS and in the *2001 International Microwave Symposium Digest*.

At the Awards Banquet of the 2001 IEEE MTT-S IMS, held in Phoenix, AZ, 23 May 2001, IEEE MTT-S AdCom President Charlie Jackson presented the following IEEE MTT-S Technical Awards.

2001 DISTINGUISHED SERVICE AWARD Reynold Kagiwada

The Distinguished Service Award is presented to recognize an individual who has given outstanding service for the benefit and advancement of the IEEE MTT-S. This year's recipient is Dr. Reynold Kagiwada, whose citation reads:

*FOR HIS OUTSTANDING AND DEDICATED SERVICE
TO THE SOCIETY.*



Reynold Kagiwada (M'72-SM'79-F'89) received the B.S., M.S., and Ph.D. degrees from the University of California at Los Angeles (UCLA).

He is currently an Advanced Technology Manager at TRW, Redondo Beach, CA, where he is responsible for technical management, strategic planning, and maintains current awareness of electronic technology developments and trends. He has conducted and managed research and development for over 30 years in the fields of microwave and millimeter waves. He holds nine patents and has co-

authored 46 technical papers.

Dr. Kagiwada is a Fellow of the IEEE. He is past president of IEEE MTT-S and has chaired several committees within the IEEE MTT-S, including the Newsletter, Technical Committee, Education Committee, Budget Committee, and Long Range Planning and Nomination and Appointment Committee. He has also been heavily involved for several years with the IEEE MTT-S International Microwave Symposium (IMS), serving on both the Technical Program and Steering Committees. He has been the Technical Program chairman for two International Microwave Symposia. For several years, he has worked on the Technical and Steering Committees for the Microwave and Millimeter-Wave Monolithic Circuits Symposium, which has been renamed the RF Integrated Circuits Symposium. He has served as chairman, vice chairman, Technical Program chairman, finance chairman and local arrangement chairman. He was the recipient of the IEEE Third Millennium Medal and the N. Walter Cox Award. He was also the Gold Medal recipient of the TRW Ramo Transfer Award.

2001 DISTINGUISHED EDUCATOR AWARD K. C. Gupta

The Distinguished Educator Award was inspired by the untimely death of Prof. F. J. Rosenbaum (1937-1992), an outstanding teacher of microwave science and a dedicated AdCom member and contributor. The award recognizes a distinguished educator in the field of microwave engineering and science who best exemplifies the special human qualities

²[Online]. Available: <http://www.mtt.org>



Charlie Jackson presents the 2001 IEEE MTT-S Distinguished Educator Award to K. C. Gupta (left).

of Fred Rosenbaum, who considered teaching a high calling and demonstrated his dedication to the IEEE MTT-S through tireless service. This year's recipient is K. C. Gupta, whose citation reads:

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



K. C. Gupta (M'62–SM'74–F'88) received the B.E. and M.E. degrees in electrical communication engineering from the Indian Institute of Science, Bangalore, India, in 1961 and 1962, respectively, and the Ph.D. degree from the Birla Institute of Technology and Science, Pilani, India, in 1969.

He has been a Professor at the University of Colorado at Boulder since 1983. He is currently also the Associate Director for the National Science Foundation (NSF) I/UCR Center for Advanced Manufacturing and Packaging of Microwave, Optical and Digital Electronics (CAMPmode), University of Colorado at Boulder and a Guest Researcher with the RF Technology Group of the National Institute of Standards and Technology (NIST), Boulder, CO. From 1969 to 1984, he was with the Indian Institute of Technology, Kanpur, India, where he was a Professor of electrical engineering. From 1971 to 1979, he was the Coordinator for the Phased Array Radar Group, Advanced Center for Electronics Systems, Indian Institute of Technology (IITK). While on leave from the IITK, he was a Visiting Professor at the University of Waterloo, Waterloo, ON, Canada, the Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland, the Technical University of Denmark, Lyngby, Denmark, the Eidgenossische Technische Hochschule, Zurich, Switzerland, and the University of Kansas, Lawrence. While on sabbatical from the University of Colorado from 1993 to 1994, he was a Visiting Professor at the Indian Institute of Science and a consultant for the Indian Telephone Industries. His current research interests are in the area of computer-aided design techniques (including ANN applications) for microwave and millimeter-wave integrated circuits, nonlinear characterization and modeling, RF microelectromechanical systems (MEMS),

