2015 Fellows Elevation and Recognition

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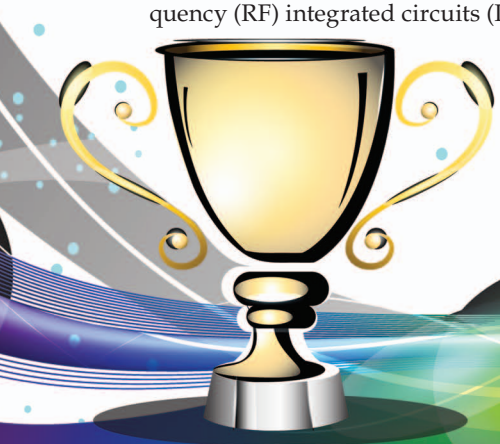
Each year, a selected number of engineers are elevated to the level of IEEE Fellow. The number of Fellows elevated in any year cannot exceed one-tenth of 1% of the total voting membership. The Fellow is the highest grade of membership in the IEEE and is conferred by the IEEE Board of Directors. This award recognizes the individual's outstanding record of accomplishments in any IEEE field of interest. The IEEE grade of Fellow was born in 1964 during the merger of the American Institute of Electrical Engineers and the Institute of Radio Engineers.

The total IEEE membership is more than 400,000 individuals and represents more than 160 countries. This year, 300 Members were elevated to Fellow. Of the 300, nine were awarded the status of Fellow by the IEEE Microwave Theory and Techniques Society (MTT-S). Another 17 are members of the MTT-S but were awarded the level of Fellow by other Societies. In alphabetical order, those awarded the level of Fellow by the MTT-S are

- Olga Borić-Lubecke for contributions to biomedical microwave technology
- Natalino Camilleri for leadership in radio-frequency (RF) integrated circuits (ICs) and systems
- Nuno Borges Carvalho for contributions in the characterization and design of nonlinear RF circuits
- Ian Gresham for technical leadership in commercial automotive radar sensors
- Jonathan B. Hacker for contributions to terahertz ICs and devices
- Paul D. Hale for contributions to the metrology of high-speed electronic and optoelectronic devices
- Hiroshi Kondoh for contributions to microwave and millimeter-wave monolithic microwave integrated circuit (MMIC) technologies
- Giuseppe Macchiarella for contributions to the synthesis of microwave filters and multiplexers
- Paul J. Tasker for contributions to microwave measurements and their application to microwave models.

In the following, we present short biographies of these new MTT-S Fellows to honor their contributions to the MTT-S. The Society is a close-knit family, exploring an ever-widening space of using microwaves and RF. Our Fellows have worked very hard and undoubtedly made many sacrifices for their work. Please join me in congratulating each of these new Fellows.



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For contributions to biomedical microwave technology

Olga Borić-Lubecke received her B.Sc. degree from the University of Belgrade, Yugoslavia, in 1989; her M.S. degree from the California Institute of Technology, Pasadena, in 1990; and her Ph.D. degree from the University of California at Los Angeles in 1995, all in electrical engineering.

Since 2003, she has been with the University of Hawaii (UH) at Manoa, where she is currently a professor of electrical engineering. Prior to joining UH, she was a member of the technical staff with Bell Laboratories, Lucent Technologies, Murray Hill, New Jersey, where she conducted research in RFIC technology and biomedical applications of wireless systems. From 1996 to 1998, she was a visiting researcher at the Institute of Physical and Chemical Research, Sendai, Japan. From 1995 to 1996, she was a resident research associate at the NASA Jet Propulsion Laboratory, Pasadena, California. She has authored or coauthored more than 170 journal and conference publications, and her research has been featured in various newspapers, magazines, and radio programs. Dr. Borić-Lubecke was a corecipient of the Emerging Technology Award at TechConnect 2007 and cofounded and served as chief technical advisor for a start-up company, Kai Medical. Her current research interests include silicon RFICs, high-frequency ICs, biomedical applications, and renewable energy.

Dr. Borić-Lubecke has pioneered research work in noncontact monitoring of cardiopulmonary activity using microwave technologies. Her major technical contributions include establishing the feasibility of using silicon RFICs for Doppler radar physiological monitoring, advancing the state of the art in Doppler radar hardware architectures and physiological signal extraction, and establishing the validity of Doppler radar physiological monitoring for health-care applications [1]–[4].

