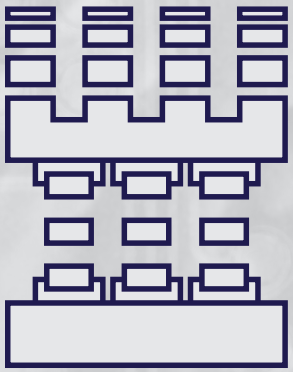

SPORIAN®

MICROSYSTEMS, INC


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MISSION AND VALUES

Sporian Microsystems' mission is to develop and commercialize advanced sensors and systems for prognostic health management, condition-based maintenance, integrated vehicle health management, environmental monitoring, asset health management and point of care medical diagnostic technology.

Sporian's goal is to provide unsurpassed value and service to its customers who include market leaders and government agencies in diverse industry segments. The Sporian team includes individuals recognized throughout the world for their contributions to sensors, MEMS, microelectronics, optoelectronics, electronic packaging, materials science, molecular biology, and chemistry.

Sporian's technologies and management processes incorporate the flexibility necessary to conduct on-time, on-budget product development. The company serves microelectronics technology users desiring unique, practical solutions for specific design and development projects. Sporian can provide services ranging from full development for your sensor, MEMS, or packaging problem, to consulting services on a particular development step. Our solutions provide increased performance, reduced cost, and mitigation of technical risk and complexity, while providing manufacturable and cost effective solutions during each stage of a project.

Sporian's corporate culture places a premium on hard work, innovation, diverse skills and experiences, collegiality, respect, and ethics.

CORE COMPETENCIES

Sporian Microsystems, Inc. is an aggressive sensors, MEMS and packaging company. Sporian develops, markets, manufactures and sells a family of novel sensors, multiple sensor-suites, sensor-subsystems and sensor data-loggers. These components and systems deliver several key features, including ruggedization, small size, low power consumption, and low cost systems that communicate via wired or wireless links. The company owns a strong, differentiated intellectual property and patent base and specializes in sensors, MEMS, microelectronics, optoelectronics, electronic packaging, materials science, molecular biology, and analytical chemistry.

Sporian has electronics fabrication and test facilities for producing prototype quantities. For higher volume production, Sporian has experience working with several regional contract manufacturers (CMs) capable of producing circuit assemblies, building cable harnesses, chassis loading, electronic testing and custom manufacturing processes in quantities from prototype to mid-volume. Several of these firms also have relationships with CMs based in Asia for high-volume production.

PRODUCTS AND SERVICES

Sporian's AssetOverseer® line of sensors and wireless sensor networks provide unprecedented battery life and harsh environment survivability for prognostic health management applications. Primary customers are in the defense, energy and transportation industries. Sporian's patented BioOverseer® and ChemOverseer® systems provide sensitive, specific detection of biological and chemical species. These products are primarily targeted for defense, life sciences, and agriculture customers. Sporian is pursuing a product development, technology licensing, and R&D service roadmap that includes four interrelated product lines:

- Environmental sensors including such parameters as temperature, vibration, humidity, shock, and chemical species present in the environment
- Biological and chemical sensors for environmental contaminant and serum pathogen detection
- Sensors, coatings and packaging for harsh, corrosive, oxidizing, high temperature, pressure, and neutron flux environments.
- Systems to integrate sensors with signal processing, data logging, wired and wireless communications, and interface software.

Sporian has performed diverse research for the Department of Defense, the Department of Energy, NASA, the National Science Foundation, the National Institutes of Health and various commercial customers. A representative list of current and recent research areas includes:

Asset Health Monitoring Systems

- Miniaturized Intelligent Wireless Sensor Platform
- Miniaturized Intelligent Wired Sensor Platform
- Arrayed Wireless Sensors for Assessing Impact Related Damage to Solid Rocket Motors
- High G 3-axis accelerometer
- Carriage Life Monitoring for External Stores
- Monitoring and Prognostic Health Management of Aircraft Generator Control Units and Main Power Relays

Harsh Environment Sensors

- Adaptable Sensor Packaging for High Temperature Fossil Fuel Energy Systems
- High Temperature MEMS Sensor Suite for Aero-propulsion and Power Technologies
- High Temperature MEMS Sensor Suite for Health Monitoring System of Turbine Engine Components
- High Temperature Sensor Materials Optimization and the Development of Thin Film Sensor Fabrication Methods
- High-Turbine Operational Sensor Assembly
- Ultra High Temperature Capacitive Pressure Sensor
- Advanced Ceramic Materials & Packaging Technologies
- Conformal Packaging & Installation Techniques for In Situ Sensors
- High Temperature Pressure Sensors for Concentrating Solar Power
- Smart, High Temperature Pressure Sensor
- Advanced High Temperature Control Rod Position Sensor for Nuclear Power Systems
- Lightweight, Accurate Bleed Flow Measurement for Gas Turbine Engines