and reconfigurable antennas. He has authored or co-authored *Microwave Integrated Circuits* (New York: Wiley, 1974; New York: Halsted Press, 1974), *Microstrip Line and Slotlines* (Norwood, MA: Artech House, 1979; revised second edition, 1996), *Microwaves* (New York: Wiley, 1979; New York: Halsted Press, 1980, Mexico: Editorial Limusa Mexico, 1983), *CAD of Microwave Circuits* (Norwood, MA: Artech House, 1981; Chinese Scientific Press, 1986; Radio I Syvaz, 1987), *Microstrip Antenna Design* (Norwood, MA: Artech House, 1988), *Analysis and Design of Planar Microwave Components* (Piscataway, NJ: IEEE Press, 1994), *Analysis and Design of Integrated Circuit-Antenna Modules* (New York: Wiley 1999), and *Neural Networks for RF and Microwave Design* (Norwood, MA: Artech House, 2000). He has also contributed chapters to the *Handbook of Microstrip Antennas* (Stevenage, U.K.: Peregrinus, 1989), *Handbook of Microwave and Optical Components, Vol. 1* (New York: Wiley, 1989), *Microwave Solid State Circuit Design* (New York: Wiley, 1988), *Numerical Techniques for Microwave and Millimeter Wave Passive Structures* (New York: Wiley, 1989), and *Encyclopedia of Electrical and Electronics Engineering* (New York: Wiley 1999). He has authored or co-authored approximately 200 research papers and holds four patents in the microwave area. He is the founding Editor of the *International Journal of RF and Microwave Computer-Aided Engineering*, published by John Wiley & Sons since 1991. He is on the Editorial Board of *Microwave and Optical Technology Letters* and the *International Journal of Numerical Modeling*. He is listed in *Who's Who in America*, *Who's Who in the World*, *Who's Who in Engineering*, and *Who's Who in American Education*.

Dr. Gupta is a Fellow of the IEEE and the Institution of Electronics and Telecommunication Engineers (IETE), India. He is a member of URSI (Commission D, USA) and the Electromagnetics Academy of the Massachusetts Institute of Technology (MIT). He is a member of the AdCom for the IEEE MTT-S, chair of the IEEE MTT-S Standing Committee on Education, past co-chair of the IEEE MTT-S Technical Committee on Computer-Aided Design (MTT-1), a member of the IEEE Technical Committee on Microwave Field Theory (MTT-15), a member of the IEEE-EAB Committee on Continuing Education, a member of the IEEE-EAB Societies Education Committee, and is on the Technical Program Committees for the IEEE MTT-S International Symposia. He is an associate editor for the *IEEE Microwave Magazine*, and is on the Editorial Board of the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES. He was the recipient of the IEEE Third Millennium Medal.

2001 MICROWAVE PIONEER AWARD

Om P. Gandhi

The Microwave Pioneer Award recognizes an individual or a team not exceeding three persons having made outstanding pioneering technical contributions that advance microwave theory and techniques and described in an archival paper published at least 20 years prior to the year of the award. This year's recipient is Prof. Om P. Gandhi, whose citation reads:

FOR CONTRIBUTIONS TO DOSIMETRY OF ELECTROMAGNETIC RADIATION AND RESULTING REVISIONS OF RF/MICROWAVE SAFETY STANDARDS.



Om P. Gandhi (S'57–M'58–SM'65–F'79–LF'99) received the B.S. degree (with honors) in physics from the University of Delhi, Delhi, India, the Postgraduate Diploma of the Indian Institute of Science, Bangalore, India, and M.S.E. and Sc.D. degrees in electrical engineering from The University of Michigan at Ann Arbor.