Dr. Borić-Lubecke was the adviser for several award-winning papers in student paper competitions, including honorable mention at the 2001 IEEE MTT-S International Microwave Symposium (IMS2001), third place at the 2001 IEEE Engineering in Medicine and Biology Society (EMBS) Conference, and first place at IMS2003. She is the coauthor of a paper that received an Honorable Mention Award at the 2006 IEEE Radio Wireless Symposium. She serves on the Technical Program Committee for the IEEE IMS and on the MTT-S Technical Committee (TC) MTT-20, Wireless Communications. She was the workshop chair for IMS2003 and as the technical program vice chair for IMS2007. She served as an associate editor for *IEEE Microwave and Wireless Components Letters* and for the IEEE EMBS Conference from 2011 to 2014. She is currently an associate editor of *IEEE Transactions on Microwave Theory and Techniques.*

References

[1] O. Borić-Lubecke and V. M. Lubecke, "Wireless house calls: Using communications technology for health care and monitoring," *IEEE Microwave Mag.*, vol. 3, no. 1, pp. 43–48, Sept. 2002.

[2] A. Droitcour, O. Borić-Lubecke, V. M. Lubecke, J. Lin, and G. T. Kovacs, "Range correlation and I/Q performance benefits in single chip silicon doppler radars for non-contact cardiopulmonary monitoring," *IEEE Trans. Microwave Theory Tech.*, vol. 52, no. 3, pp. 838–848, Mar. 2004.

[3] W. Massagram, V. M. Lubecke, A. Host-Madsen, and O. Borić-Lubecke, "Assessment of heart rate variability and respiratory sinus arrhythmia via Doppler radar," *IEEE Trans. Microwave Theory Tech.*, vol. 57, no. 10, pp. 2542–2549, Oct. 2009.

[4] I. Mostafanezhad and O. Borić-Lubecke, "An RF-based analog linear demodulator," *IEEE Microwave Wireless Compon. Lett.*, vol. 21, no. 7, pp. 392–394, July 2011.

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For leadership in RFICs and systems

Natalino Camilleri received his B.S.E.E. degree from the University of Malta with first class honors. He earned his Ph.D. degree in electrical engineering under the mentorship of Prof. Tatsuo Itoh at the University of Texas at Austin in 1985.

He is a distinguished RF technology professional. Early in his career, he was a notable engineer with several publications on RF circuits and technology. He later moved into management roles; however, he remained on the forefront of technology.

He started his career in military millimeter-wave circuits by working on several emerging technologies such as the pseudomorphic high-electron-mobility transistor (pHEMT) and gallium arsenide (GaAs) heterojunction bipolar transistors (HBTs). While at Texas Instruments and Avantek, his work was often published [1]–[3].

In 1990, he made a career change by moving into the emerging cellular industry at Motorola. He quickly realized the importance of low-cost semiconductors for consumer products and focused on several technologies but noted the use of complementary metal–oxide–semiconductors (CMOS) for the consumer market [4]. He focused on RF CMOS power amplifier technology, and he was one of the founding fathers of the laterally diffused metal–oxide transistor technology for RF power amplification.

He realized the importance of higher levels of integration, and in 1995, he moved to Advanced Micro Devices, in the Digital Signal Processing Group, to work on chip sets for the U.S. cordless phone market operating at 900 MHz, 2.4 GHz, and 5.8 GHz [5]. The chips he developed were adopted by several notable brands such as AT&T, Panasonic, Vtech, and Uniden.

In 2005, he joined Alien Technology as the vice president of engineering to work on the development of passive ultrahigh-frequency RF identification (UHF RFID) tag ICs. He was the driving force behind three generations of very low-power passive UHF RFID tag chips with the trademark of Higgs. Billions of Higgs chips were shipped since they have been notably the best performing ICs on the market.

In 2012, he joined Nitero as the vice president of RF engineering. With his experience in millimeter-wave devices and in CMOS design, he was instrumental in developing the first 28-nm CMOS transceiver at 60 GHz for 802.11 ad.

Over the last 20 years, Dr. Camilleri has worked with distinguished RF professionals to organize the IEEE Radio Frequency Integrated Circuits Symposium.

References

[1] N. Camilleri, B. Kim, H. Q. Tserng, and H. D. Shih, "Ka-band monolithic GaAs FET amplifier modules," in *IEEE MTT-S Microwave Millimeter-Wave Monolithic Circuits Symp. Dig.*, 1988, pp. 129–132.

