

# DOE SBIR & STTR GRANT APPLICATION AWARDS FISCAL YEAR 2010 PHASE II

(Back to the SBIR/STTR Awards Page)

---

## TOPICS:

- Accelerator Technology for the International Linear Collider
- Advanced Coal Research
- Advanced Concepts and Technology for High Energy Accelerators
- Advanced Materials and Technologies for Cooling and Waste Heat Recovery
- Advanced Sources for Accelerator Facilities
- Advanced Technologies and Materials for Fusion Energy Systems
- Advanced Technologies for Electricity Systems
- Advanced Technologies for Nuclear Energy
- Advanced Turbine Technology for IGCC Power Plants
- Advanced Water Power Technology Development
- Alternative Radiological Sources
- Ancillary Technologies for Accelerator Facilities
- Atmospheric Measurement Technology
- Carbon Cycle Measurements of the Atmosphere and the Biosphere
- Catalysis
- Climate Control Technology for Fossil Energy Application
- Coal Gasification Technologies
- Energy Efficient Membranes
- Energy Savings Technologies for Commodity Manufacturing Industries
- Fusion Science and Technology
- Geothermal Technologies
- High Energy Density Laboratory Plasma (HEDLP)
- High Energy Physics Computer Technology
- High Energy Physics Detectors
- High Performance Networks
- High-Field Superconductor and Superconducting Magnet Technologies for High Energy Particle Colliders
- Hydrogen, Fuel Cells, and Infrastructure Technologies
- Imaging, Radiochemistry, and Artificial Retina
- Improved Characterization of Waste in Tanks and Ancillary Piping
- Improved Motor Designs and Power Electronics Advancements for Hybrid and Plug-In Electric Vehicles
- Increasing Efficiency in Traditional Lighting Technologies
- Instrumentation for Electron Microscopy and Scanning Probe Microscopy
- Instrumentation for Materials Research Using Synchrotron Radiation
- Nanotechnology
- Nuclear Physics Accelerator Technology
- Nuclear Physics Electronics Design and Fabrication
- Nuclear Physics Instrumentation, Detection Systems and Techniques
- Oil and Gas Technologies
- Production of Biofuels from Biomass
- Radio Frequency Accelerator Technology for High Energy Accelerators and Colliders
- Remote Sensing
- Scalable Middleware and Grid Technologies
- Scientific Visualization and Data Understanding
- Search, Discovery, and Communication of Scientific and Technical Knowledge in Distributed Systems
- Seismic Signal Analysis
- Sensors and Controls for Fossil Energy Power Generation Systems
- Software Libraries and Applications Maintenance and Scaling to Petascale

- **Solar Energy**
- **Solid Oxide Fuel Cell Technology for Coal-Based Power Plants**
- **Solid State Lighting**
- **Technologies Related to Energy Storage for Hybrid and Plug-In Hybrid Electric Vehicles**
- **Technology to Support BES User Facilities**
- **Use of Algae for Fuels Production**
- **Wind Energy Technology Development**

---

**TOPIC: Accelerator Technology for the International Linear Collider**

[top of page](#)

**Company**

Euclid TechLabs, LLC  
5900 Harper Rd. #102  
Solon, OH 44139-1866

**Title**

A New Quarter-Wave Coaxial Coupler For 1.3 GHz Superconducting Cavity

**Summary**

This project will develop new and more efficient techniques for providing energy to a superconducting accelerator.

---

**Company**

Omega-P, Inc.  
258 Bradley St., 2nd fl.  
New Haven, CT 06510-1106

**Title**

Electron Gun and Beam Collector for a FOR A 10-MW, 1.3-GHz, Low-Voltage, Multi-Beam Klystron

**Summary**

This project will develop high-power, multi-beam klystrons that should lower cost and complexity for a future electron-positron collider, and also open up commercial applications with improved clinical accelerators and industrial processors. The ability for future machines to operate at higher energies than can be reached at present will allow for progress in elementary particle high-energy physics.