He has been a faculty member in the Department of Electrical Engineering, University of Utah, Salt Lake City, since 1967, where he has been a Professor since 1973. He also served as the Department Chairman from 1992 to 2000. During his professional career, he has been with the Philco-Ford Research Laboratory, Blue Bell, PA



Charlie Jackson presents the 2001 IEEE MTT-S Microwave Pioneer Award to Om P. Gandhi (*left*).

(1960–1962) and the Central Electronics Engineering Research Laboratory, Pilani, India (1962–1966). While with the University of Utah, he was initially involved with crossed-field microwave tubes and semiconductor plasmas before entering the field of bioelectromagnetics. His entry into the latter field was a result of spending the autumn quarter of 1973 consulting at the Walter Reed Army Institute of Research, Washington D.C. Experimental measurements of frequency-dependent absorption of RF by anesthetized rats and lossy prolate spheres of various size led him to postulate conditions of maximum absorption by man and animals—work that was presented at the IEEE MTT-S Symposium, Palo Alto, CA, 12–14 May 1975 and published that same year in this TRANSACTIONS as “Conditions of Strongest Electromagnetic Power Deposition in Man and Animals.” A contribution of this paper was to show that the absorption cross section of the human body at “resonance” is higher by a factor of 8–10 than expected previously and can be four or more times the physical cross section of the body. This work led to a downward revision of the ANSI/IEEE RF/Microwave safety guidelines (ANSI C95.1-1982) and subsequently by IRPA of the World Health Organization (1984) and by Standards Committees in Germany (1984), Australia (1985), Canada (1987), U.K. (1989), and Japan (1990). He authored *Microwave Engineering and Applications* (New York: Pergamon, 1981) and has authored or co-authored several book chapters and over 200 journal papers on electromagnetic dosimetry, microwave tubes, and solid-state devices. He also edited *Biological Effects and Medical Applications of Electromagnetic Energy* (Englewood Cliffs, NJ: Prentice-Hall, 1990) and co-edited *Electromagnetic Biointeraction* (New York: Plenum, 1989). For the last 25 years, he and his students have been involved in the development of anatomically based models of the human body (present resolutions on the order of 1–3 mm) and numerical electromagnetic techniques that are being used to understand coupling of electromagnetic (EM) fields for far- and near-field exposures from ELF to microwave frequencies. Since all of the current safety standards in the U.S. and elsewhere are set in terms of the internal rates of EM energy deposition, these techniques have been used for compliance testing of electromagnetic devices from cellular telephones to electronic article surveillance systems. His current research interests are inversion algorithms based on these techniques for medical diagnostics and design of noninvasive applicators for biomedical application.

Dr. Gandhi is a Fellow of the IEEE. He was president of the Bioelectromagnetics Society (1992–1993), co-chairman of the IEEE SCC 28.IV Subcommittee on RF Safety Standards (1988–1997), and chairman of the IEEE Committee on Man and Radiation (COMAR) (1980–1982). He was the recipient of the Distinguished Research Award presented by the University of Utah for 1979–1980. In 1995, he was the recipient of the d’Arsonval Medal of the Bioelectromagnetics Society for pioneering contributions to the field of bioelectromagnetics.



Charlie Jackson presents the 2001 IEEE MTT-S Application Award to James C. Rautio (*left*).

2001 MICROWAVE APPLICATION AWARD

James C. Rautio

The Microwave Application Award recognizes an individual or team for outstanding application of microwave theory and techniques. This year’s recipient is James C. Rautio, whose citation reads:

FOR DEVELOPMENT OF WIDELY USED FULL-WAVE ELECTROMAGNETIC SOLUTION SOFTWARE FOR THE COMPUTATION OF PRINTED CIRCUIT CHARACTERISTICS.



James C. Rautio (S’77–M’78–SM’91–F’00) began his life on a farm and might still be there but for amateur radio. His father had a pre-World War II rig and he was intensely curious. This led to getting a ham license in 1969 and to his decision to become an electrical engineer even though no one in his family had ever been to college. After high school, he worked for two years. He received the B.S.E.E. degree from Cornell University, Ithaca, NY, in 1978, the M.S. degree in systems engineering from the University of Pennsylvania, Philadelphia, in 1982, and the Ph.D. degree from Syracuse University, Syracuse, NY, in 1986.

