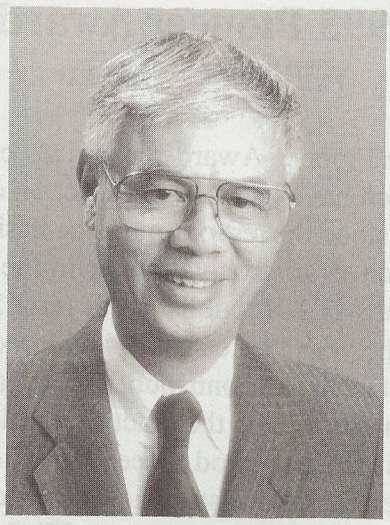
1995 Microwave Application Award

Dr. Cheng P. Wen



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

The 1995 recipient of the award is **Dr. Cheng P. Wen**. The award citation reads: *"FOR THE INVENTION AND DEVELOPMENT OF THE CO-PLANAR WAVEGUIDE AND FOR THE APPLICATION OF THE WAVEGUIDE TO VARIOUS MICROWAVE STRUCTURES"*.

Dr. Cheng P. Wen received his BS, MS and Ph.D. degree in Electrical Engineering in 1956, 1957, and 1963, respectively, all from the University of Michigan, Ann Arbor, Michigan. From 1955 to 1963, he was employed by the University of Michigan Electron Physics Laboratory as a research assistant. During this period, he worked on traveling-wave amplifiers, leading to his dissertation in "Noise Propagation in Two-Dimensional Electron Streams".

In 1963, he joined the Microwave Research Laboratory of the RCA Laboratories (David Sarnof Research Center), Princeton, New Jersey, where he conducted research on ultra-low noise traveling-wave amplifiers, gas lasers, microwave acoustics, ferromagnetic semiconductors, microwave magnetics in integrated circuits and millimeter-wave avalanche diodes. His accomplishments included the demonstration of the lowest noise traveling-wave amplifier, the construction of the first surface acoustic wave coder/decoder, the operation of a electronic laser color switch, the development of coplanar waveguide (an alternate integrated circuit transmission medium), and the development of high power mm-wave IMPATT devices. He was a recipient of the RCA Laboratory Outstanding Achievement Awards in 1964, 1969 and 1973.

Dr. Wen joined Rockwell International Corporation in 1974 and established a microwave device research activity at the Science Center, Thousand Oaks, California. Subsequently, he transferred to the Rockwell Electrons Division to develop manufacturing technology for discrete microwave devices.

In 1982, Dr. Wen joined the Hughes Aircraft Company in Torrance, California. He has provided leadership to technical teams to develop solid-state devices/components and to transition technology from research and development to manufacturing. Accomplishments include the development of an ultra-high power millimeter-wave IMPATT diode (25-watt pulsed power output at W-band frequencies) and the demonstration of a Gamma-radiation hard, superlattice long-wavelength infrared detector with built-in intrinsic event discrimination capability. He is currently leading a project team to engage in the development of a coplanar waveguide based, dielectric coated, flip-chip monolithic microwave integrated circuit technology. He is also in charge of establishing magnetoresistance position sensor chip manufacturing at Hughes Microelectronics Division for automotive applications. He also held a part-time teaching position under a Hughes microwave engineering program at California State University, Northridge, in the 1980s.

Dr. Wen has published more than 30 technical papers on microwave solid-state devices and circuits, lasers, acoustic devices, traveling-wave amplifiers and infrared detectors. He has been awarded 27 U.S. patents. Dr. Wen is a Senior Member of the IEEE and a member of the American Physical Society, Sigma Xi, Eta Kappa Nu and Tau Beta Pi.