



## **SDK Ready for Mass Production of Vapor-Grown Carbon Nanofiber**

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Showa Denko K.K. (SDK) has developed vapor-grown carbon nanofiber (VGNF) with fiber diameter of 80 nanometers (nm: one billionth of a meter). With the completion of 10-tons/year mass production arrangements, SDK will step up its efforts to develop market for VGNF.

VGNF is positioned between vapor-grown carbon fiber (VGCF, having fiber diameter of 150 nm) and carbon nanotube (CNT, having fiber diameter of 20 nm). SDK is already commercially producing 40 tons/year of VGCF while developing CNT for various applications, including electron source for field-emission displays. VGNF possesses both characteristics of the high-performance bulk material (VGCF) and quantum electronics material (CNT).

SDK started developing VGCF in 1980's and began its commercial production in late 1990's. This time, SDK has developed VGNF, perceiving its significant potential as a unique new material.

Compared with VGCF, VGNF shows improved electrical/thermal conductivity and higher strength. SDK's market development efforts for VGNF will center on such applications as fuel cells, high-performance secondary batteries, capacitors, resin composites (for electrostatic coating, electromagnetic shielding, etc.) and metal composites for higher strength and lighter weight.

VGNF is an extension of the VGCF technology. VGCF was developed jointly with Professor Morinobu Endo of Shinshu University and commercialized by SDK for the first time in the world. SDK has now established VGNF mass production technology by optimizing manufacturing conditions.

SDK is planning to sell ¥3-4 billion worth of VGNF/VGCF in 2005, by meeting customer needs for fine carbon fibers with different levels of fiber diameters.

Regarding CNT, SDK is participating in the frontier carbon project of New Energy and Industrial Technology Development Organization. As part of the project, SDK is engaged in pilot-scale basic researches in cooperation with National Institute of Advanced Industrial Science and Technology, aiming at establishing a large-quantity synthesis technology.