He was with General Electric Space Systems, where he designed microwave circuits on alumina, developed millimeter-wave measurement equipment, and wrote circuit analysis software. In 1982, he joined the GE Electronics Laboratory, Syracuse, NY, where he designed monolithic GaAs microwave integrated circuits. His software development was pursued at home by starting Sonnet Software in 1983, and developing the simple antenna analysis program “Annie.” Annie ran on the Apple II, Commodore 64, and IBM-PC. On the first two computers, the program was written entirely in assembly language, including floating point routines. Selling Annie commercially provided an entrepreneurial education critical for later commercial success. His research on the electromagnetic analysis of planar circuits was prompted by his microwave

design experience, especially GaAs, where tweaking a design was no longer possible. Inspired by the early work of Rolf Jansen, he felt the solution might be found in numerical electromagnetics. He was a Visiting Professor at Syracuse and Cornell Universities for several years, while continuing to develop software. In 1988, he took Sonnet Software full time. Sonnet's first major sale was in 1989, the same year Sonnet Software incorporated and hired its first employee. The following decade was devoted to promoting the acceptance of numerical electromagnetics in the high-frequency design cycle. As part of this effort, Sonnet Software was listed on the 1995 Inc. 500 list of the fastest growing privately held U.S. companies, the only high-frequency software company ever so listed. A recent project was the conversion of an 1882 biography of James C. Maxwell to electronic form, which is available on the World Wide Web.

Dr. Rautio was the recipient of the 1984 ARRL Technical Excellence Award for a series of five papers about Annie that appeared in *QST Magazine*.

2001 MICROWAVE PRIZE

Dan Anderson, Mitek Lisak, Ulf Jordan,
Torbjörn Olsson, and Mats Åhlander

The Microwave Prize recognizes, on an annual basis, the most significant contribution by a published paper to the field of interest of the IEEE MTT-S. Papers under consideration are those published during the period January 1 to December 31 of the year preceding the Fall Meeting of the Administrative Committee at which the award is considered. This year's recipients are Dan Anderson, Mitek Lisak, Ulf Jordan, Torbjörn Olsson, and Mats Åhlander. Their citation reads:

FOR A SIGNIFICANT CONTRIBUTION TO THE FIELD OF ENDEAVOR OF THE IEEE MTT SOCIETY IN THE PAPER ENTITLED Microwave Breakdown in Resonators and Filters, IEEE Transactions on Microwave Theory and Techniques, MTT-48, pp. 2547–2556 (1998)



Dan Anderson was born in Göteborg, Sweden, in 1943. He received the M.S. degree in electrical engineering and the Ph.D. degree in electron physics from the Chalmers University of Technology, Göteborg, Sweden, in 1969 and 1973, respectively, and the B.S. degree in mathematics and astronomy from the University of Göteborg, Göteborg, Sweden, in 1971.

Since 1973, he has been engaged in research and education at the Chalmers University of Technology, where he is currently a Professor of electromagnetics. His research and teaching interests covers a broad range of basic aspects and applications of electromagnetic theory, e.g., plasma physics with application to fusion energy production, nonlinear optics with applications to high-speed fiber-optical communication, microwave discharges with applications to microwave breakdown phenomena, and accelerator physics. He is also engaged in applied research in collaborations between Chalmers University of Technology and different Swedish high-technology industries. He has been involved for many years as a part-time consultant for research and development work in industry.



Charlie Jackson with the 2001 IEEE MTT-S Microwave Prize Recipients Torbjörn Olsson (left) and Ulf Jordan (right).



Mitek Lisak was born in Szczecin, Poland, in 1947. He studied at the University of Technology, Stettin, Poland, from 1965 to 1969. He emigrated due to political reasons to Sweden, where he continued his studies at the Chalmers University of Technology, Göteborg, Sweden, from 1970 to 1972. He received the M.S. degree in electrical engineering and the Ph.D. degree in electron physics from the Chalmers Institute of Technology, in 1972 and 1976, respectively.

