

NanoSonic and Lockheed partner on nanotechnology

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NanoSonic Inc., a Blacksburg firm, has signed an agreement with Lockheed Martin Corp. to develop nanotechnology materials and coatings.

Nanotechnology involves the manipulation of materials on an extremely small scale. "Nano" means one-billionth.

NanoSonic is led by Richard O. Claus, who holds a chair in electrical and computer engineering and materials science at Virginia Tech.

Claus said in a statement that the partnership with Lockheed Martin should be "very beneficial" to his company and Virginia's role in nanotechnology. He was in a conference in Spain this week and could not be reached for further comment.

Making new material

The company, founded in 1998, recently announced that it has begun making a new material called Metal Rubber that conducts electricity like a metal but stretches like rubber up to several hundred percent of its original length. It is being considered for medical and aerospace uses. Metal Rubber has been mentioned as a possible component for airplane wings that shift their shape when charged with electricity or for use in artificial muscles.

Claus, a 2001 recipient of a Virginia Outstanding Scientist Award, and Yan Jing Liu, a Chinese graduate student at Tech, formed NanoSonic. Liu, who was working an electrostatic self-assembly process for making coatings, got Claus interested in the technology. Liu is no longer with the company.

The process sounds deceptively simple. It involves cleaning a base material such as glass and leaving it with an electrical charge. Then the base material is dipped into water-soluble solutions of nanoparticles, one solution carrying a positive charge and the other a negative charge.

Film builds up

In between each dipping, a purified water wash removes any loosely-bonded particles. Eventually, a film of new material builds up.

The complicated part of the process falls to the chemists who prepare the solutions of nanoparticles. After that, it's easy to do and inexpensive. Near-perfect coatings can be created in an environmentally-safe manner at room temperatures and pressures without the need for a clean room, Claus explained.