[2] B. Bayraktaroglu, N. Camilleri, and S. A. Lambert, "Microwave performances of npn and pnp AlGaAs/GaAs heterojunction bipolar transistors," *IEEE Trans. Microwave Theory Tech.*, vol. 36, pp. 1869–1872, Dec. 1988.

[3] N. Camilleri, P. Chye, P. Gregory, and A. Lee, "A W-band monolithic amplifier," in *IEEE MTT-S Int. Microwave Symp. Dig.*, 1990, pp. 903–906.

[4] N. Camilleri, J. Costa, D. Lovelace, and D. Ngo, "Silicon MOSFETs, the Microwave Device Technology for the 90s," in *IEEE MTT-S Int. Microwave Symp. Dig.*, June 1993, pp. 545–548.

[5] N. Camilleri, "Architectures of highly integrated RFICs for 900 MHz US digital cordless systems," in *Proc. IEEE Radio Frequency Integrated Circuits Symp.*, June 1998, pp. 109–112.

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For contributions in the characterization and design of nonlinear RF circuits

Nuno Borges Carvalho was born in Luanda, Angola, in 1972. He received his diploma and doctoral degrees in electronics and telecommunications engineering from the University of Aveiro, Portugal, in 1995 and 2000, respectively.

He is currently a full professor and a senior research scientist with the Institute of Telecommunications, University of Aveiro. He coauthored *Intermodulation in Microwave and Wireless Circuits* (Artech House, 2003), *Microwave and Wireless Measurement Techniques* (Cambridge University Press, 2013), and *White Space Communication Technologies* (Cambridge University Press, 2014). He has been a reviewer and author of over 200 papers in magazines and conferences. He is an associate editor of *IEEE Transactions on Microwave Theory and Techniques*, *IEEE Microwave Magazine*, and *Cambridge Wireless Power Transfer Journal*.

He is the coinventor of four patents. His main research interests include software-defined radio front ends, wireless power transmission, nonlinear distortion analysis in microwave/wireless circuits and systems, and measurement of nonlinear phenomena. He has recently been involved in the design of dedicated radios and systems for newly emerging wireless technologies.

Dr. Carvalho was the chair of the MTT-S TC MTT-11, Microwave Measurements, and the past chair of the IEEE Portuguese Section. He is also the chair of the International Union for Radio Science Portugal Metrology Group. He was the recipient of the 1995 University of Aveiro and Portuguese Engineering Association Prize for best student at the University of Aveiro, the 1998 Student Paper Competition Award (third place) of the IEEE MTT-S IMS, and the 2000 Institution of Electrical Engineers U.K. Measurement Prize.

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For technical leadership in commercial automotive radar sensors

Ian Gresham received his B.Eng. and Ph.D. degrees in electronic and electrical engineering from the University of Leeds, U.K., in 1988 and 1994, respectively. From 1988 to 1990, he was with Marconi Command and Control Systems, Leicester, U.K., where he was a microwave engineer in the fields of fire control and naval radar, developing integrated radar front ends and frequency agile synthesizers. In 1990, he joined the Microwave and Solid-State Group at the University of Leeds, where his doctoral research focused on low-phase-noise signal generation at microwave and millimeter-wave frequencies.

In 1993, he joined M/A-COM, Milton Keynes, U.K., as a senior engineer responsible for the design of microwave components and subsystems for both military and commercial applications, prior to concentrating on MMIC design using GaAs HBT and pHEMT processes for wireless applications. In 1998, he joined the M/A-COM Corporate Research and Development Center in Lowell, Massachusetts, as a principal and then a senior principal engineer, where his research interests were centered upon the commercialization of millimeter-wave systems for commercial and consumer applications with particular emphasis on automotive radar, millimeter-wave sensors, presence detection, and point-to-point radio. In addition to pioneering the use of SiGe BiCMOS for millimeter-wave sensor applications, other aspects of his research included the adoption of low-cost commercial packaging technologies for millimeter-wave, expanding verification and validation techniques, and developing multistandard through, reflect, and line measurement for differential circuits.

In 2003, he won the EuMA European Microwave Prize for Best Paper for his work on ultrawideband signal generation. In 2006, he received the IEEE Microwave Theory and Techniques Outstanding Young Engineer Award with the citation "for contributions to the development of millimeter-wave IC design for commercial and defense applications." In 2007, he was awarded the inaugural Tyco Electronics Key Innovation Award for research leading to significant commercial developments.