---

**Company**

Omega-P, Inc.  
258 Bradley St., 2nd fl.  
New Haven, CT 06510-1106

**Title**

RF Cavity Chain and Magnetic Circuit for a 10-MW, 1.3-GHz, Low-Voltage, Multi-Beam Klystron

**Summary**

This project will develop high-power, multi-beam klystrons that lower cost and complexity for a future electron-positron collider, and that also open up commercial applications with improved clinical accelerators and industrial processors.

**TOPIC: Advanced Coal Research**

[top of page](#)

**Company**

Southwest Sciences, Inc.  
1570 Pacheco Street Suite E-11  
Santa Fe, NM 87505-3993

**Title**

NDE of Gas Turbine Thermal Barrier Coatings

**Summary**

This project will develop a technology that allows for non-destructive inspection of the thermal barrier coatings applied to power plant and aircraft engine turbine parts. This new technology will provide cost savings and improved operations to the gas turbine industry.

**TOPIC: Advanced Concepts and Technology for High Energy Accelerators**

[top of page](#)

**Company**

Muons, Inc.  
552 N. Batavia Ave  
Batavia, IL 60510

**Title**

Quasi-Isochronous Muon Collection Channels

**Summary**

This project will develop new ways to collect large numbers of muons and to form them rapidly into bright beams, thereby overcoming the disadvantage of their short lifetime and allowing many commercial and scientific uses, including applications such as muon colliders.

---

**Company**

RadiaBeam Technologies LLC  
1717 Stewart Street  
Santa Monica, CA 90404-4021

**Title**

An Inexpensive High Brightness Photoinjector using Solid Free Form Fabrication (SFF)

**Summary**

This program will develop a high average power, high brightness electron gun manufactured with innovative, cost cutting techniques. This promises to be a key enabling technology for imaging and analysis applications of interest to homeland security as well as industrial and academic programs.

---

**Company**

SVT Associates, Inc.  
7620 Executive Drive  
Eden Prairie, MN 55344-3677

**Title**

Robust GaN-Based Photocathodes for High-Current RF Electron Injectors

**Summary**

This project will develop high-efficiency and robust photocathodes based on gallium-nitride (GaN) semiconductors. In addition to their importance as high-brightness electron sources for research programs, these devices can be used as high-sensitivity ultra-violet and visible detectors and imaging arrays, and have potential for successful commercialization of both high-performance electron emitters and sensitive photodetectors.

**TOPIC: Advanced Materials and Technologies for Cooling and Waste Heat Recovery**

[top of page](#)

**Company**

Advanced Cooling Technologies, Inc.  
1046 New Holland Ave.  
Lancaster, PA 17601-5606

**Title**

Nanofluids Enhanced Twisted Tape Heat Exchanger

**Summary**

This project will develop a high thermal performance heat exchanger that will be smaller, lighter, and require less energy to be provided to the accompanying pump than conventional heat exchangers. The commercialization of this technology will further create technical jobs and enable expansion into new markets.

---

**STTR Project**

**Company**

Advanced Cooling Technologies, Inc.  
1046 New Holland Ave.  
Lancaster, PA 17601-5606

**Title**

Stabilization of Nanofluids Using Self Assembled Monolayers

**Summary**

This project will develop nanofluids that have the capability of increasing heat transfer efficiency in many current heat exchangers by improving the heat transfer properties inherent to current coolants. Heat transfer is an important part of many energy intensive processes, and more efficient heat transfer leads to more efficient use of fuel.

---

**Company**

R&D Dynamics Corporation  
49 West Dudley Town Road  
Bloomfield, CT 06002-1421

**Title**

High Efficiency R744 Centrifugal Chiller

**Summary**

This project will develop a high efficiency carbon dioxide centrifugal chiller cycle that will replace the current cycles that use strong greenhouse chemical refrigerants. The new chiller cycle will use 73% less power than current carbon dioxide cycles in the case of 150 ton capacity chillers.