Chem/Bio Sensor Systems

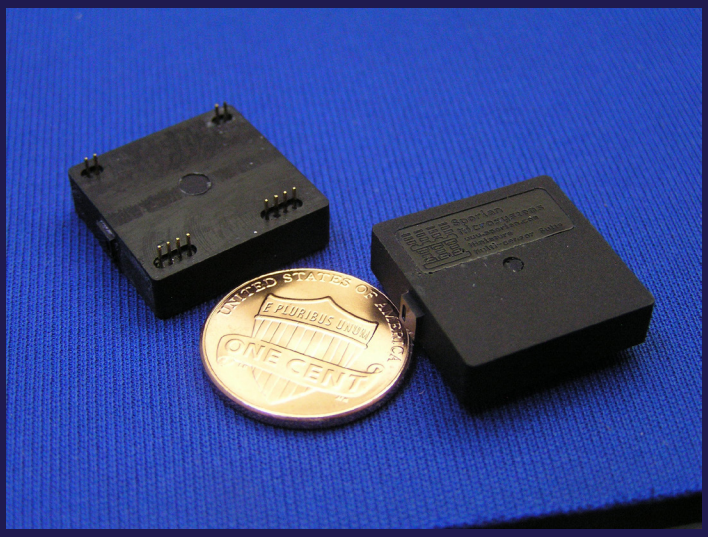
- Development of a Highly Integrated Multifunctional Optical Sensor for Monitoring Weapons Health and Battlefield Environments
- Handheld Biomonitoring Device for Estimating the Adverse Health Effects of Noxious Exposures
- Highly Selective, Low Power, Wireless, Immunoassay Based Optical Sensor for Detection of Water-born Pathogens
- Nanosensor Cartridge for Bioagent Detection within Geospatial Networked Motes
- Rapid, Handheld, Flexible Use Detection System for Bacterial Contamination
- Small, Low Power, Bore Gas Composition Sensor for Determining Aging Changes in Composite Propellants and Service Life Assessment
- Commercial Soil Nutrient Sensor
- Carbon Monoxide Detector for Aviation Oxygen Systems
- Flexible Platform for the Sensitive Detection of Biological Contaminants

Low Power Wireless Networks

- Arrayed Wireless Sensors for Assessing Impact Related Damage to SRMs
- Miniaturized Intelligent Wireless Missile Sensor Platform
- Highly Selective, Low Power, Wireless, Immunoassay Based Optical Sensor for Detection of Water-born Pathogens
- Low-cost Multi-sensors as Embedded Gauges for In-situ Non-Destructive Evaluation (NDE) of Rocket Motor Serviceability
- Wireless Intra-Soldier Data Reception and Transmission
- Wireless Sensor to Monitor Generator Control Unit and Main Power Relay Health

MEMS Development and Packaging

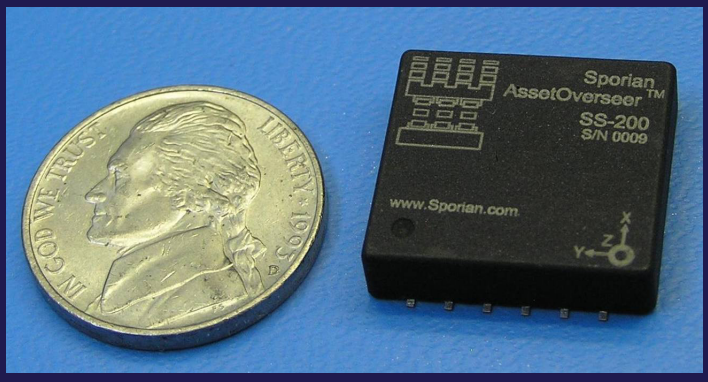
- Adaptable Sensor Packaging for High Temperature Fossil Fuel Energy Systems
- Analysis of Prognostic Sensor Technologies for MEMS Applications in Military Systems
- High G 3 axis accelerometer
- High Temperature MEMS Sensor Suite for Aero-propulsion and Power Technologies
- High Temperature MEMS Sensor Suite for Health Monitoring System of Turbine Engine Components
- Novel Joining Method for Self-Assembly of Reliable Three Dimensional Micro-Electro-Mechanical Systems
- Single Chip Micro Electro Mechanical (MEMS) Environmental Sensor Suite
- Commercial Advanced MEMS, optoelectronic, and RF Packaging R&D