In 2008, he joined the Radar Systems Group at Autoliv Electronics, where he directed the development of mixed-signal application-specific ICs for short-range, midrange, and multimode radar systems with responsibility for the definition of IC architecture; IC design and verification; and design for reliability, including complete millimeter-wave IC pin–pin electrostatic discharge protection and Automotive Electronics Council Q100 qualification and design for production test.

He joined NXP as director of research and development for the RF small-signal business in 2010 and opened the Boston Design Center, which focused on design, development, and application support for satellite, infrastructure, and wireless connectivity products. He then joined Anokiwave in January 2014 as technology fellow/vice president as a member of the management team focusing on next-generation highly integrated IC design for silicon-based millimeter-wave systems, with particular emphasis on radar, Satcom, and point-to-(multi)point applications.

Dr. Gresham is the chair of the MTT-S TC MTT-16, Sensors and Sensor Systems Technical Program Subcommittee, and cochair of the MTT-S TC MTT-27, Wireless-Enabled Automotive and Vehicular Applications Committee. He served as an associate editor of *IEEE Transactions on Microwave Theory and Techniques* from 2007 to 2010 as well as being a member of the editorial board for a number of other refereed journals. In 2012, he was one of the guest editors for the IMS edition of *IEEE Microwave Magazine*.

In addition, he has served on the Technical Program Review Committee for many IEEE-sponsored conferences for multiple years as well as serving on the Steering Committee for several conferences. He served as the directory chair for the MTT-S Administrative Committee (AdCom) for a period of five years and was also a member of the MTT-S AdCom Electronic Information Committee. He has authored or coauthored more than 30 papers in refereed journals or peer-reviewed conferences and holds 11 U.S. patents.

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For contributions to terahertz ICs and devices

Jonathan B. Hacker was born in Vancouver, British Columbia, Canada, in 1963. He received his B.A.Sc. degree in electrical engineering from the University of British Columbia in 1986. He earned his M.S. and Ph.D. degrees in electrical engineering under the mentorship of Prof. Dave Rutledge at the California Institute of Technology in 1990 and 1994, respectively. From 1993 to 1997, he held the position of member of technical staff at Bell Communications Research in Red Bank, New Jersey. Since 1997, he has been a research scientist at Rockwell Science Center, which was acquired by Teledyne in 2006 and became the Teledyne Scientific Company.

As a researcher and innovator, Dr. Hacker has been a catalyst for change in the terahertz (submillimeter-wave) band, with a legacy of pioneering work on creative new circuit approaches and device technologies to realize bipolar-transistor-based ICs operating up to 700 GHz [1]–[4]. This work has had an impact on the submillimeter-wave industry by changing the way it thinks about and builds such systems that, prior to these discoveries, consisted of two-terminal semiconductor and vacuum-tube solutions.

Dr. Hacker has spent 17 years at Teledyne Scientific & Imaging as a highly creative leader pushing the technological edge of millimeter-wave and submillimeter-wave solid-state technology to realize his dream of cost-effective and high-performance terahertz-band sources and sensors that will enable fantastic new capabilities and bandwidths for sensing and communicating in our world. Examples include the ability to see through blinding fog, dust, and snow as well as low-power high-bandwidth communication links from mobile power-starved platforms such as handheld electronics, aircraft, and ground vehicles. In the pursuit of this dream, Dr. Hacker managed the capture of programs from U.S. government agencies such as the U.S. Defense Advanced Research Projects Agency, Air Force Research Lab, and Army Research Lab through his ability to conceive and convincingly explain a path forward to realize technological solutions worthy of large-scale investment.

He is active in the IEEE MTT-S. He has served as the electronic paper manager for the IMS since 2005. He will be co-vice general chair for IMS2020 in Los Angeles. In 2008, he was elected to the MTT-S AdCom, where he served both on the Intersocietal Liaison Committee and as an assistant treasurer.

References

[1] J. Hacker, M. Urteaga, M. Seo, A. Skalare, and R. Lin, "InP HBT amplifier MMICs operating to 0.67 THz," in *IEEE MTT-S Microwave Symp. Dig.*, Seattle, WA, June 2013, pp. 1–3.

[2] J. Hacker, M. Seo, A. Young, Z. Griffith, M. Urteaga, T. Reed, and M. Rodwell, "THz MMICs based on InP HBT technology," in *IEEE MTT-S Microwave Symp. Dig.*, Anaheim, CA, May 2010, pp. 1126–1129.