---

**Company**

Structured Materials Industries, Inc  
201 Circle Drive North Unit 102  
Piscataway, NJ 08854-3723

**Title**

NanoEngineered High ZT Solid State Nanocomposite Thermoelectric (ssnTE) Manufacturing for Multiple Energy Generation Applications

**Summary**

This project will apply new nano-enabled techniques to Thermoelectrics, a technology for the direct conversion of heat into electrical energy, which will produce dramatically improved operational efficiencies, thus realizing cost savings and improved energy utilization.

**TOPIC: Advanced Sources for Accelerator Facilities**

[top of page](#)

**Company**

Muons, Inc.

552 N. Batavia Ave  
Batavia, IL 60510

**Title**

H-Ion Sources for High Intensity Proton Drivers

**Summary**

This project will develop a device to produce H- ions in order to enable higher intensity beams with better reliability and improved efficiency for many powerful particle accelerators used in science, industry, and homeland defense.

---

**Company**

SupraMagnetics, Inc.  
214 Canal Street  
Plantsville, CT 06479-1742

**Title**

Extrudable NbTi Superconductor with Ferromagnetic Pins for Undulator Magnets

**Summary**

This project will develop a new, economical, NbTi superconductor with advanced performance. This superconductor will be used for undulator magnets, as well as MRI and NMR instruments.

**TOPIC: Advanced Technologies and Materials for Fusion Energy Systems**

top of page

**Company**

Hyper Tech Research, Inc.  
539 Industrial Mile Road  
Columbus, OH 43228-2412

**Title**

High Jc, Low AC Loss Nb3Sn Superconductor for 14-20T Fusion Application

**Summary**

This project will develop a much improved, lower cost Nb3Sn superconductor wire for the DOE advanced Fusion Program will be developed concurrently.

**TOPIC: Advanced Technologies for Electricity Systems**

top of page

**Company**

Electrical Distribution Design, Inc.  
311 Cherokee Drive  
Blacksburg, VA 24060

**Title**

Model-Based Renewable Resource Risk Assessment Analysis and Simulation

**Summary**

This project will combine leading model-based analysis capability and web-based renewable resource monitoring for development of a new operations management risk analysis, mitigation and visualization system. The new approach will be tested using full scale utility system models and data. The new system will be usable by itself at utilities with limited monitoring resources and as part of a fully integrated smart grid solution.

---

**Company**

Underground Systems, Inc.  
84 Business Park Drive Suite 109  
Armonk, NY 10504

**Title**

Adaptive Predictive Algorithms and Real-Time Decision Support Tools for Renewables Integration

**Summary**

This project will develop and implement software and visualization decision support tools to allow utilities to incorporate DLR in their operations. Advanced technologies are necessary to optimize the efficiency of the electric transmission grid for better renewables integration, and a Dynamic Line Rating (DLR) system could be used for this purpose.

**TOPIC: Advanced Technologies for Nuclear Energy**

top of page

**Company**

Analysis and Measurement Services Co  
AMS Technology Center  
9119 Cross Park Drive  
Knoxville, TN 37923-4510

**Title**

Advanced Techniques for On-Line Condition Monitoring and Diagnostics of Digital Rod Position Indication Systems for Existing and Next Generation Nuclear Power Plants

**Summary**

This project will enhance the digital rod position indication systems of existing and new nuclear reactors with diagnostic capabilities to provide better rod position information, component health, and automated rod drop time measurements. This can help reduce unplanned reactor trips and shorten refueling outage times.

---

**STTR Project**

**Company**

Polymer Aging Concepts, Inc.  
372 River Drive  
Dahlonega, GA 30533-5248

**Title**

Nanotechnology-Based Condition Monitoring Sensors for Generation IV Electrical Insulation Systems

**Summary**

This project will develop advanced nanotechnology materials which will improve the performance and durability of a new class of sensors that detect degradation of electric cable and motor insulation in harsh environments such as nuclear power plants, allowing replacement before failure. This sensor technology has applications in new automotive, aerospace and green technologies

**TOPIC: Advanced Turbine Technology for IGCC Power Plants**

[top of page](#)

**Company**

Mikro Systems, Inc.  
1180 Seminole Trail Suite 220  
Charlottesville, VA 22901-5713

**Title**

Advanced Cooling for IGCC Turbine Blades

**Summary**

This project will develop a Tomo Lithographic Molding process to enable improved cooling of turbine engines used in power generation and in aircraft. This will allow turbine to operate at higher temperatures and will result in improved performance and fuel efficiency.