Since 1977, he has been with the Chalmers Institute of Technology, where he has been engaged in research and education and has been a Professor of electromagnetic field theory and plasma physics. He has been a Project Leader of both national and international projects and has worked as a part-time research consultant for industry. His research activity covers a broad range of plasma physics with application to fusion energy production, nonlinear optics with applications to high-speed fiber optical communication, microwave discharge physics with applications to microwave phenomena, and accelerator physics. He has authored or co-authored over 200 papers in international scientific journals and over 100 contributions to scientific conferences and symposia, including many invited presentations. He has also authored and co-authored eight lecture compendia and several popular review reports on thermonuclear fusion and nonlinear optics. He has co-supervised 35 diploma works for the M.Sc. degree, 18 licentiate theses, and 15 Ph.D. theses. Since 1999, he has been the Head of the Swedish Fusion Research Programme.



Ulf Jordan was born in Storfors, Sweden, in 1974. He received the M.Sc. degree in electrical and electronic engineering from the Chalmers University of Technology, Göteborg, Sweden, in 1999, and is currently working toward his Ph.D. degree.

His main research interests include plasma physics and microwave breakdown.



Torbjörn Olsson (A'97) was born 1955. He received the Master degree in engineering physics and the Ph.D. degree from the Chalmers University of Technology, Göteborg, Sweden, in 1979 and 1987, respectively. His doctoral dissertation involved both experimental and theoretical efforts. The experimental challenge was to use high-resolution laser and RF spectroscopy in order to investigate atomic hyperfine structure. An atomic beam apparatus was constructed and the complete system comprised also optics, RF equipment, data-sampling system, and a sophisticated single-mode ring laser. The title of his doctoral dissertation reads "Experimental and Theoretical Investigation of Hyperfine Structure and Isotope Shifts in Mo and Alkaline Earth Elements."

From 1987 to 1989, he was with the Jesse W. Beams Laboratory, Charlottesville, VA, where the issue was to use narrow-band strong pulse lasers to investigate negative ions trapped in a so-called ion trap of Penning type. In such a configuration, RF signals are used for monitoring purposes of the stored charge. During the subsequent four years as a Research Assistant in the Department of Atomic and Molecular Physics, Royal Institute of Technology, Stockholm, Sweden, most of his interest was put into possible application of spectroscopy. In collaboration with the Institution of Accelerator Physics, Åbo Akademi, Sweden, gases at a pressure range of 0.1–15 bar were investigated using proton- and alpha-particle bombardment in conjunction with classical spectroscopy. His effort was also given to a possible detector concept, using laser excitation for the detection of ionizing radiation. Since 1993, he has been with Allgon Systems AB, where his devotion has been the analysis and construction of microwave filters. The possible problem of microwave breakdown in components used for communication systems constraints the freedom of design and has been a natural topic to study.

Dr. Olsson was the recipient of a post-doctoral scholarship presented by the Swedish Natural Science Research Council.



Mats Åhlander (M'00) was born in Stockholm, Sweden, in 1974. He received the M.Sc.E.E degree from the Royal Institute of Technology (KTH), Stockholm, Sweden. In his final year at KTH, an area for a diploma thesis work dealing with the subject of microwave induced breakdown in resonators was suggested to him. As part of his thesis activity at Allgon, he developed a numerical tool for predicting the breakdown threshold in microwave resonators. Some of the results from the thesis work later were included in a joint publication. He graduated from

KTH in May 1998.

In August 1998, he joined the Signal Processing Team at Ericsson Radio Systems AB, where he is currently involved in the development of traffic signal-processing algorithms for GSM/EDGE base stations.

N. WALTER COX AWARD John W. Wassel

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 to a Society volunteer whose efforts on behalf of IEEE MTT-S best exemplify Walter's spirit and dedication. The 2001 recipient is John Wassel, whose citation reads:

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



Charlie Jackson presents the 2001 IEEE MTT-S N. Walter Cox Award to John W. Wassel.



John W. Wassel (M'69–SM'83) received the B.Sc. degree in physics from the University of Oklahoma, Norman, in 1960, and the M.S. degree in engineering from Southern Methodist University, Dallas, TX, in 1967.

