



SBIR/STTR SUCCESS

HYSITRON, INC.

Nanoscale technologies have led to large scale successes for Hysitron, Inc. Founded in 1992 and incorporated in 1993, Hysitron received its first SBIR in 1994 as a three person company and has grown to a 125 person company today. Hysitron's technical innovation is a small (square centimeter) 3 plate capacitive transducer. The transducer was developed into a 3 dimensional Nanoindenter by a SBIR Phase I US Army contract in 1994. Hysitron's patented transducer bridged the gap between existing qualitative Atomic Force Microscopes and the quantitative instruments available at the time, resulting in meaningful technological progress.

PHASE III SUCCESS

The company has generated \$225 million in revenue over the last 21 years of operation, and attributes its global success to the SBIR program.

AGENCIES

DoD, DOE

SNAPSHOT

Hysitron is helping to support the National Nanotechnology Initiative (NNI) and grow American industry and competitiveness through scientific achievement and training the next generation of nanotechnology workers.

HYSITRON, INC.

9625 West 76th Street
Eden Prairie, MN 55344

www.hysitron.com

As a result of Hysitron's innovation, the Army was able to measure ultra-thin laser refractive coatings of canopies and face shields, the Navy was able to develop self-cleaning materials for ships' hulls, and NASA was able to repair the original problem with the coatings on the Hubble Telescope. Also, Defense labs benefited from new knowledge of material behavior, allowing them to solve significant material science challenges, including testing the 100 nanometer (nm) coatings on the disk drives in computers and the 10 nm coatings on the Gillette Mach III razor blades.

"Simply put, our nanomechanical test instruments allow for the miniaturization of all manufactured components in the world so that they can use less energy and work smarter," explained company CEO Thomas Wyrobek. "The fundamentals of a micro mechanical system (MEMS) allowed us to operate at a scale which gave easy access to nano-scale data for many application areas. Our instruments operate below the wavelength of light."

Hysitron has sold these instruments to 60 countries and brought that revenue back to the USA. The company has generated \$225 million in revenue over the last 21 years of operation, and attributes its global success to the SBIR program. Had it not been for the six SBIR awards, the company would have simply sold its transducer technology into the commodity catalogue sale market.

"The number one impact of the SBIR program on our work is that it gave us focused topics to use our engineering skills to configure our product for useful and very high tech and mission-critical applications. In terms of our commercial success, SBIR gave us the opportunity to carry our research and development and feasibility studies on military grade products and demonstrate our solutions. This allowed us to go to industries in the US with

similar challenges as the military and present working, tested solutions,” said Wyrobek. “Most of the topics we look at involve so much risk that there’s no guarantee that there’s a market or a need. These projects would be too risky without SBIR, but the innovation that comes out of these projects and learning about the markets they can fit into is invaluable. We are now able to act independently of SBIR, but we stay active in the program because the topics keeps us interested and inspired.”

In terms of the company’s growth strategy and goals, Wyrobek notes that often companies like Hysitron are acquired by larger firms, which can be challenging when the purchaser doesn’t understand the technology being acquired. Right now the “miniaturization of everything” is helping to drive the business along with the National Nanotechnology Initiative (NIN), which works towards, “a future in which the ability to understand and control matter at the nanoscale leads to a revolution in technology and industry that benefits society.” Hysitron believes that its skills combined with these trends and initiatives will help it grow into a larger company. The company’s customers are able to achieve their material manipulation goals, which helps the industry innovate and funds more research, students, and methods to make more innovative instrumentation products.

“The spirit of the SBIR program is that it’s the way America can help itself innovate technologies – it is an objective opportunity for scientists and engineers to bring what they know to the benefit of others. The innovation that comes out of the SBIR program is the brainchild of America, it is a way for us to help the government, our warfighters, and all citizens,” said Wyrobek.

This collaborative spirit is also reflected in the company’s diverse work force and the company’s engagement with STEM initiatives in the US. Thomas Wyrobek is a recipient of the 2011 Advocacy Award through its direct support of the Nano-Link Center at Dakota County Technical College in Minnesota; a National Science Foundation and an Advanced Technical Education funded program. Hysitron collaborates with 1,000 academic institutions worldwide on six continents and markets to the related Industries that are the benefactor of those collaborations. Regionally, Hysitron is working with all of the major research institutions in Minnesota, Wisconsin, South Dakota, North Dakota and Iowa, as well as the Tier II Liberal Arts schools with 4 year programs. Through a partnership with Dakota County Technical College (DCTC) the company is actively engaged with the school’s two year Nanotechnology Science program that prepares students for careers in nanobiotech, nanomaterials and nanoelectronics industries.



With over 20 years of experience in nanotechnology, Hysitron is a pioneer in in-situ imaging with nanomechanical property measurement capabilities.