**TOPIC: Advanced Water Power Technology Development**

[top of page](#)

**STTR Project****Company**

Concepts NREC  
39 Olympia Avenue  
Woburn, MA 01801-2073

**Title**

Development of a Self-Adaptive Air Turbine for Wave Energy Conversion using an Oscillating Water Column (OWC) Air System

**Summary**

This project will develop a Turbine Shutter Valve and OWC Height control, which will make the utilization of the world's oceans as a renewable energy resource more economical.

**Company**

FloDesign Inc.  
380 Main Street  
Wilbraham, MA 01095

**Title**

MECT, The Next Generation Hydrokinetic Turbine

**Summary**

This project will develop a new, novel water turbine technology through extensive laboratory and open water testing. Its performance and structural breakthroughs will assure the economic viability of hydrokinetic water turbines for application in rivers/streams, tidal currents, and ocean currents, thereby helping transform and accelerate this energy sector toward becoming a significant contributor of electricity in the US renewable energy portfolio.

**Company**

Princeton Power Systems, Inc.  
201 Washington Road, Building #2  
Princeton, NJ 08540-6642

**Title**

High-Voltage, Highly-Efficient, Power-Dense Electronic Converter Using Silicon Carbide and AC-link

**Summary**

This project will develop an advanced hydro and ocean power electronic conversion system that will significantly reduce the cost of these generation sources and make them more efficient and more compatible with the existing electric grid. This will displace polluting, fossil fuel-burning power generators with a clean, renewable energy source.

**TOPIC: Alternative Radiological Sources**

[top of page](#)

**Company**

RadiaBeam Technologies LLC  
1717 Stewart Street  
Santa Monica, CA 90404-4021

**Title**

Compact, Electronic Blood Irradiator

**Summary**

This project will develop a safe, compact, electronic blood irradiator to effectively replace the Cs-137 blood irradiators in the US, as recommended by the National Research Council.

## TOPIC: Ancillary Technologies for Accelerator Facilities

[top of page](#)

### Company

Boulder Precision Electro-Optics  
5733 Central Ave  
Boulder, CO 80301-2848

### Title

A Laser Power-Build-Up System for H Atom Ionization

### Summary

This project will build a prototype cavity, and lock a high-power pulsed laser to the cavity to attain MW peak pulse powers. This will quantify the mode distortion from absorbed power, and examine the performance of different mirror coatings. Attention to the materials used and the design will allow ultra-high vacuum cleaning techniques to be used to avoid mirror contamination issues.

---

### Company

Kapteyn-Murnane Laboratories, Inc.  
1855 South 57th Court  
Boulder, CO 80301

### Title

Development of High Efficiency High Average Power Picosecond (10-50ps) Laser for High Repetition Frequency Electron Guns.

### Summary

This project will develop a prototype 2 MHz picosecond amplified laser to meet the needs of FEL photocathodes. This requires a state-of-the-art cryogenically cooled, amplified laser system to meet the goals of the photoinjector laser.

---

### Company

Muons, Inc.  
552 N. Batavia Ave  
Batavia, IL 60510

### Title

Beam Pipe HOM Absorber for 750 MHz RF Cavity Systems

### Summary

This project will construct low cost, reliable, ferrite microwave absorber assemblies. These assemblies will be used in vacuum systems in the presence of charged particle beams.

---

### STTR Project

### Company

Muons, Inc.  
552 N. Batavia Ave  
Batavia, IL 60510

### Title

High Power Co-Axial SRF Coupler

### Summary

This project will improve co-axial window technology by using new materials and techniques. This improved technology will transfer RF power from sources to RF cavities at very high levels, and therefore meet the demands of intense light sources used for science and industry.