[3] J. Hacker, Y. M. Lee, H. J. Park, J.-S. Rieh, and M. Kim, "A 325 GHz InP HBT differential-mode amplifier," *IEEE Microwave Wireless Compon. Lett.*, vol. 21, pp. 264–266, May 2011.

[4] J. Hacker, M. Urteaga, D. Mensa, R. Pierson, M. Jones, Z. Griffith, and M. Rodwell, "250 nm InP DHBT monolithic amplifiers with 4.8 dB gain at 324 GHz," in *IEEE MTT-S Int. Microwave Symp. Dig.*, Atlanta, GA, June 2008, pp. 403–406.

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For contributions to the metrology of high-speed electronic and optoelectronic devices

Paul D. Hale received his B.Sc. degree in engineering physics in 1985 and his Ph.D. degree in applied physics in 1989, both from the Colorado School of Mines, Golden. His dissertation work was on characterizing and modeling frequency-shifted feedback optical cavities and lasers [1]. In 1989, he joined the Optoelectronics Division of the National Institute of Standards and Technology (NIST), Boulder, Colorado, where he remained until 2014, conducting research on broadband device and signal metrology using ultrafast optoelectronic techniques [2] and sampling oscilloscopes [3], [4]. These techniques were applied to characterizing various high-speed devices [5]–[7] and launched significant results in waveform metrology [8]–[11]. During this time, he was a member of a multidisciplinary team that developed multivariate statistical tools to simultaneously quantify both the time and frequency domain uncertainties in measurements such as pulsed waveforms [10], [11] and the frequency response of photodiodes [12].

Dr. Hale is now the leader of the High-Speed Measurements Group in the RF Technology Division of NIST's newly created Communications Technology Laboratory. His current technical work focuses on implementing uncertainty analyses for quantities of interest for wireless communications and disseminating NIST traceability through high-speed electronic and optoelectronic measurement services. Dr. Hale was an associate editor of optoelectronics/integrated optics of *IEEE Journal of Lightwave Technology* from June 2001 to March 2007. He has authored or coauthored more than 70 technical publications and received the Department of Commerce Bronze, Silver, and Gold Awards; the Allen V. Astin Measurement Science Award; two Automatic Radio Frequency Techniques Group Best Paper Awards; and the NIST Electrical Engineering Laboratory's Outstanding Paper Award.

References

[1] P. D. Hale and F. V. Kowalski, "Output characterization of a frequency shifted feedback laser: theory and experiment," *IEEE J. Quantum Electron.*, vol. 26, no. 10, pp. 1845–1851, Oct. 1990.

[2] D. F. Williams, P. D. Hale, and T. S. Clement, "Calibrated 200 GHz waveform measurement," *IEEE Trans. Microwave Theory Tech.*, vol. 53, no. 4, pp. 1384–1389, Apr. 2005.

[3] T. S. Clement, P. D. Hale, D. F. Williams, C. M. Wang, A. Dienstfrey, and D. A. Keenan, "Calibration of sampling oscilloscopes with high-speed photodiodes," *IEEE Trans. Microwave Theory Tech.*, vol. 54, pp. 3173–3181, Aug. 2006.

[4] P. D. Hale, C. M. Wang, D. F. Williams, K. A. Remley, and J. Wepman, "Compensation of random and systematic timing errors in sampling oscilloscopes," *IEEE Trans. Instrum. Meas.*, vol. 55, no. 6, pp. 2146–2154, Dec. 2006.

[5] H. C. Reader, D. F. Williams, P. D. Hale, and T. S. Clement, "Characterization of a 50 GHz comb generator," *IEEE Trans. Microwave Theory Tech.*, vol. 56, no. 2, pp. 515–521, Feb. 2008.

[6] D. F. Williams, H. Khenissi, F. Ndagijimana, K. A. Remly, J. P. Dunsmore, P. D. Hale, C. M. Wang, and T. S. Clement, "Sampling-oscilloscope measurement of a microwave mixer with single-digit phase accuracy," *IEEE Trans. Microwave Theory Tech.*, vol. 54, pp. 1210–1217, Mar. 2006.

[7] P. D. Hale, J. A. Jargon, C. M. Wang, B. Grossman, M. Claudius, J. Torres, A. Dienstfrey, and D. F. Williams, "A statistical study of de-embedding applied to eye diagram analysis," *IEEE Trans. Instrum. Meas.*, vol. 61, no. 2, pp. 475–488, Feb. 2012.

