

June 14, 2010

[Nanosonic develops new material for fire and blast protection](#)

Nanosonic, a company based in Blacksburg, has developed a new technology for the Navy that protects structures from fire and other blasts. The company is now working on a pilot program for commercialization with Northrop Grumman. Here is a press release from Nanosonic:

A new coating technology that provides fire, blast and ballistic protection to various types of structures from ships to buildings is currently in a pilot program to make it available for future commercialization.

“The unique property of the coating is its ability to combine flame and blast protection. A handful of materials provide either feature but not both since the properties are mutually exclusive with currently available material technologies,” said Vince Baranauskas, director of polymer science and engineering at NanoSonic, Inc., of Blacksburg, Va., and co-inventor of the material with Michael Bortner, director of manufacturing process development for NanoSonic.

Baranauskas said the new hybrid coating material was developed in his lab for the U.S. Navy through a synergistic use of nanotechnology and polymer science. The successful testing of the novel technology is allowing NanoSonic to use the U.S. Navy Commercialization Pilot Program to start manufacturing pilot scale quantities.

According to Roshdy Barsoum, program manager of the Office of Naval Research’s Explosion Resistant Coating, Ships and Engineering Systems Division, the new coating, HybridSil, represents a major development in the application of protective coatings for ship structures, because of its superior fire and blast resistance.

NanoSonic is partnering with Northrop Grumman on the pilot program.

Commercial applications for the flame and blast resistant material include safer, protective coatings for buildings and vehicles. Other future uses could include furniture and clothing manufacturing industries, according to NanoSonic’s President Richard Claus, a past recipient of Virginia’s Outstanding Scientist Award.

Buildings in countries prone to terrorist attacks could be retrofitted to reduce greatly the threat of fire and smoke toxicity from explosions, Baranauskas added.

Baranauskas explained his efforts to develop this new material started three years ago. He was responding to the U.S. Navy's quest for better blast protection of its military fleet without the concerns of flammability and smoke toxicity that challenge currently investigated materials. To improve the reliability of the materials used in ship construction, NanoSonic used a Small Business Innovation Research (SBIR) grant to design the new polymeric material, a polyorganosiloxane blend.

The material shows exceptional flame and blast resistance, Baranauskas said. The material also provided better protection from land mine blasts when compared to panels that were not treated with the new spray-on coating technology. "It was better than a 30 percent reduction in permanent deflection,?" he added.

The new polymer nanocomposite HybridSil will reduce the probability of lost lives and lessen damages to ships, thus increasing survivability against explosive and flame threats, Baranauskas said.

NanoSonic makes this self-assembling material using its patented, environmentally friendly, room temperature nanotechnology manufacturing process. Baranauskas said the material may be tailored for 20 to 60 minutes at room temperature followed by curing within 24 hours in shipyard environments. It can be incorporated into a product such as a ship's hull in several ways, including painting or using an airless spray technique.

Original product testing occurred in an underwater military laboratory in San Antonio, Texas.