

2005 Microwave Pioneer Award Hermann Statz and Robert A. Pucel

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 the team of Hermann Statz and Robert A. Pucel, whose citation reads: "*FOR DEVELOPMENT OF THE FIRST COMPREHENSIVE PHYSICS-BASED MODEL OF THE SHORTGATE FIELD EFFECT TRANSISTOR AND A DESIGN TOOL WHICH HAS PLAYED A SIGNIFICANT ROLE IN THE EMERGING FIELD OF MMICS.*"



Hermann Statz was born on Jan. 9, 1928 in Herrenberg, Württemberg, Germany. He received from the University of Stuttgart the Diplom Physiker (MS) degree in 1949 and Dr. rer. nat. degree in 1951. He did postdoctoral work in the area of solid-state physics at the University of Stuttgart and the Max Planck Institute in Stuttgart from 1951 to 1952. From 1952 to 1953 he was a DIC Staff member at the Massachusetts Institute of Technology and worked with Prof. John C. Slater in the Solid State and Molecular Theory Group. In 1953 he joined as a Group Leader the Raytheon Research Division in Waltham, MA. In 1958 he became Assistant Division General Manager and in 1969 he was named Technical Director and Assistant General Division Manager of that Division. In 1986 he was also given the position of Research Division General Manager at Raytheon Co. He has published more than 100 papers, including one book, in the fields of semiconductor surfaces, semiconductor devices, paramagnetic resonance, ferromagnetism, masers, lasers, solid-state microwave devices and technology. Dr. Statz retired from Raytheon in 1993. Since that time he has consulted for various companies, among them XMX Corporation, Heidelberger Druckmaschinen, and Analogic. He made recently contributions to the science of nanoparticles, especially novel optically resonant particles for use in color pigments and other applications.

Dr. Statz is a fellow of the IEEE (1980), a fellow of the American Physical Society and a member of the National Academy of Engineering. He was a member of the Board of Editors of the Journal of Applied Physics and Applied Physics.



Robert Pucel was born in Ely, a small iron mining town in northern Minnesota. Following graduation from high school in 1945, he enlisted in the U.S. Navy for a year, after which he entered the Massachusetts Institute of Technology (MIT) in 1947 as an undergraduate. Upon receiving his doctorate in 1955 in the field of electrical communications, he rejoined the Research Division of Raytheon Company as a senior staff member, specializing in the area of solid-state microwave device research. In 1965 he formed one of the first Microwave Semiconductor Devices and Integrated Circuits Programs in the world. This program evolved into the Monolithic Microwave Circuits (MMIC) Program at Raytheon. Four years later Bob relinquished program management to concentrate on technical matters.

His research has encompassed both theoretical and experimental studies of the physics and the design and operation of most new microwave semiconductor devices, such as bipolar and field effect transistors, avalanche, tunnel, and varactor diodes including their signal and noise properties. He has published extensively on these subjects as well as on microwave propagation and losses in dielectric and magnetic substrates. His publications exceed 100 in number. He also has 21 patents in his name.

Bob is a pioneer in MMIC technology and has many publications in this field. He became the spokesman on this topic for the MTT Society as the 1980-81 National Lecturer. In this role he delivered over 30 lectures in the United States and, internationally, including Canada, Europe, Japan, Israel, and the Peoples Republic of China (the latter is a first for the MTT Society). His most recent work in the MMIC field is in the area of device modeling and its CAD implementation.

Dr. Pucel's involvement with the MTT Society is extensive. In addition to his lectureship, he was a corecipient of the 1976 Microwave Prize and was granted the MTT Society's Microwave Career Award, in 1990. He organized the MTT-IMS Historical Exhibit on MMICs. He was a member of several IEEE Standards committees and a long-time member of the MTT Editorial Review Board and the IMS Program Committee. He was the editor of, and a contributor to, the IEEE/MTT reprint volume entitled Monolithic Microwave Integrated Circuits which was published in 1985. He also was the principal author of several book chapters in other publications.

He is a Life Fellow of the IEEE and a recipient of its Third Millennium Medal. In 1988 Raytheon granted him its most prestigious recognition, the Excellence in Technology Award for his work on MMICs. He retired after 42 years of service in 1993. He has been a private consultant in the microwave field since 1981 under the name of RCP Consultants. Dr. Pucel was inducted into the National Academy of Engineering in 1994.

He resides in Griswold, CT with Catherine Ann, his wife of 53 years. His family of five children and their spouses, and nine grandchildren live in New England and North Carolina. Presently Bob's interests are scientific software development for Windows, computer graphics, gardening, and volunteer service for his local church.