[8] A. Dienstfrey and P. D. Hale, "Analysis for dynamic metrology," *Meas. Sci. Technol.*, vol. 25, no. 3, p. 035001, 2014.

[9] A. Dienstfrey and P. D. Hale, "Colored noise and regularization parameter selection for waveform metrology," *IEEE Trans. Instrum. Meas.*, vol. 63, no. 7, pp. 1769–1778, July 2014.

[10] P. D. Hale and C. M. Wang, "Calculation of pulse parameters and propagation of uncertainty," *IEEE Trans. Instrum. Meas.*, vol. 58, no. 3, pp. 639–648, Mar. 2009.

[11] P. D. Hale, A. Dienstfrey, C. M. Wang, D. F. Williams, A. Lewandowski, D. A. Keenan, and T. S. Clement, "Traceable waveform calibration with a covariance-based uncertainty analysis," *IEEE Trans. Instrum. Meas.*, vol. 58, no. 10, pp. 3554–3568, Oct. 2009.

[12] D. F. Williams, A. Lewandowski, T. S. Clement, C. M. Wang, P. D. Hale, J. M. Morgan, D. A. Keenan, and A. Dienstfrey, "Covariance-based uncertainty analysis of the NIST electro-optic sampling system," *IEEE Trans. Microwave Theory Tech.*, vol. 54, no. 1, pp. 481–491, Jan. 2006.

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For contributions to microwave and millimeter-wave MMIC technologies

Hiroshi Kondoh received his Ph.D. degree in electrical engineering from Cornell University, New York, in 1982. After one year as a research associate at Cornell University, he joined the Microwave Technology Division of Hewlett-Packard (HP, currently Keysight), California, as a member of technical staff and later became a project manager, where his work focused on the development of MMIC circuits, 0.25-µm-gate modulation doped field-effect transistor (MODFET)-based MMIC process for up to 50-GHz applications for HP's internal proprietary advantage on RF/millimeter-wave and optical measurement instruments. Many of his designs were adapted to HP's products and facilitated the extension of HP's high-performance test/measurement offerings to beyond 50 GHz. The nonlinear Root model was also developed under Dr. Kondoh's leadership and introduced as the commercial product for the simulation/design and characterization/extraction tools.

In 1994, he joined the Central Research Laboratory, Hitachi, Japan, as a senior researcher, and later he was elevated to senior chief researcher, where his focus was on 77-GHz-band automotive radars, millimeter-wave sensors, and millimeter-wave commercial wireless communications. His contributions to the 77-GHz-band automotive radars include his patented invention of the single-cavity multichip module (MCM) structure with a waffle-iron lid to eliminate package resonances, 0.15-µm pHEMT MMIC process development, transceiver MMICs, MCM module designs integrated with planar antennas, and target detection/tracking algorithms such as direction-of-arrival estimation, which resulted in one of the world's first commercial 77-GHz automotive radar products with all-MMIC configuration. His other achievements include a 77-GHz low-temperature cofired ceramic-based MCM radar transceiver and a press-released invention of the world's first plastic-molded single-chip 77-GHz radar sensor.

With his proposal of an innovative composite-FR4-substrate MCM module structure combined with silicon-based millimeter-wave MMICs for low-cost Gb/s high-speed communications, Dr. Kondoh led a Japanese national project under the Ministry of Internal Affairs and Communications' (MICs') policy of expanding commercial millimeter-wave spectrum usage in Japan, which resulted in successful demonstration of multi-Gb/s communications in the 30-, 60-, and 80-GHz frequency bands. Many of the developed technologies represent the world-best performance of SiGe and CMOS millimeter-wave MMICs at the time of publication.

Dr. Kondoh's additional contribution to the Japanese government was to investigate the practical deployment of 79-GHz ultrawideband radar in Japan. Working with a group of Japanese radar suppliers and car manufacturers, he led the assembly, which led to the official 79-GHz band frequency allocation for automotive radars in Japan by the MIC. As the vice chair of an Association of Radio Industries and Businesses (ARIB) Committee, Dr. Kondoh also assembled the Japanese industry specifications of 79-GHz ultrawideband radars, ARIB Standard STD-T111, and contributed to the official methods of radar product qualification, TELEC T-319.

He has been with Centellax, California, since 2009, first as a Japanese representative and later as chief operating officer responsible for the research and development, marketing, and production of products related to 40-/100-/400-Gb/s optical communications and microwave/millimeter-wave applications. After the merger of Centellax and EHF Consulting in 2015, he continued on as an independent consultant.

