Benefits of Doing Business With the Stony Brook Center for Advanced Sensor Technology

We enable selected partner companies to have access to our research faculty, their unique expertise, equipment, and labor, all with the following economic advantages. The Stony Brook Center for Advanced Sensor Technology (The Center) has been granted a budget enabling us selectively to match corporate contributions to a project and, in addition, the University contributes a special overhead cost reduction to our corporate partners. Technology transfer can be an added outcome of a project with The Center.

Over fifty (50) large and small companies have developed productive programs with The Center. Among key selection criteria is the favorable economic impact that a given project is anticipated to have on the economy of New York State, measured in basic parameters such as anticipated job creation and retention.

The Center strives to be seen by its industrial customers as an extension of their own R&D effort. They accomplish their R&D goals faster and with less risk by working with us. Flexible project selection rules and tailored schedules enable The Center to work with just about any company that needs our help. For a given project, we have the capability of enhancing our expertise by hiring new personnel, and the freedom to invest in new infrastructure.

The Center's affiliated faculty member capabilities are especially strong in sensors, imaging, engineered materials, fluorescent detection technology, signal processing, fiber-based sensor networks, and software for sensor networks and cyber-security. The Center's "Active Research Areas Summary" more fully outlines its particular research strengths, and a copy will gladly be provided you upon request.

The Center welcomes your questions and comments, and invites you to contact us with any idea you may have for a project. Thank you.

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SUNY Stony Brook

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Active Research Areas Summary

Fluorescent detection technology, sensors, and imaging. We have two world-class groups (one headed by Prof. Vera Gorfinkel, the other by Prof Serge Luryi and Dr. Mikhail Gouzman) with well-equipped labs. Among applications -- novel DNA sequencing instruments and medical applications of fluorescent imaging, a start-up company to facilitate commercialization of the results for either direction.

Fiber-powered sensors. The Sensor CAT has pioneered a unique technology that enables both power delivery to the sensors and information exchange to be transmitted via optical fiber. We have a well-equipped lab (Dr. Mikhail Gouzman). A start–up company has been formed to commercialize the applications.

Uncooled mid-infrared lasers and applications. The world-famous group, headed by Prof. Gregory Belenky, is developing the most advanced technology in high-power mid-IR lasers and is developing several applications (telecom, defense, sensors, homeland security). The Sensor CAT has now the practically complete semiconductor laser fabrication facility and a world-class optoelectronics laboratory.

Superconducting electronics. The world's leading designer group (Dr. Vasili Semenov) develops and designs the cutting-edge novel superconducting electronic circuits, such as digital SQUID circuits with unrivaled performance. Dr Semenov is one of the original creators of the RSFQ logic family, now the foundation of all electronic applications of superconductivity. A start-up company has been formed to facilitate commercialization of the results.

Biomedical sensors and applications. In addition to those mentioned in 1 and 2, development of devices for neuromuscular diagnostics and treatment (Prof. Ken McLeod at SUNY Binghamton). A start-up company strives to commercialize the technology.

Statistical information processing. Prof. Feinberg's group holds the industry record in accuracy of load forecasts for electric utilities. A start-up company has been formed to facilitate commercialization.

Magnetic sensors and materials. The world-famous group (Prof. Richard Gambino) specializes in magneto-optical materials and applications. Prof Gambino is one of the original IBM creators of the optical magnetic recording technology. A start-up company has been formed to facilitate commercialization of the results.

Other active technical directions

1. **Carbon nanotubes for sensors and energy storage.** Patented technology and significant characterization expertise; state and industrial support.
2. **Infrared imaging materials based on vanadium oxides.** Advanced technology and facilities for material deposition and characterization.
3. **MEMS valves.** Unique patented design; state and industrial support.
4. **Signal processing with applications to radars and acoustic probes**
5. **Software development for sensor networks and cyber-security**
6. **High-precision optical metrology**
7. **Solid-state laser design**
8. **Chemical sensors**
9. **X-ray sources and imaging**

SUNY AT STONY BROOK FACILITIES AND LABORATORIES
Relevant to the Stony Brook Center for Advanced Sensor Technology's Program

ADVANCED MATERIALS

- Corrosion Science Laboratory
- *Crystal Growth Laboratory*
- Laboratory for Characterization of Advanced Materials
- Magneto-Optic Materials Laboratory
- Mesoscale Electronics and Sensors Laboratory
- *Microgravity Research Facility*
- *NSF Center for Thermal Spray Research*
- NSF Center for Polymers at Engineered Interfaces
- *Rapid Prototyping Facility*
- *Surface Analysis and Thin Film Analysis Laboratory*
- *X-Ray Beamline Facility for Synchrotron Topography*
- Electron Microscopy Facilities

Electrical Engineering

- Communications, Signal Processing, Speech, and Vision Laboratory
- Digital Signal Processing Laboratory
- Digital Systems Design Laboratory
- *Fiber-Optic Sensors Laboratory*
- *Fluorescence Detection Laboratory*
- *Instrumentation Laboratory*
- *Microelectronics Laboratory*
- NSF Industry/University Center for Design of Analog and Digital Integrated Circuits
- *Opto-Electronics Laboratory*
- Semiconductor Optoelectronic Laboratory

Mechanical Engineering

- *Computational Solid Mechanics Research Facility*
- *Laboratory for Experimental Mechanics Research*
- Laser-Based Measurement and Diagnostics for Thermal Engineering
- Ultrafast Laser Materials Processing and Micromachining
- Manufacturing Automation Laboratory
- Optical Metrology Laboratory
- Process Modeling Laboratory
- Robotics and High Speed Machinery Laboratory
- System Engineering and Integration Laboratory
- Thermal Sciences Research Laboratory
- Ultrafast Thermal Phenomena and Thermo-Optical Measurement

Physical Sciences

- Advanced Technology Laboratory and Cryogenic Fluids Facility
- Center for High Pressure Research
- Chemical Synthesis Center
- Electron-Microprobe Facility
- Isotope Geology Laboratory
- Superconductor and Nano-Scale Device Fabrication Laboratory
- University Nuclear Magnetic Resonance Center
- X-Ray Crystallography Facility
- X-Ray Microscopy Laboratory
- *University Mass Spectrometer Facility*

Biomedical Engineering

- *Bioelectromagnetics Research Laboratory*
- *Biomechanics Testing Laboratory*
- Medical Image Processing Laboratory
- University Microscopy Imaging Center
- DNA Sequencing Laboratory

Shops:

- Electronics
- Glass
- Machine
- Refrigeration

Business support

- Long Island High Technology Incubator, Inc.
- New York State Small Business Development Center
- STRATEGIC PARTNERSHIP FOR INDUSTRIAL RESURGENCE (SPIR)