He retired from the Raytheon Systems Company, Dallas, TX, in 1999. The RSC operations in Dallas, TX, were the former Defense Systems of Texas Instruments Incorporated, which was acquired in 1997. His final position was Deputy Manager of the Sensors Core Competency for Research and Development with responsibility for research activities in electro-optics, RF and microwaves, antennas, radomes, microwave materials, and microelectronics. He has extensive experience in various microwave designs such as couplers, dividers, filters, amplifiers, converters, parametric amplifiers, YIG filters and oscillators, and specialized receiver applications, mostly for defense systems. His prior experience was with Collins Radio, Microwave Physics, and LTV Continental Electronics.

Dr. Wassel served as president of the IEEE Microwave Theory and Techniques Society (IEEE MTT-S) during 1996 and was a member of the IEEE MTT-S AdCom from 1991 to 1998. He was editor of the *IEEE MTT-S Newsletter* from 1991 to 1994 and chairman of the 1990 IEEE MTT-S International Microwave Symposium (IMS), Dallas, TX. He also served on the Organizing Committees for the 1987 and 1982 IEEE MTT-S International Microwave Symposia, held in Las Vegas, NV, and Dallas, TX, respectively. He is a former IEEE MTT-S chapter chairman and conference chairman for the Dallas IEEE Section. He was the recipient of the 1991 Outstanding Engineer Award presented by the Dallas IEEE Section.

THE STUDENT AWARDS PROGRAM (GRADUATE FELLOWSHIPS AND STUDENT PAPER COMPETITION)

This marks the third year that students are being honored at a special awards luncheon.

Several Graduate Fellowships are awarded each year, based on a submission process described on the World Wide Web.³

³[Online]. Available: <http://www.mtt.org>

This year, six Ph.D. candidates were selected for fellowships, and were presented with their awards at the Student Awards Program Luncheon on 24 May 2001. Their names, affiliations, and research areas are listed below.

Pavel Belov, St. Petersburg Institute of Fine Mechanics and Optics, St. Petersburg, Russia: *Research topic: Investigation of the electromagnetic properties of microwave photonic-bandgap materials.*

Joey Bray, Carleton University, Ottawa, ON, Canada: *Research topic: Millimeter-wave waveguide ferrite phase shifters fully embedded in a low-temperature co-fired ceramic package.*

Jonathan Fredrick, University of California at Los Angeles: *Research topic: Ultra-high-performance phase shifters, tunable transmission lines, and variable couplers for applications in feed-forward power amplifiers.*

Anthony Grbic, University of Toronto, Toronto, ON, Canada: *Research topic: Development of low-cost printed antenna array front-end technology for the deployment of broad-band millimeter-wave indoor services supporting mobility.*

Zee Meantng, University of Manchester; Institute of Science and Technology, Manchester, U.K.: *Research topic: Semiconductor junction circulator.*

Ramesh Ramadoss, University of Colorado at Boulder: *Research topic: Programmable aperture microelectromechanical (MEMS) interconnected antenna array using printed circuit technology.*

The student paper competition has become an important part of the IEEE MTT-S IMS. This year, 242 student papers were submitted as contributed papers, 140 were accepted, and of those, 26 were selected as semifinalists, whose travel to the IEEE MTT-S IMS was subsidized by the IEEE MTT-S and the National Science Foundation (NSF). Final judging was done during the IMS. The competition winners are listed below.

First Place:

Ronald Reano, The University of Michigan, Ann Arbor: *Integrated electro-thermal probe.*

Second Place:

Ryan Miyamoto, University of California at Los Angeles: *A reconfigurable active retrodirective/direct conversion receiver array for wireless sensor systems.*

Miguel Urteaga, University of California at Santa Barbara: *185-GHz monolithic amplifier in InGaAs/InAlAs transferred-substrate heterojunction bipolar transistor (HBT) technology.*

Third Place:

Jianjun Xu, Carleton University, Ottawa, ON, Canada: *Exact adjoint sensitivity analysis for neural-based microwave modeling and design.*

Chang-Ho Lee, Georgia Institute of Technology, Atlanta: *A compact low-temperature co-fired ceramic (LTCC) Ku-band transmitter module with integrated filter for satellite communication applications.*