Dr. Kondoh's and his teams' technical achievements have been published in major conferences and journals. His contributions related to the IEEE include serving as a paper reviewer, subcommittee (vice) chair, and/or Steering Committee member for MTT-S, IMS, EuMW, Asia-Pacific Microwave Conference, Radio Wireless Week, and International Electron Devices Meeting. He is currently a member of IMS TC-6, -16, and -27.

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For contributions to the synthesis of microwave filters and multiplexers

Giuseppe (Pino) Macchiarella received the laurea degree in electronic engineering from the Polytechnic of Milan, Italy, in 1976. From 1977 to 1986, he worked as a research fellow at the Italian National Research Council, where he was involved in the SIRIO propagation experiment (the first Italian satellite for telecommunications). Since 1986, he has been an associate professor of microwave at Politecnico di Milano, Faculty of Information Engineering.

In the first years of his career, his scientific activity was in various fields of electrical engineering: propagation of electromagnetic waves and statistical modeling of Earth–satellite communication channels, surface acoustic wave devices, and numerical techniques for electromagnetics. Since 2000, he has been devoted exclusively to the study of microwave circuits, with particular emphasis on the synthesis and applications of microwave filters and multiplexers. In this area, he has made significant contributions to

- the synthesis of filters with arbitrary transmission zeros and cascaded-block topology [1], [2]
- the synthesis of dual-band filters through frequency transformations [3]
- the synthesis of star-junction duplexers and multiplexers [4], [5]
- the extraction of polynomial models from measured scattering parameters of microwave filters and diplexers (for application to computer-aided alignment) [6].

His achievements in the filters area have found several practical applications, especially in the combiners employed in base stations for mobile communications.

From 2001 to 2007, he was with the PoliEri Lab, a research laboratory founded by the Polytechnic of Milan and Ericsson Lab Italy to stimulate applied research on monolithic ICs for microwave communications. Prof. Macchiarella has achieved significant accomplishments in this area, specifically in the development of innovative linearizer architectures for monolithic power amplifiers [7].

Prof. Macchiarella has published more than 140 papers in top international journals and conference proceedings. He has been responsible for several contracts and collaborations with various companies in the microwave industry.

He is currently on the editorial board of *IEEE Transactions on Microwave Theory and Techniques* and *IEEE Microwave and Wireless Components Letters*. He is also a member of the MTT-S TC MTT-8, Filters and Passive Networks Subcommittee (vice chair). Since 2007, he has been with the Technical Program Review Committee (TPRC) of IMS, often as chair or vice chair. Since 2009, he has been also with the TPRC of the European Microwave Conference.

References

[1] G. Macchiarella, "Exact synthesis of in-line prototype filters using cascaded triplet and quadruplet sections," *IEEE Trans. Microwave Theory Tech.*, vol. 50, no. 7, July 2002.

[2] S. Tamiazzo and G. Macchiarella, "An analytical technique for the synthesis of cascaded N-tuplets cross-coupled resonators microwave filters using matrix rotations," *IEEE Trans. Microwave Theory Tech.*, vol. 53, no. 5, pp. 1693–1698, May 2005.

[3] G. Macchiarella and S. Tamiazzo, "Design techniques for dual-passband filters," *IEEE Trans. Microwave Theory Tech.*, vol. 53, no. 11, pp. 3265–3271, Nov. 2005.

[4] G. Macchiarella and S. Tamiazzo, "Novel approach to the synthesis of microwave diplexers," *IEEE Trans. Microwave Theory Tech.*, vol. 54, no. 12, pp. 4281–4290, Dec. 2006.

[5] G. Macchiarella and S. Tamiazzo, "Synthesis of star-junction multiplexers," *IEEE Trans. Microwave Theory Tech.*, vol. 58, no. 12, pp. 3732–3741, Dec. 2010.

[6] D. Traina, G. Macchiarella, and T. K. Sarkar, "Robust formulations of the Cauchy method suitable for microwave duplexers modeling," *IEEE Trans. Microwave Theory Tech.*, vol. 55, no. 5, pp. 974–982, May 2007.

[7] R. Iommi, G. Macchiarella, A. Meazza, M. Pagani, "Study of an active predistorter suitable for MMIC implementation," *IEEE Trans. Microwave Theory Tech.*, vol. 53, no. 3, pp. 874–880, Mar. 2005.

