Rick Claus, Ph.D. in Electrical Engineering, CEO, Director of Advanced Development, with 30 years experience in advanced material technologies. Former chaired professor of engineering at Virginia Tech. PI on more than 700 externally-sponsored research programs totaling more than $50M. Authored or co-authored nearly 1000 journal and conference papers and more than 30 issued U.S. patents.

Jennifer Lalli, Ph.D. in Chemistry, President, specializing in polymer science and nanocomposite synthesis. Led the group that developed ESA into a large-scale production method and invented NanoSonic's Metal Rubber material. PI on NanoSonic programs funded by the DoD, NASA, DOE, NIH, and NSF, totaling more than $25M

Vince Baranauskas, Ph.D. in Chemistry, Chief Technology Officer, specializing in polymer synthesis, characterization, deposition, and statistical optimization. Inventor of NanoSonic's HybridSil technology with extensive experience designing and tailoring polymeric nanocomposites for demanding aerospace, marine, space, geothermal, and turbine environments.

Hang Ruan, Ph.D., in Electrical Engineering, VP Sensors & Systems Division, expert and inventor in the area of optical devices and smart materials. PI on the nanoscience and sensor related fields such as low-power wireless sensors, fiber optic/bio/nano sensors, molecular self assembly, micro/nano/RF photonics, micro/nano/flexible electronics, and other nano-scale devices.

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NanoSonic, Inc.

putting nanotechnology to work

Protective Coatings
Flexible Hybrid Composites
Nanoelectronics and Sensors

NANOSONIC

Founded in 1998, we are a privately-held Delaware C-Corporation headquartered in Giles County, Virginia, USA. Using advanced chemistry, materials science, and RF engineering applications, NanoSonic designs, develops, and manufactures products using environmentally benign processes and techniques.

Facilities

A 10,000 sq. ft. R&D lab and an open 10,000 square foot process scale-up and manufacturing lab allow NanoSonic to achieve state-of-the-art materials research and development, small-scale manufacturing, and efficient day-to-day operations. Research equipment ranges from six well-equipped chemical fume hoods, to 20 and 100 liter reactors, to self-assembly robotic systems, and small-scale composite production units. Support testing equipment includes UV-vis, FTIR, DSC, TGA, a computer-controlled Instron load frame, a CAD-driven fabric cutter, large-scale self-assembly systems, and others. Separate support labs are available for electronic, optical and microelectronic device fabrication and analysis.

Manufacturing

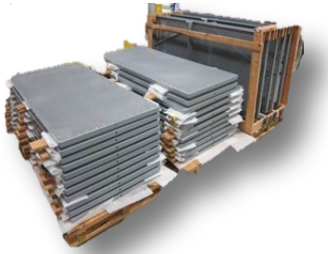
NanoSonic has the capability to manufacture production level HybridSil® and HybridShield® coatings, Metal Rubber™ textiles and other unique products. We have successfully demonstrated the capability to manufacture >2,000,000 lbs. per year of nanocomposite resins. We are also the largest manufacturer of monodisperse nanoclusters in the U.S. Process scale-up equipment includes a 55-gallon drum reactor.

Sustainability

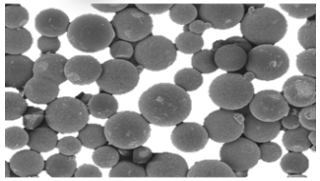
As the flagship company within Giles County's Wheatland EcoPark, NanoSonic implements green energy practices and participates in local efforts to protect the land, air, and water around us. Our 30,000 sq. ft. LEED building includes a transpired solar collector wall, sensored lighting, Energy Star equipment, low-VOC finishes, and many other sustainable features.

NanoSonic and the Office of Naval Research received a 2011 "R&D 100" Award for the development of HybridSil, a revolutionary coating material that is blast- and fire-resistant. In addition, NanoSonic also received a 2007 "R&D 100" Award along with NASA Langley Research Center and NASA Johnson Space Center for development of its Metal Rubber Textiles.

PROTECTIVE COATINGS



Anticorrosion
HybridSil Anticorrosion Coating is a single component, next-generation environmental protective material designed to protect marine, automotive, aerospace, shelter, and communication structures from harsh corrosive environments. Combat active military structures coated with HybridSil Anticorrosion have avoided corrosive damaged for over 4-years , while MIL-PRF-24635 parts revealed corrosive damage in less than 6-months.



Self-Healing
NanoSonic's self-healing HybridSil capsules may be dispersed within any HybridSil resin or commercially supplied aerospace, marine, or automotive topcoat to impart laceration, abrasion, and erosion repair to underlying substrates.