---

### Company

Tech-X Corporation  
5621 Arapahoe Ave  
Boulder, CO 80303-1379

### Title

High Fidelity Simulation of Low-Energy Ion Beam Chopping for the Spallation Neutron Source

### Summary

This project will develop enhanced software which will be used to reduce risk and cost for planned experiments at Oak Ridge National Laboratory as part of the upgrade to the Spallation Neutron Source.

---

## TOPIC: Atmospheric Measurement Technology

[top of page](#)

### Company

Aerodyne Research, Inc.  
45 Manning Road  
Billerica, MA 01821-3976

### Title

Development and Characterization of a Compact Aerosol Chemical Speciation Monitor (ACSM)

### Summary

This project will develop an instrument with unique capabilities for identifying and measuring the organic precursors of aerosol particles, leading to a better understanding of the sources, transformations, and fates of atmospheric particulate matter which can adversely impact global climate, human health, and visibility.

---

**Company**

Aerodyne Research, Inc.  
45 Manning Road  
Billerica, MA 01821-3976

**Title**

Volatility Resolved Measurements of Total Gas-Phase Organic (TGO) Compounds by High Resolution Electron Impact Mass Spectrometry

**Summary**

This project will develop an instrument with unique capabilities for identifying and measuring the organic precursors of aerosol particles, leading to a better understanding of the sources, transformations, and fates of atmospheric particulate matter which can adversely impact global climate, human health, and visibility.

---

**Company**

Yankee Environmental Systems, Inc.  
101 Industrial Boulevard  
Turners Falls, MA 01376-1611

**Title**

Oxygen A-Band Spectrometer

**Summary**

This project will develop a High Resolution Oxygen A-Band Spectrometer which will provide measurements that both validate atmospheric models and calibrate orbiting remote sensors for cloud and aerosol effects. This will reduce the scientific challenge of understanding long-term climate change by being able to precisely measure the scattering properties of clouds and aerosols in our atmosphere.

**TOPIC: Carbon Cycle Measurements of the Atmosphere and the Biosphere**

[top of page](#)

**Company**

Aerodyne Research, Inc.  
45 Manning Road  
Billerica, MA 01821-3976

**Title**

High Precision CO<sub>2</sub> Monitor to Constrain the Partitioning of CO<sub>2</sub> Fluxes

**Summary**

This project will develop a novel instrument for carbonyl sulfide which can be used to assess global budgets for CO<sub>2</sub> uptake by plants. Measuring global carbon dioxide uptake by vegetation will allow for better understanding of global climate change.

---

**STTR Project****Company**

Aerodyne Research, Inc.  
45 Manning Road  
Billerica, MA 01821-3976

**Title**

An Absolute CO<sub>2</sub> Monitor with Extremely High Accuracy

**Summary**

This project will design a novel, commercial monitor with unsurpassed accuracy and unique capability to be deployed worldwide. This monitor will accurately measure carbon dioxide across the globe, which will assist the understanding of global climate change.

---

**Company**

Physical Sciences Inc.  
20 New England Business Center  
Andover, MA 01810-1077

**Title**

Highly Compact CO<sub>2</sub> Sensor for Balloon Deployment

**Summary**

This program will develop a sensor for routine monitoring of CO<sub>2</sub> from balloons and small aircraft. The increase in the accuracy of measurements of various trace species in the atmosphere will allow for better models of global climate change, which in turn could affect policy decisions relating to energy utilization.

---

**STTR Project****Company**

Physical Sciences Inc.  
20 New England Business Center  
Andover, MA 01810-1077

**Title**

Development of a Fieldable Soil Carbon Monitor

**Summary**

This project will develop a small, rugged, fieldable monitor for soil carbon. The overall goal of the program is to establish feasibility of a detector that will help assess management strategies for the sequestration of carbon dioxide in soil.

**TOPIC: Catalysis**

**Company**

Allopartis Biotechnologies  
1700 4th St, 219 Byers Hall  
UCSF MC2522  
San Francisco, CA 94158

**Title**

Pre-Production Optimization of Cellulolytic Enzymes

**Summary**

This project will develop a revolutionary, capital efficient approach to boost the activity of the enzymes that are used to convert biomass into fermentable sugars. This will lower the cost of sustainable, domestically produced cellulosic biofuels.

