



**Dr. Roger Bacon**

**Dr. Roger Bacon**, Technology fellow at the Parma Technical Center, Amoco Performance Products, Inc., has distinguished himself in the field of carbon fiber development and research. As an undergraduate student at Harvard College in Philadelphia, Pa., he majored in physics. Earning a B.A. degree in

studies on solid state physics at Case Western Reserve University, Cleveland, Ohio, where he was awarded the PhD Degree in 1955. At that time, Dr. Bacon began his career with Union Carbide Corporation in research and development, becoming Group Leader in 1962. With Amoco, he has continued research on carbon fiber processes and carbon-carbon composites. His work has covered structure and physical properties of graphite crystals and whiskers, carbon fibers, and composites, with approximately 22 publications and patents to his credit. Dr. Bacon received a patent in 1960 on "Filamentary Graphite and Method for Producing the Same," and was Principal Investigator, U.S. Air Force (1965-1970), on "High Strength-High Modulus Carbon Fibers." He is the co-inventor of patented processes on stress-carbonization and stress-graphitization of carbon fibers. He has been an invited lecturer for the United Nations Development Program in India on advanced fibers and composites, and was invited speaker at the Royal Society (London). Dr. Bacon is a member of the American Physical Society for Advancement of Materials and Processing Engineering.



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WINNERS

## MEDAL OF EXCELLENCE

IN COMPOSITE MATERIALS



**Mr. William Watt**

**Mr. William Watt**, OBE, FRS, is posthumously awarded the Medal of Excellence in Composite Materials for pioneering work in the development of carbon fibers, and widely acclaimed technical innovation within the composites industry. Early education at the George Heriot School was followed by work as a laboratory assistant at the Edinburgh and East Scotland College in Agriculture. At Heriot Watt College in Edinburgh and the University of London he was awarded first class honors in chemistry. His 39-year career with Royal Aircraft Establishment, Farnborough, covered areas of high temperature research of non-metallic materials, and technology for turbine blades and rocket nozzle applications. In 1960, Mr. Watt became an individual merit senior principal scientist at RAE in recognition of his outstanding work on carbon and graphite. His experiments, first with cellulose fibres, and finally with Courteille, led to the production of carbon fibres with a high degree of preferred crystalline orientation. The invention was patented in 1964, and was recognized in 1968 by the civil service Wolfe Award for outstanding technical innovation. The OBE Award, in 1969, was followed in 1971 by the USA Charles Pettinos Award for research and innovation in carbons. A Fellow of the Royal Society (1976), Mr Watt was presented an honorary Doctorate of Science by his old college Heriot Watt. In retirement, he continued as a senior research fellow in the Department of Materials Science at the University of Surrey.

studies on solid state physics at Case Western Reserve University, Cleveland, Ohio, where he was awarded the PhD Degree in 1955. At that time, Dr. Bacon began his career with Union Carbide Corporation in research and development, becoming Group Leader in 1962. With Amoco, he has continued research on carbon fiber processes and carbon-carbon composites. His work has covered structure and physical properties of graphite crystals and whiskers, carbon fibers, and composites, with approximately 22 publications and patents to his credit. Dr. Bacon received a patent in 1960 on "Filamentary Graphite and Method for Producing the Same," and was Principal Investigator, U.S. Air Force (1965-1970), on "High Strength-High Modulus Carbon Fibers." He is the co-inventor of patented processes on stress-carbonization and stress-graphitization of carbon fibers. He has been an invited lecturer for the United Nations Development Program in India on advanced fibers and composites, and was invited speaker at the Royal Society (London). Dr. Bacon is a member of the American Physical Society for Advancement of Materials and Processing Engineering.



**Dr. Akio Shindo**

**Dr. Akio Shindo**, Technical Advisor, Corporate Research & Development Laboratory, Toa Nenryo, Co., Ltd., has been honored for contributions to the development of PAN-based carbon fiber. He studied chemistry at the Hiroshima University, and was awarded a B.A. degree in 1951. Continuing postgraduate studies at Hiroshima University, he was granted a Doctor of Science in 1961 for a thesis on "Studies on Graphite Fibre." Dr. Shindo was employed at the Government Industrial Research Institute, Osaka, from April 1952 to March 1987, when he joined Toa Nenryo Kogyo, Co., Ltd. He has been honored by the Chemical Society of Japan and by the State for his contributions in the field of composite materials.