

Calvin H. Carter, Jr.

Brief Biography: Dr. Calvin H. Carter, Jr. of Cree, Inc. has been nominated for the National Medal of Technology for his pioneering innovation in the development of high quality silicon carbide and related semiconductor material and devices and for the impact this has made on the economy. Wide bandgap (WBG) semiconductors (e.g., silicon carbide (SiC) & gallium nitride (GaN) and its alloys) are the foundation material for reliable and efficient blue and green light emitting diodes (LEDs), efficient white light generation, high power solid-state microwave amplifiers, more efficient/compact power supplies, higher efficiency power distribution/transmission systems and high quality manmade gemstones. A market of up to \$20B/yr is envisioned by 2015 and is currently over \$1.3B/yr.



Calvin Carter began his research in silicon carbide in 1977 as a graduate student at North Carolina State University (NCSU). In 1987 Dr. Carter and five other associates from NCSU formed Cree Research, Inc. (Cree Research, Inc. became Cree, Inc. in 2000). They were successful in securing four Department of Defense Small Business Innovative Research contracts that served as part of their initial venture capital funding and provided a sound basis for raising additional private capital.

In the formative years of SiC research and development (1984 - 1993), Dr. Carter was instrumental in explaining and promoting the merits of SiC. He presented many professional papers before the Materials Research Society and to the newly formed International Conference on Silicon Carbide and Related Materials. These and other opportunities allowed him to engage in extensive dialogue with other researchers. He has co-authored over 80 publications and is the co-author of 17 U.S. and 74 foreign patents related to wideband gap semiconductor materials. His specific expertise is in crystal growth, thin film deposition, impurity doping, and material characterization. He developed the first production means of perfecting and commercializing SiC semiconductor wafers impacting both military and consumer markets.

Dr. Carter has served as Director of Materials Technology at Cree, Inc. during its 16-year history and served as Executive Vice President and Director from 1987-2000. Cree has grown to a company that employs over 1100 people and generated \$230M of revenue in their fiscal year 2003.

Among many colleagues involved in the research and development of wide bandgap materials, Dr. Calvin Carter contributed most to the development of silicon carbide wafers. He was the individual the development community looked to for guidance in the early years. Absent of high quality SiC as a substrate, much of today's GaN industry would not exist.

Dr. Carter's innovation, leadership and insight opened the way to new capabilities, new industries and new markets based on wide bandgap semiconductor technology.

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