Miniature, Low Power Sensor Suite for Asset Health Monitoring

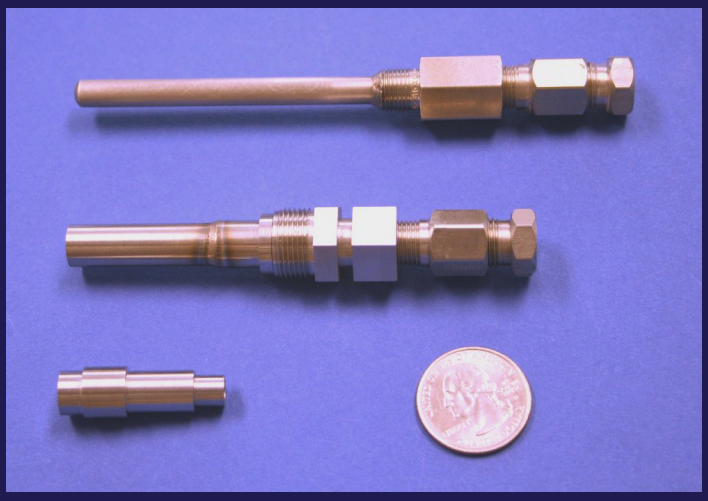
Inline Waterborne Pathogen Sensor System

Wireless Pathogen Sensor Buoy

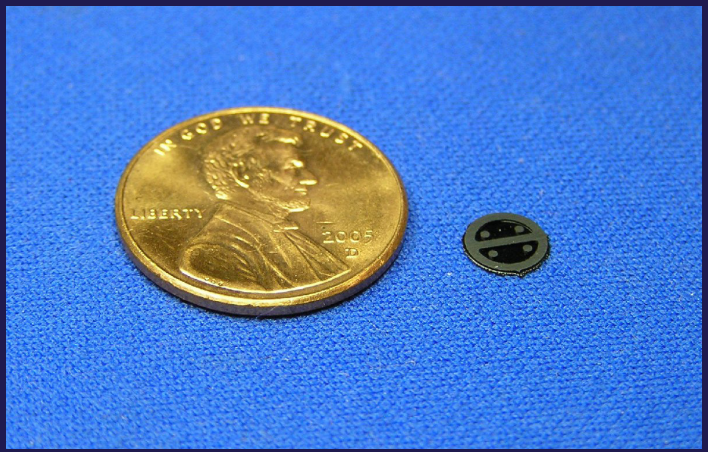


Ultra Low Power, High G, 3-Axis Accelerometer

Wireless Asset Health Monitoring System



High Temperature Turbine Engine Probes



Turbine Engine Temperature / Pressure Sensor Suite

MARKETS AND CUSTOMERS

Sporian provides a wide range of products, research, development, consulting, and design services for a variety of industries and Government agencies. Government customers include:

- US Army
- US Air Force
- US Navy
- US Department of Defense
- US Department of Energy
- US National Aeronautics and Space Administration (NASA)
- US National Institutes of Health
- US National Science Foundation
- Missile Defense Agency

STRATEGIC PARTNERS

Sporian partners with academia, government agencies, and industry to identify and address today's challenging opportunities.

Universities

- Auburn University
- Clemson University
- Massachusetts Institute of Technology
- University of California at Berkeley
- University of Central Florida
- University of Colorado
- University of Tulsa
- University of Utah
- University of Wisconsin-Madison

Commercial and Industrial

Sporian's commercial and industrial partnerships are under non-disclosure agreements.

Government Agencies and Laboratories

- Air Force Research Laboratory
- Army Corps of Engineers
- Army Night Vision and Electronic Sensors Directorate
- Army Topographical Center
- Boulder Water
- Centers for Disease Control
- Food and Drug Administration
- Idaho National Laboratory
- NASA Glenn Research Center
- National Cancer Institute
- National Energy Technology Laboratory
- National Heart, Lung and Blood Institute
- National Renewable Energy Laboratory
- Naval Air Systems Command
- Navy Strategic Systems
- Oak Ridge National Laboratory
- Pacific Northwest National Laboratory
- Sandia National Laboratories
- Space and Naval Warfare Systems Command (SPAWAR)
- United States Geological Survey-Denver (USGS)

CORE COMPETITIVE ADVANTAGES

The Sporian Microsystems, Inc. has over 4500 square feet of lab space dedicated for:

- Harsh Environment Sensor Element Fabrication – Chemical precursor synthesis and preparation, UV lithography, thermal processing, laser machining.
- Electronics fabrication and testing – Oscilloscopes, function generators, microprocessor/logic programming, basic circuit analysis equipment, LabView DAQ systems, and stock electronic components.
- Environmental testing – Vibration test system, inertial shock tower, ovens, furnaces, pressure vessels, temp/humidity chamber coupled pressure/temperature chamber to 1000 PSI and 1600 °C.
- Optical characterization – Optics tables, opto-mechanical fixtures, lasers, solid-state optical components, photo-diodes, microscopes, spectrometers, spectrophotometer, and laser diode drivers.
- Microelectronics packaging – Class 1000 clean room facilities, die handling/bonding, ball and wedge wire bonding, flip-chip bonding, wire and die bond testing system, hot bar bonding system, reflow ovens, microscopes, glove boxes, dispensing systems, bake-out ovens, and dry storage.
- Molecular biology – Reagent handling, storage, microscopes, centrifuges, nutator, incubator, fluorescent imaging microscope, and spectrophotometer.

The labs are outfitted with common lab equipment, along with other custom electrical test, measurement, microelectronics packaging, processing equipment, and computing resources for design, modeling, and analysis. Sporian's facilities are in compliance with the environmental laws and regulations of Federal, state (Colorado), and local (City of Lafayette and County of Boulder) authorities with respect to airborne emissions, waterborne effluent, external radiation, noise, solid and bulk waste disposal, and hazardous, flammable, and toxic materials handing and storage.

Many Sporian employees are recognized as thought leaders in their respective fields. Thirty percent of Sporian's technical employees have Ph.D. in engineering or science.

Sporian is a charter member of the following organizations: Colorado Advanced Photonics Technology Center, Northern Colorado Defense Contractors Alliance, and the Propulsion Industry Working Group Strategic Advisory Board.

Sporian's optical sensor architecture has received two patents. Sporian also has numerous invention disclosures that may ultimately be filed as patents or used to dispute competing patent claims. Sporian carefully protects its trade secrets including the utilization of non-disclosure agreements, document marking, and IP reviews of documents to be circulated externally. Sporian is building strong brand identification with its AssetOverseer®, BioOverseer®, AquaOverseer® and ChemOverseer® trademarks.

With capabilities ranging from research and product development to prototype production and contract manufacturing through partner organizations, Sporian can provide a seamless path to product realization.

COMPANY PROFILE

Sporian Microsystems, Inc. was founded in 2000 with the goal of developing advanced MEMS and packaging technology. Sporian's management team has a strong background in technology, project management, entrepreneurship, and business leadership.

Sporian's President, Dr. Brian Schaible has managed day to day operations of Sporian since its founding in 2000 and has overseen the growth of the company from a one person operation to its current state. Dr. Schaible has 20 years of research experience in the areas of sensors, MEMS, and advanced microelectronic and optoelectronic packaging. Dr. Schaible's current research interests include: wireless sensor networks and communications, sensor and MEMS design and packaging; optical and fiber based communications and sensors; and sensor networking. Before starting his graduate education, Dr. Schaible worked as a civilian engineer for the Department of Navy. While in this position, he was responsible for providing engineering support to the F/A-18 aircraft fleet for mechanical subsystems such as the hydraulic and flight control systems, environmental control systems, and accessory drive systems. At Sporian, Dr. Schaible has served as the principle investigator on sensor development projects for the US Army, US Air Force, and the US Navy. Dr. Schaible has two patents and has authored or co-authored more than 15 papers. Dr. Schaible received the B.S., M.S., and Ph.D degrees in Mechanical Engineering from the University of Colorado at Boulder.

Dr. Michael Usrey, Sporian Vice President, oversees all of the company's marketing and commercialization efforts. Dr. Usrey has more than 30 years of experience in technology management. He was founder and CTO for EnergyWindow, providers of an energy e-procurement system serving dozens of Fortune 500 firms and the US Postal Service. EnergyWindow successfully raised over $1 million in venture capital funding and was subsequently acquired by E Source. Dr. Usrey was also founder and chief executive of Protocol Communications, an Internet service provider acquired by Midwestern regional ISP Local Link. Prior to this, he was an IT project manager at Honeywell with control of a $15 million budget and a key participant in the $1 billion Sperry merger. Dr. Usrey has taught entrepreneurship, management, technology and engineering courses at New Mexico State University, University of Minnesota, University of Colorado, National Technological University, and Vienna University of Technology. He has consulted with dozens of companies in technology and operations management as an advisor to the Boulder Technology Incubator. Dr. Usrey earned advanced degrees in industrial engineering, with minors in computer science and economics, from the University of Minnesota and New Mexico State University. He is a registered professional engineer and is certified in production and inventory management.

CONTACT INFORMATION

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