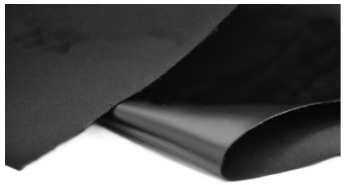
Icephobic
HybridShield Icephobic delivers a ground breaking combination of icephobicity, environmental durability, and corrosion protection in an easily applied, one-part copolymer nanocomposite coating. Surfaces equipped with HybridShield Icephobic have drastically reduced ice adhesion affording a significant reduction in removal effort. Icephobicity and environmental durability have been confirmed by multiple independent and government laboratories.

CRES Pipe Repair
HybridShield CRES Pipe Repair kits provide an unparalleled material that seals pressurized leaking pipes and prevents further crevice corrosion in one easy step.

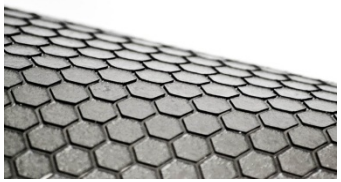
Fire/Blast
For the first time, in one unique material, HybridSil Fire / Blast provides protection to three threats simultaneously: fire, blast, and ballistics. It drastically enhances the survivability and operational lifetime for a broad spectrum of building and vehicle structures. Other materials provide fire resistance or blast resistance, but not both.

FLEXIBLE HYBRID COMPOSITES

THERMAL ARRAYS
HybridShield Thermal Arrays impart extreme fire protection to underlying materials by creating a conformal, highly flexible boundary to fire threats that is extremely flame resistant and dimensionally stable at high temperatures.



FLEXIBLE COMPOSITES
NanoSonic's HybridSil flexible composite armor technology provides a next-generation combination of environmental durability and flexibility through a paradigm breaking reactive infusion technology between innovative copolymer nanocomposites and high performance textiles.

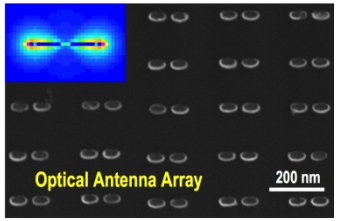


ARMOR ARRAYS
Through the precisely tailored application of 3D structured copolymer nanocomposite arrays covalently coupled with high performance fabrics, HybridSil Armor Arrays provide a pioneering combination of laceration, abrasion, and puncture protection in a highly flexible, conformal composite ensemble.

METAL RUBBER ELECTROMAGNETIC
Metal Rubber is a self-assembled nanocomposite that combines the high electrical conductivity of metals with the low mechanical modulus of elastomers. It offers utility as a conformal electromagnetic shielding material and long term durability as it is based on noncorrosive gold and low glass transition temperature polymers.

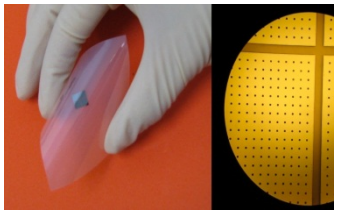
FOAMS
Energy absorbing, highly flame resistant HybridSil foams provide enhanced impact protection, fire resistance, and reduced smoke toxicity over state-of-the-art closed and open cell polyurethane foams .

NANOELECTRONICS AND SENSORS



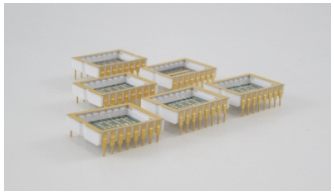
NANOANTENNA PHOTO DETECTORS

NanoSonic fabricates high efficiency nano-antenna photodetectors using unique materials and micro-patterning techniques. They enable applications including broadband solar cells, multi-spectral photodetectors and arrays, large-area photoconductors, photo-induced capacitors and inductors, and spatial light modulators



NANOMEMBRANE BASED FLEXIBLE ELECTRONICS

Ultra-thin and mechanically flexible semiconductor sensors and devices are manufactured using nanomaterials and micro-patterning methods. Flexible, bendable and stretchable electronic devices, device arrays, and circuits result. Their uses include conformable optical displays, flexible solar cells, and high frequency shear flow and normal pressure sensors.



RADIATION HARDENED MEMORY DEVICES

NanoSonic produces radiation-hardened digital data memory chips using novel designs, materials, and processes. In addition to radiation hardness required for space and other critical systems, these devices provide non-volatility, high data capacity, fast switching speed, and low power consumption.

CHEMFET BIO SENSORS

NanoSonic constructs conformal nanomembrane and graphene based chemical field effect transistors (ChemFETs) for chem/bio detection systems. Multi-parameter wireless sensor units using these detectors offer cost, sensitivity, and selectivity advantages over conventional chem/bio field sampling techniques.

METAL RUBBER MECHANICAL SENSORS

Metal Rubber can exhibit piezoresistive behavior while retaining high electrical conductivity and low mechanical modulus. It can be used to implement low impedance strain gauges and shear force sensors. Large failure strain allows implementation of large physical displacement extensometers