

Y-Carbon? Because It Has So Many Applications!

By: Kevin Lane

The **Pennsylvania NanoMaterials Commercialization Center** recently awarded King of Prussia-based Y-Carbon a grant in the amount of \$ 243,835 in Ben Franklin Technology Development Authority funding, with the company providing matching funds of \$78,000. This sum and other vital resources were used to achieve critical milestones in commercializing Y-Carbon's technology.

The company will convert carbides (such as titanium carbide) into a highly pure form of carbon, essentially by extracting the metal atom and leaving behind carbon that has homogenous pores, the size of which may be precisely controlled by the extraction process. This process produces materials with extraordinarily high surface areas that have several applications, such as supercapacitors used for electrical storage and water desalination. The nanoporous carbon also can be used for safer fuel storage, toxic gas handling, monitoring for explosives and toxins, fuel cells and even blood purification.

Products made with Y-Carbon's technology will allow for higher density energy storage in electric vehicles, the removal of liver-failure toxins from the human body, and additional applications that will provide clean energy and improved health care worldwide.

Y-Carbon's funding was used to develop a customer prototype for use by a major defense contractor, and it also was used as leverage in securing two SBIR phase 1 grants.

"Certainly the funding that Y-Carbon received from the Nano Center was critical in allowing us to develop a prototype for a major defense contractor," said Dr. Ken Malone, Y-Carbon's CEO, "and we probably would not have received our SBIR awards either without the Center's assistance. However a very important direction that the Center provided was an improved business structure, a certain rigor and discipline. This enabled us to focus more on the commercialization aspects of our technology, where previously we were more focused on R&D."

Yet Y-Carbon's focus on research and development earned them *R&D Magazine's* prestigious R&D 100 Award, which is presented annually to "revolutionary technologies newly introduced to the market." Previous winning technologies have included the automated teller machine (1973), the fax machine (1975), the Kodak Photo CD (1991) and HDTV (1998).

Y-Carbon was founded by Dr. Yury Gogotsi, who is a tenured professor and director of Drexel University's A.J. Drexel Nanotechnology Institute. With more than 20 years in the fields of materials science and nanotechnology, Dr. Gogotsi holds more than 30 patents. He has authored numerous published works, including two books and more than 180 papers in peer-reviewed journals, including three papers in *Nature* and two in *Science*. Dr. Gogotsi also currently serves as Y-Carbon's chief science officer.

Dr. Ranjan Dash is a co-founder and chief technology officer at Y-Carbon. He has more than six years of work experience in diverse fields, including ceramic manufacturing, software development and research and development in materials science. Ranjan is alumnus of the Drexel Nanotechnology Institute, where he did his research on the core technology that Y-Carbon is commercializing.

Dr. Malone is a serial entrepreneur and has a breadth of experience in the fine chemical industry, including leadership positions in manufacturing, research, finance, marketing and business management.

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