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For fundamental contributions to a broad range of microwave measurements and their application to practical microwave transistor models

Paul J. Tasker obtained his B.Sc. degree in physics and electronics in 1979 and his Ph.D. degree in electronic engineering in 1983, both from Leeds University, United Kingdom. From 1984 to 1990, he worked as a research associate at Cornell University, New York, with Lester Eastman and was involved in the design and development of high-frequency transistors. From 1990 to 1995, he was a senior researcher and manager at the Fraunhofer Institute for Applied Solid-State Physics in Freiburg, Germany, responsible for the development of millimeter-wave MMICs. He joined the School of Engineering at Cardiff University as a professor in 1995. While at Cardiff University, he established the Center for High-Frequency Engineering.

He has made contributions to the development of a broad range of microwave measurements systems and their use in transistor characterization and associated computer-aided design (CAD) model extraction. His early work focused on S-parameter measurement systems and their calibration up to millimeter-wave frequencies. The application of these systems included the development of closed-form expressions, defined on measured S-parameters, which determine the bias-dependent intrinsic equivalent circuit element values of linear transistor models [1]. This linear characterization and equivalent circuit modeling activity was then extended to include the measurement of noise parameters. The application of these systems included undertaking the fundamental experimental validation [2] of the Pospieszalski noise–temperature model, thus contributing to the acceptance of this approach to modeling transistor noise and its use in CAD design. More recently, he has been involved in the development of large-signal RF *I–V* waveform measurements, particularly the advanced active load-pull waveform measurement systems required for active device characterization [3]. This work contributed to both the understanding of high-efficiency power amplifier modes and the design methodology for realizing highly efficient high-power amplifiers [4], the compelling idea of "waveform engineering"—establishing specific dynamic *I–V* waveforms to achieve component design objectives. Linked to this has been his contribution in the development of measurement-based nonlinear behavioral models (Cardiff models), which are derived directly from RF *I–V* waveform measurements and can be integrated into the commercial CAD environment [5]. Since 1985, he has contributed to more than 300 journal and conference publications. In 2007, he was awarded the honor of being Distinguished Microwave Lecturer by the IEEE MTT-S and served in this role until 2011. He is now a member of the IEEE MTT-S speaker's bureau. He is also a Fellow of the IET and the Learned Society of Wales.

References

[1] B. Hughes and P. J. Tasker, "Bias dependence of the MODFET intrinsic model elements values at microwave frequencies," *IEEE Trans. Electron Devices*, vol. 36, no. 10, pp. 2267–2273, 1989.

[2] P. J. Tasker, W. Reinert, J. Braunstein, and M. Schlechtweg, "Direct extraction of all four transistor noise parameters from a single noise figure measurement," in *Proc. 22nd Microwave Conf.*, 1992, vol. 1, pp. 157–162.

[3] J. Benedikt, R. Gaddi, P. J. Tasker, and M. Goss, "High-power time-domain measurement system with active harmonic load-pull for high-efficiency base-station amplifier design," *IEEE Trans. Microwave Theory Tech.*, vol. 48, no. 12, pp. 2617–2624, 2000.

[4] S. C. Cripps, P. J. Tasker, A. L. Clarke, J. Lees, J. Benedikt, "On the continuity of high efficiency modes in linear RF power amplifiers," *IEEE Microwave Wireless Compon. Lett.*, vol. 19, no. 10, pp. 665–667, 2009.

[5] Q. Hao, J. Benedikt, and P. J. Tasker, "Nonlinear data utilization: From direct data lookup to behavioral modeling," *IEEE Trans. Microwave Theory Tech.*, vol. 57, no. 6, pp. 1425–1432, 2009.

The following MTT-S members were also elected to the grade of Fellow in 2015; their nominations were evaluated by other Societies.

- **David Abe**
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  For leadership and contributions to the development of high-power microwave and millimeter-wave vacuum electronic devices
- **Wiren Becker**
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  For contributions to power distribution and signal integrity in high-speed interconnects for computing systems
- **Xiaodong Chen**
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  For contributions to antennas for wireless communications and satellites
- **Tie Jun Cui**
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  For contributions to microwave metamaterials and computational electromagnetics
- **Alistair Duffy**
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  For the development of validation methods in computational electromagnetics
- **Nachappa Gopalsami**
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  For contributions to millimeter-wave spectroscopy, imaging, and reflectometry
- **Deepnarayan Gupta**
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  For contributions to the advancement of CMOS RFICs and devices modeling.
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  For contributions to antenna design and propagation modeling in mobile communication devices