

N5 Sensors



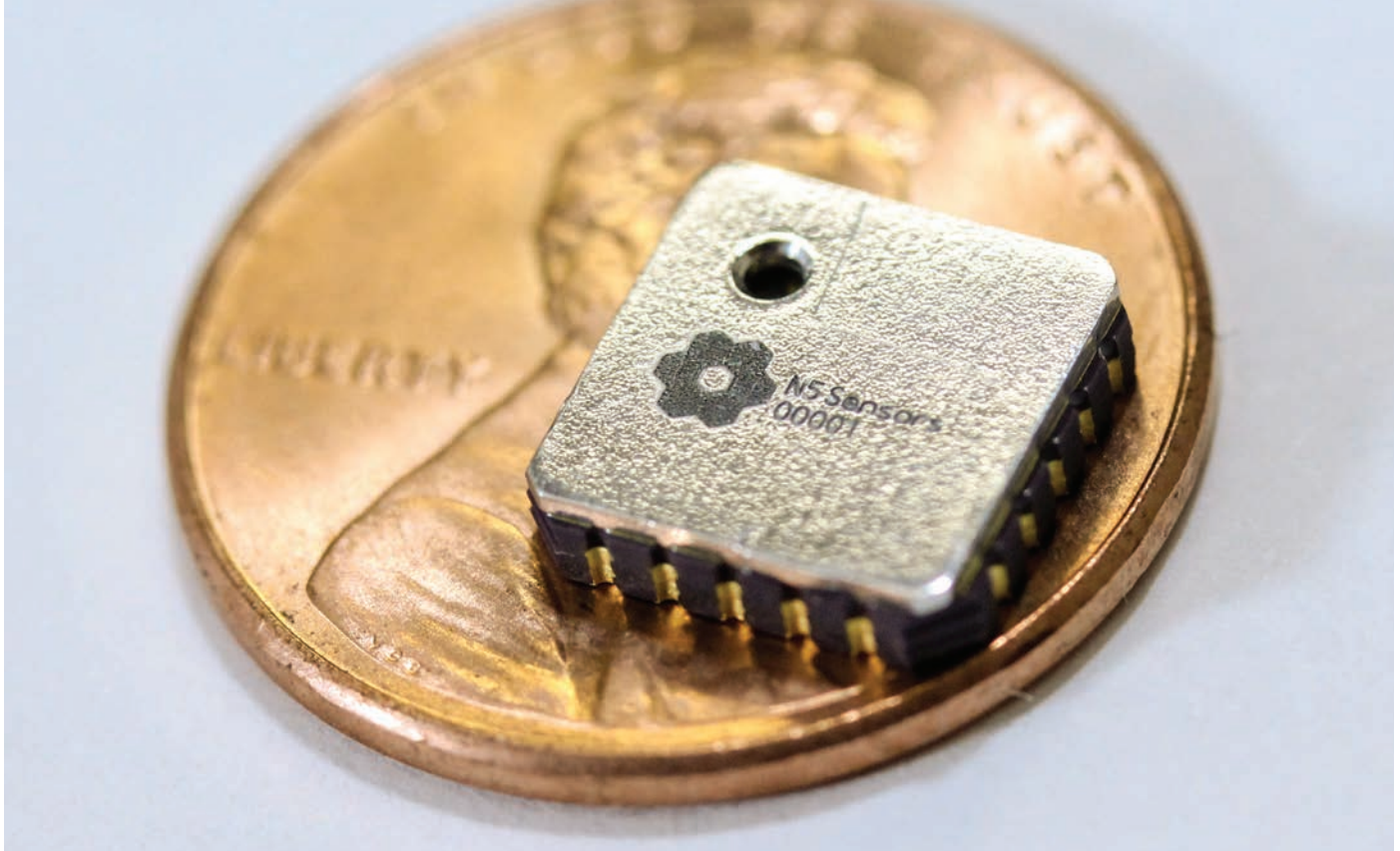
TOTAL DHS SBIR INVESTMENT
\$850K

PHASE III REVENUE
Nearly \$3M in government contracts;
Over \$600K in sales

9610 Medical Center Dr. Suite 200
Rockville, MD, 20850
<http://www.n5sensors.com>

Gas and chemical sensors are used in a variety of industrial and government applications to protect the safety of humans and infrastructure but the sheer size, power requirements and hefty maintenance costs create limitations. Maryland-based N5 Sensors Inc., received a Small Business Innovation Research (SBIR) award from the Department of Homeland Security Science and Technology Directorate (DHS S&T) to develop an ultra-small, low-cost hazardous gas and particulate matter detector using novel chip-scale chemical sensor technology that can be used by firefighters. The N5 Sensors team's solution replaces the traditional bulky monitors that could only detect four gases. N5's solution leverages microscale gas sensor technology and detects up to 13 toxic gases and particulate matter.

"In essence, we are harnessing the power of nanoscale materials and combining that with advanced semiconductor manufacturing techniques," explains Dr. Abhishek Motayed, Founder & President of N5 Sensors. "The result is a wearable, ultra-low power microscale robust gas sensor that can save lives, is easy to manufacture, and can dramatically drive down costs."



The sensors developed by N5 led to several patents, and a new alternative to the ineffective detectors that had been used for over 70 years. Able to fit on one's fingertip, N5's chip-scale gas and chemical detection sensors resulted in reduced maintenance costs, performance improvements in response time and selectivity, and improved reliability with less false positives. The ability to integrate with smart phones and other devices allowed the user to quickly assess their environment.

The Phase I and II SBIR projects led to a Phase II award through the DHS Commercialization Readiness Pilot Program (CRPP) that allowed the company to continue the development of the technology. N5 Sensors also received a \$1.2M contract from the Combating Terrorism and Technical Support Office (CTTSO) to advance beyond the detection of toxic industrial chemicals.

With the ability to detect levels of methane, oxygen, nitrogen dioxide, carbon monoxide and a host of other gases, the applicability of such a technology extends beyond first responders. N5 Sensors used the same core technology developed under the DHS SBIR to create a handheld monitoring device for at-home use, giving users the ability to monitor air quality, pollutants and Volatile Organic Compounds (VOCs) via a user-friendly app. Other government agencies also saw the possibilities, and soon NASA contracted N5 to develop a hybrid gas sensor for use inside spacesuits.

N5 Sensors also got the Department of Energy's Advanced Research Projects Agency-Energy's (ARPA-E) attention and received a \$1.53 million contract for next-generation carbon dioxide sensing technology. The ARPA-E's SENSOR (Saving Energy Nationwide in Structures with Occupancy Recognition) program focuses on large-scale energy savings and achieving a 30% reduction in HVAC energy usage by measuring carbon dioxide and accurately controlling air intake in buildings. Sensors for occupant counting and CO₂ allow for energy-saving optimized ventilation and temperature control without impacting the routines or comfort of those inside.

"The DHS S&T SBIR program was tremendously valuable and the Program Managers were the reason we were able to connect and ultimately work with other agencies," says Motayed. "Not only did it provide valuable next-round funding for the product development, but it gave us a platform to showcase the applicability of this technology."

N5 Sensors was founded in 2012 as a spin-off from the University of Maryland, College Park. The team hopes that its patented gas sensor technologies will replace the traditional sensor technology that still exists in the market. With the connectivity that comes with wearables, tiny sensors and smart devices, they want to give people the ability to assess their own environments and understand the impact on their health and well-being.