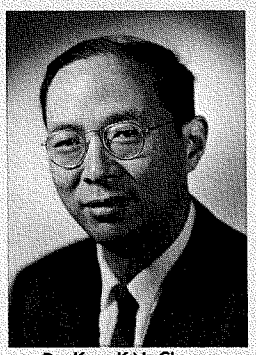
The David Sarnoff

The 1967 Individual Awards for

Science and Engineering



Dr. Kern K.N. Chang

Martin R. Royce

. . . About the Awards

RCA's highest technical honors, the four annual David Sarnoff Outstanding Achievement Awards, have been announced for 1967 by Dr. George H. Brown, Executive Vice President, Research and Engineering. David Sarnoff, RCA Board Chairman, and Dr. Elmer W. Engstrom, Chairman of the Executive Committee and Chief Executive Officer, will present the awards, which consist of a gold medal, a bronze replica citation, and a cash prize for each.

The Awards for individual accomplishment in science and in engineering were established in 1956 to commemorate the fiftieth anniversary in radio, television, and electronics of David Sarnoff, RCA Board Chairman. The two awards for team performance were initiated in 1961. All engineering activities of RCA divisions and subsidiary companies are eligible for the Engineering Awards; the Chief Engineers in each location present nominations annually. Members of both the RCA engineering and research staffs are eligible for the Science Awards. Final selections are made by a committee of RCA executives, of which the Executive Vice President, Research and Engineering, serves as Chairman.

Dr. Kern K. N. Chang of RCA Laboratories, Princeton, N.J., recipient of the 1967 David Sarnoff Outstanding Achievement Award in Science—"*for original contributions to the basic understanding of microwave phenomena and for the invention and development of superior microwave components.*"

Dr. Chang, winner of the 1967 David Sarnoff Outstanding Achievement Award in Science, has for a number of years been one of the pioneers in semiconductor microwave technology. He has been on the staff of RCA Laboratories since 1948 where his early work concerned the development of focusing means for traveling-wave tubes. He was responsible for the application of periodic, permanent-magnet focusing to traveling-wave tubes, now used in most of the TWT's marketed by RCA. He also conceived the idea of using electrostatic periodic strong focusing and devised a traveling-wave tube using bifilar helices to provide the focusing, resulting in a TWT package weighing less than a pound. In the field of parametric amplifiers, Dr. Chang, in an effort to overcome the limitations of "conventional" parametric amplifiers, devised a three-stage amplifier with the requisite four terminals which was non-reciprocal between input and putput, as well as a traveling-wave amplifier using a helix. With the advent of the tunnel diode, he invented a low-noise amplifier with a tunnel diode as the active element. More recently, Dr. Chang has been engaged in studies of a new class of amplifiers, down-converters, and avalanche-diode oscillators.

Martin R. Royce of Television Picture Tube Operations, EC&D, Lancaster, Pa., recipient of the 1967 David Sarnoff Outstanding Achievement Award in Engineering . . . "*for the invention and development of a more efficient red-emitting phosphor for color picture tubes which results in superior brightness and provides essentially unity current ratios.*"

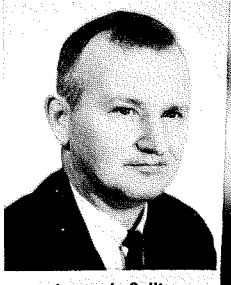
Mr. Royce, winner of the 1967 David Sarnoff Outstanding Achievement Award in Engineering, has made an important individual contribution to the improvement of color television with his development of a new red-emitting phosphor. Mr. Royce has been associated with RCA since 1953. As the senior engineer assigned to an applied research program on phosphors, he discovered the basic phosphor during a survey of new rare earth compounds. Recognizing its potential value, he overcame a series of initial difficulties and produced samples which demonstrated the attributes of the new phosphor. Subsequently, he was instrumental in causing a major commercial development program to be organized. As a key member of the engineering and manufacturing team that developed the new red phosphor, Mr. Royce made valuable suggestions and contributions. He also provided the experience and confidence necessary to convert all RCA commercial color tube production to the new phosphor. As a result, Mr. Royce has helped RCA maintain its industry-wide profit and volume leadership in color television.

