

**30th annual
proceedings**

**reliability
physics
1992**

San Diego, California • March 31, April 1, 2, 1992

**Sponsored by
the IEEE Electron Devices Society and
the IEEE Reliability Society**

IEEE Catalog No. 92CH3084-1

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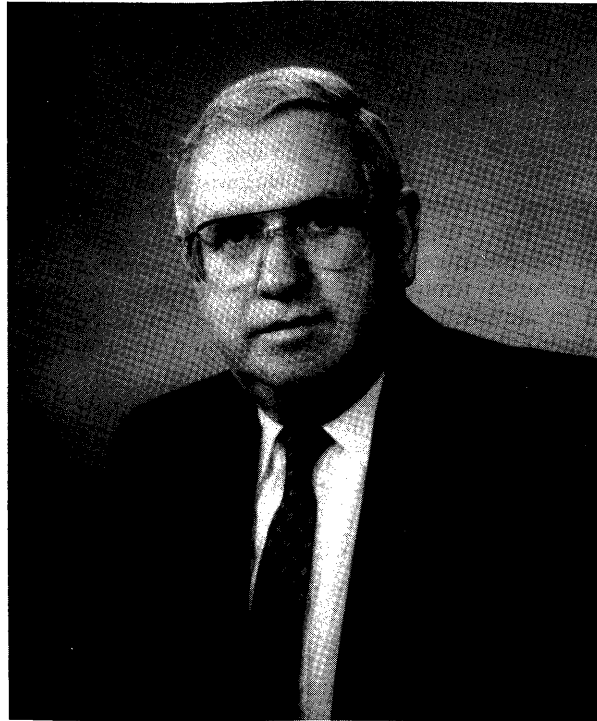
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IEEE Catalog No.	92CH3084-1	Serial
Library of Congress No.	82-640313	Softbound
ISBN:	0-7803-0473-x	Casebound
	0-7803-0474-8	Microfiche
	0-7803-0475-6	

IN REMEMBRANCE



Dr. Harold E. Nigh
1932 – 1991

General Chairman of IRPS – 1975
IRPS Board of Directors – 1976, 1979–1983

This memorial is to commemorate the contributions of Dr. Nigh to both our industry and IRPS management. He served in many capacities within IRPS including Technical Program Chairman, General Chairman in 1975, and, being the immediate Past General Chairman, as Chairman of the Board of Directors Ex Officio in 1976. He returned to the Board in 1979 as the Electron Devices Representative and remained in that position through the 1983 Symposium.

During his tenure on the Board of Directors of IRPS, Dr. Nigh had the responsibility, jointly with Mr. Alfred L. Tamburrino, for Audits and Personnel Planning. A major accomplishment was the establishment of a methodology for the IRPS management line of succession. To effect implementation of the methodology, he actively participated in the recruitment of management teams. This foundation has manifested itself in the smooth IRPS administrative transitions that exist today.

Dr. Nigh's career focused primarily on the development, manufacturing, and reliability of MOS integrated circuits. His

professional interests and contributions closely tracked the commercial development of MOS technology in the microelectronics industry generally and at AT&T particularly.

In addition to his active participation within IRPS, Dr. Nigh was active in many other endeavors. He served as a Member of the Board of Directors of Lehigh Valley Thresholds, President of the Lehigh Valley Youth Soccer League, and Member of the Board of Directors of the Lehigh Valley Senior Soccer League.

The role model characteristics of Dr. Nigh were apparent to those within the IRPS management, to his co-workers at Bell Telephone Laboratories, and to those he associated with in his community. Dr. Nigh demonstrated strong mentoring of younger people, creative problem solving, compassion for the people with whom he interacted, and strong loyalty to the organizations he supported. His contributions have made a lasting impact on the IRPS, AT&T and his community.

Dr. Nigh was born in Parnell, Missouri, in 1932. He graduated from Parnell High School in 1950 after which he served in the U.S. Navy from 1951 until 1955. Upon discharge from the Navy, he attended Northwest Missouri State University where, in 1958, he received a Bachelor of Science degree in Physics and Mathematics. Just five years later, in 1963, he was awarded the degree of Ph.D. in Physics from Iowa State University. Dr. Nigh continued his work at Iowa State as a Post-Doctoral Fellow from 1963 to 1964.

In 1964 Dr. Nigh joined Bell Laboratories in Allentown, Pennsylvania as a Member of Technical Staff. His interests were immediately captured by metal-dielectric-silicon structures and devices such as MOS capacitors and insulated gate field effect transistors (IGFETs). In the late '60's, conventional metal-gate p-channel MOS transistors were fabricated with aluminum and silicon dioxide on n-type silicon wafers. Threshold voltages of -3 to -4 volts were typical. Sodium contamination of silicon dioxide was common and led to unstable electrical characteristics under conditions of positive gate bias and moderate temperature elevation. Dr. Nigh's research soon led to the discovery that layered dielectric structures of aluminum oxide (Al_2O_3) and silicon dioxide (SiO_2) could produce electrically stable p-channel MOS transistors with threshold voltages of -1 volt. This enabled Bell Laboratories to design and Western Electric to manufacture p-channel MOS integrated circuits that operated from the same 5-volt power supplies used by conventional bipolar integrated

circuits. For this work, Dr. Nigh and his collaborators J. Stach and S.K. Tung received U.S. Patent 3502950.

In 1968, Dr. Nigh was promoted to Supervisor, MOS Development. In both this assignment and other comparable positions with Bell Laboratories, he supervised the development of fabrication processes and conducted reliability evaluations for MOS integrated circuits. The fabrication technologies developed by Dr. Nigh were used in the manufacture of DRAMs, SRAMs digital signal processors and ASIC devices. These interests led to his becoming active in IRPS.

In 1983, Dr Nigh transferred to Western Electric Company and was promoted to MOS Product Engineering Manager at the Allentown Works. In 1985, he became Manager of AT&T Microelectronics' Santa Cruz Plant in California. He returned to Pennsylvania in 1986 as Manager, Lightwave and Compound Materials Development and Manufacturing Engineering at AT&T's Reading Works. In 1987 he was promoted to Director, Engineering and Manufacturing at Allentown. From 1988 until his retirement in 1989, he was General Manager of the Allentown Works.

Dr. Nigh passed away August 8, 1991. He is survived by his wife Christine, their four children and five grandchildren.

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