Dimitrios Peroulis, The University of Michigan, Ann Arbor: *Tunable lumped components with applications to reconfigurable MEMS filters.*

Honorable Mention:

Matthew Morgan, California Institute of Technology, Pasadena: *A full-waveguide-band monolithic microwave integrated circuit (MMIC) tripler for 75–110 GHz.*

Costas Sarris, The University of Michigan, Ann Arbor: *Development and application of an efficient finite-difference time-domain (FDTD)/Haar multiresolution time-domain (MRTD) numerical interface.*

Jun Zou, University of Illinois Urbana-Champaign: *Development of vertical planar coil inductors using plastic deformation magnetic assembly.*

Amy Droitcour, Stanford University, Stanford, CA: *A microwave radio for Doppler radar sensing of vital signs.*

Mark P. van der Heijden, Delft University Delft, The Netherlands: *Ultra linear distributed class-AB LDMOS RF power amplifier*

Seong-Sik Jeon, University of California at Los Angeles: *A novel planar array smart antenna system with hybrid analog-digital beamforming.*

Bruce Green, Cornell University, Ithaca, NY: *High-power broad-band AlGaIn/GaN high electron-mobility transistor (HEMT) MMICs on SiC substrates.*

IEEE MTT-S Administrative Committee Awards and Recognition

In addition to the IEEE honors and IEEE MTT-S Awards, the Awards Committee and the President, in consultation with various IEEE MTT-S Administrative and Technical Committees, recognize the achievements of those key individuals who have given extraordinary service to the IEEE MTT-S by presenting them with Certificates of Recognition. These awards were announced during Microwave Week and were presented by President Charlie Jackson during the AdCom Dinner, the Symposium Plenary Session, the Technical Program Committee Luncheon, and the Awards Banquet.

1998–2000 EDITOR, IEEE TRANSACTIONS
ON MICROWAVE THEORY AND TECHNIQUES
James W. Mink

1998–2000 EDITOR, IEEE MICROWAVE
AND GUIDED WAVE LETTERS
Madu S. Gupta

1998–2000 DISTINGUISHED MICROWAVE LECTURERS

The IEEE MTT-S established the office of Distinguished Microwave Lecturer as a service to its members in 1967. Qualified speakers are chosen to bring topics of current interest

to the microwave community, specifically, to IEEE MTT-S, student, and other Society chapters. These speakers have multiyear commitments and make 6–7 lecture trips per year. Four Distinguished Microwave Lecturers finishing their three-year terms of service this year, and their lecture topics, are as follows.

Thomas J. Brazil *Nonlinear High-Frequency Computer-Aided Design—The Key to Success in Wireless Design*

Gailon E. Brehm *MMICs for Wireless Communications—Design and Technology Tradeoffs*

J. Michael Golio *Low-Voltage Microwave Electronics*

Robert J. Trew *Wide-Bandgap Semiconductor Microwave Power Amplifiers*

Other individuals who have received certificates of recognition include the following:

IEEE MTT-S Administrative Committee

Roger Sudbury, 2000 President

Robert T. (Tim) Kemerley, Member 1995–2000

Michael B. Steer, Member 1998–2000

Jeffrey M. Pond, 2000 Secretary

2000 IEEE IMS

Glenn Thoren, General Chair

Richard Sparks, Vice-General Chair

Peter Staecker, Technical Chair

Manfred Schindler, Vice-Technical Chair

Rich Jerome, Local Arrangements Chair

Other Symposia and Meetings

Michael Fennelly, Conference Chair 55th ARFTG Conference

Fazal Ali, General Chair, 2000 RFIC Symposium

Service to the IEEE MTT-S IMS Technical Program Committee

George Matthaei, for Contributions as Technical Program Committee (TPC) member from 1966 to 2000

Walter Curtice, for Contributions as TPC member from 1990 to 2000, and in addition, as Chair of the Princeton–Central Jersey IEEE MTT/AP/ED joint Chapter, from 1980 to 2000

Julian Dees, for Contributions as TPC member from 1990 to 2000