Dr. Marvin S. Abrahams

Dr. James J. Tietjen

The 1967

George J. Armbruster

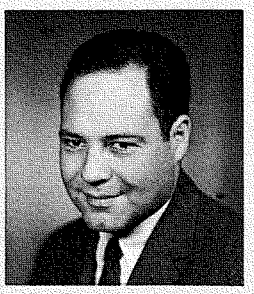


James L. Sullivan

Outstanding Achievement Awards

Dr. James A. Amick

Dr. Ronald E. Enstrom



Dr. David Richman

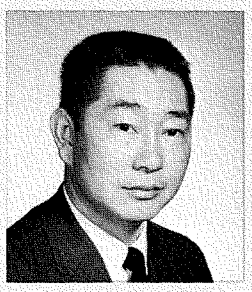
DRS. MARVIN S. ABRAHAMS, JAMES A. AMICK, RONALD E. ENSTROM, DAVID RICHMAN and JAMES J. TIETJEN, all of RCA Laboratories, Princeton, N.J., recipients of the 1967 David Sarnoff Outstanding Team Award in Science . . . *"for team performance in significantly advancing the synthesis and characterization of gallium arsenide, gallium phosphide, and their alloys."*

DRS. ABRAHAMS, AMICK, ENSTROM, RICHMAN, and TIETJEN, winners of the 1967 David Sarnoff Outstanding Team Achievement Award in Science, have made important contributions in advancing the synthesis and characterization of gallium arsenide, gallium phosphide, and their alloys to provide, for the first time, application of these materials in useful devices. Through their team efforts, a vapor phase growth technology was evolved that permitted the growth of these materials in a state of purity, homogeneity and crystalline perfection never approached before. Among the distinguished "firsts" achieved by this team in conjunction with other research and engineering groups, have been vapor phase growth of over 1,000 GaAs varactor diodes with outstanding properties, the first pulsed injection lasers to emit visible light at room temperature, GaAs Gunn effect devices oscillating at the highest frequency yet achieved, and the brightest room temperature electroluminescent diode yet reported. Drs. Amick and Richman, both chemists, pioneered in the use of vapor phase growth for the preparation of semiconductors. Dr. Tietjen, also a chemist, was particularly instrumental in transforming the basic information developed by Drs. Amick and Richman into a useful technology for providing practical devices. Dr. Enstrom, a metallurgist, made valuable contributions in the improvement in purity crucial to the success of the high-frequency Gunn devices. Dr. Abrahams, also a metallurgist, throughout the course of this research provided key information concerning the role of structure in the synthesis and performance of these materials.

Team Awards for Science and Engineering

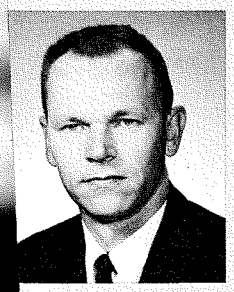
MESSRS. GEORGE J. ARMBRUSTER, ULRICH A. FRANK, HAJIME J. KISHI, DALE L. KRATZER, JAMES L. SULLIVAN, ROBERT A. VAN OLST, and CLAYTON E. YOST, all of DEP's M&SR Division, Moorestown, N.J., recipients of the 1967 David Sarnoff Outstanding Team Award in Engineering . . . *"for advances in all-solid-state lightweight tactical radar, including the first successful application of phase-coded CW techniques."*

Ulrich A. Frank



Hajime J. Kishi

Dale L. Kratzer



Robert A. Van Olst

Clayton E. Yost

MESSRS. ARMBRUSTER, FRANK, KISHI, KRATZER, SULLIVAN, VAN OLST, and YOST, winners of the 1967 David Sarnoff Outstanding Team Achievement Award in Engineering, have successfully developed a highly reliable, very lightweight tactical radar, enabling RCA to make a significant and unsolicited defense contribution. In June 1965 an engineering team was formed under the technical leadership of J. L. Sullivan to explore the possibilities of applying the very latest solid-state technology to the specific military need for a very lightweight battlefield radar for personnel detection, weapon pointing, and communications. The tentative concepts evolved represented a departure from those employed in standard lightweight radar by approaching the problem with phase-coded techniques and correlation concepts. In early 1966, after overcoming the major problem of contamination of output signal with code noise to prevent degrading of system sensitivity, the team developed a working model. Although design goals were not immediately attained, the original concepts were shown to be completely valid. Refinements in the transmitter and antenna brought performance up to a level previously restricted to equipment weighing 20 to 40 pounds. In 1966, testing under actual battlefield conditions in Viet Nam showed the unit to be extremely rugged and reliable. As a result of these successful tests, the Army field forces have requested 100 units for full operational evaluation.