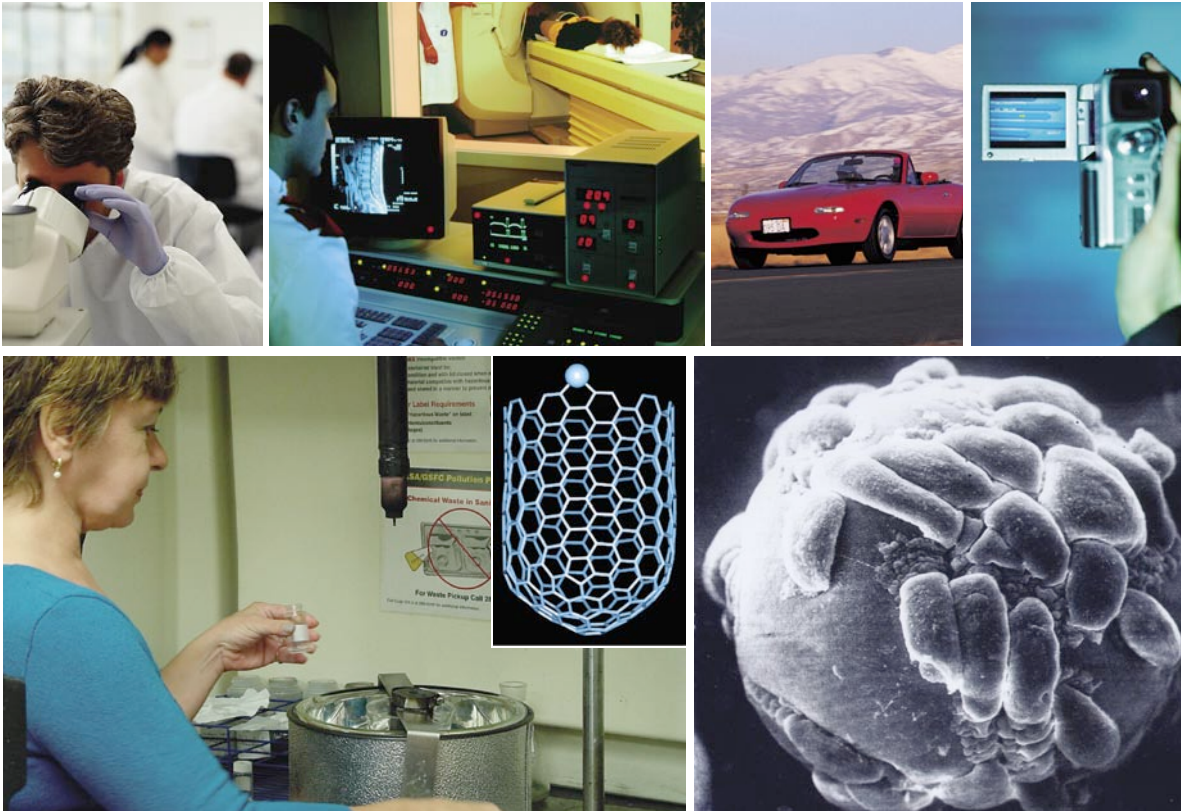




Low-Cost, High-Quality Carbon Nanotubes Enter the Marketplace



University and industry researchers now have access to high-quality single-walled carbon nanotubes (SWCNTs) through Idaho Space Materials (ISM) and its NOMEK 1556 product. These SWCNTs, which are made without the use of a metal catalyst, are manufactured using a process that originated at NASA Goddard Space Flight Center. Having successfully commercialized NASA's manufacturing process to increase production capacity while maintaining quality, ISM can produce SWCNTs at a rate of 50 grams per hour.

Benefits of Technology Transfer

- ISM's licensing of the NASA SWCNT manufacturing technology accelerated the launching of the advanced materials company and its premier product.
- ISM is making its SWCNTs available to university and not-for-profit researchers at a reduced price, facilitating the development of real-world applications of nanotechnology.
- ISM's sales of NOMEK products generate royalties for NASA, which can be reinvested in additional space program research.
- ISM provides a source for NASA to purchase low-cost, high-quality SWCNTs that could be used in space exploration and science missions.
- ISM is creating high-tech jobs in Boise, Idaho.

On the Record

“Licensing NASA’s technology allowed us to begin operations and rapidly commercialize an innovative product without the traditional R&D costs and time. We were able to focus on process enhancement and commercialization, which resulted in significant improvements in yield and production capacity without sacrificing product quality.”

– *Wayne Whitt, president, Idaho Space Materials*

“I’m very excited to see that this agreement is now making CNTs more readily available, particularly for academic and other research programs. The fact that they now have access to lower cost CNTs bodes well for the future of nanotechnology.” – *Jeannette Benavides, Goddard inventor*

About Idaho Space Materials

Located in Boise, Idaho Space Materials (www.IdahoSpace.com) was founded in December 2005 as a manufacturer of advanced materials based on existing patents. ISM currently employs 8 people and plans to increase the staff to 20 by the spring of 2007.

The Technology’s Origins

Although carbon nanotubes were discovered 15 years ago, their use has been limited due to the complex, dangerous, and expensive methods for their production. However, scientists at NASA Goddard Space Flight Center developed a simpler, safer, and much less expensive manufacturing process for SWCNTs. The key innovation in NASA’s process was its ability to produce bundles of SWCNTs without using a metal catalyst, dramatically reducing pre- and post-production costs while generating higher yields.

NASA believed that its improved production process could increase the prevalence of carbon nanotube technology in many areas, including medical applications such as portable/field equipment, implantable biosensors, artificial limbs and organs, and drug delivery; miniature and consumer electronics; research instruments (e.g., microscopy); fuel cells; radiation shielding; and innovative polymers for a wide range of applications. Therefore, the technology entered NASA’s technology transfer process.

The Transfer Process

In 2003, NASA Goddard’s Innovative Partnerships Program (IPP) began promoting the innovative SWCNT manufacturing technology at conferences, in print, and online. By the spring of 2005, the technology had caught the attention of Wayne Whitt, who was looking for an innovation with which to start an advanced materials company. Within a year he had founded Idaho Space Materials and applied for a nonexclusive license for the NASA technology. As license negotiations proceeded, as led by IPP’s Darryl Mitchell, Goddard inventor Jeannette Benavides met with company officials to demonstrate and fully explain the technology. The license agreement between NASA and ISM was signed on March 6, 2006.

Creating a Commercial Product

ISM enhanced NASA’s process, boosting yield and production capacity. As part of these efforts, ISM worked with the Electron Microscopy Center at the University of Idaho, which also called upon the expertise of Goddard’s Dr. Benavides in performing the Raman spectroscopy on ISM’s samples. The characterization data provided ISM with feedback on variations in its manufacturing process, allowing procedures to be improved. ISM later obtained a Raman spectroscopy system from Kaiser Optical Systems to perform in-house characterization of nanotubes.

Once ISM’s production process had been perfected, the company launched its SWCNTs as NOMECE 1556 on August 1, 2006. Product orders have already been received from university researchers, who can purchase ISM’s SWCNTs at a reduced price.

Looking Ahead

ISM is producing SWCNTs at a rate of 50 grams per hour and is able to scale manufacturing infinitely to match consumer demand. These high production rates will facilitate research into new uses for SWCNTs—a list of applications that grows daily.

For More Information

If you would like additional information about Goddard’s technology transfer opportunities, please contact:

Office of Technology Transfer

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