---

**Company**

Exelus, Inc.  
110 Dorsa Ave  
Livingston, NJ 07039-1003

**Title**

Catalytic Processing of Biomass to Ethylene & Propylene

**Summary**

This project will develop a new, cost-effective, economically viable method for converting non-food biomass into large commodity petrochemicals such as ethylene and propylene.

---

**STTR Project**

**Company**

InnoSense LLC  
2531 W. 237th Street Suite 127  
Torrance, CA 90505-5245

**Title**

Direct Conversion of Carbon Dioxide to Methanol

**Summary**

This project will develop and demonstrate the viability of producing methanol using inexpensive photoelectrodes powered by solar energy to: (1) sequester carbon dioxide, (2) provide an alternative fuel source, and (3) reduce our nation's dependency on foreign oil. Although carbon dioxide is a greenhouse gas, it is a versatile industrial gas, and can be used in numerous processes and applications.

---

**Company**

TDA Research, Inc.  
12345 W. 52nd Ave.  
Wheat Ridge, CO 80033-1916

**Title**

Novel Catalytic Alkane Oxidation Process

**Summary**

This project will develop a new catalytic process that produces ethanol more cheaply than current synthetic processes and can be used in existing petrochemical plants. Ethanol, primarily made from corn, is a versatile chemical that is used as a chemical solvent, a sterilizer, an antifreeze, a chemical intermediate, and an oxygenate in fuels.

---

**TOPIC: Climate Control Technology for Fossil Energy Application**

**Company**

Multi-Phase Technologies, LLC  
310 Rebecca Dr.  
Sparks, NV 89441-7923

**Title**

Wireless Electrical Resistively Tomography System for CO2 Sequestration Monitoring

**Summary**

This project will develop a cost-effective method of monitoring CO2 sequestration reservoirs for potential leakage pathways and for reservoir integrity using Electrical Resistively Tomography. This method will reduce the likelihood of local environmental impacts.

---

**STTR Project**

**Company**

Physical Sciences Inc.  
20 New England Business Center  
Andover, MA 01810-1077

**Title**

Networked Sensors for Sequestration MVA

**Summary**

This project will develop, test, install, and evaluate laser-based sensors for use as tools to monitor the integrity of carbon dioxide sequestration sites and pipelines. These tools will reduce the cost of site operation and verify that sequestration performs the intended function of reducing greenhouse gas emissions.

## TOPIC: Coal Gasification Technologies

[top of page](#)

### Company

Eltron Research & Development Inc.  
4600 Nautilus Court  
South Boulder, CO 80301-3241

### Title

Molecular Separations Using Micro-Defect Free Ultra Thin Films

### Summary

This project will develop a thin film molecular sieve technology that will make the separation of CO<sub>2</sub> and other kinds of molecules much cheaper. This will be of great use to pharmaceutical and chemical industries, in addition to energy industries.

## TOPIC: Energy Efficient Membranes

[top of page](#)

### Company

Compact Membrane Systems, Inc.  
335 Water Street  
Newport, DE 19804-2410

### Title

Novel Ethanol Dehydration Membranes

### Summary

This project will develop a low-cost and energy-saving membrane based process to remove water from ethanol for fuel grade applications.

### Company

Compact Membrane Systems, Inc.  
335 Water Street  
Newport, DE 19804-2410

### Title

Novel Membranes for Enhancing Value of Bio-Oil

### Summary

This project will develop a highly economical membrane separation to remove undesirable compounds from bio-oil to improve its quality and stability. Bio-oil is a renewable fuel, but quality and stability of raw bio-oil has to be improved in order to use it as a fuel in engines, gas turbines and boilers, and as a refinery feedstock to produce transport fuel.

### Company

Membrane Technology and Research, Inc.  
1360 Willow Road, #103  
Menlo Park, CA 94025-1524

### Title

Acetic Acid Recovery Using Membranes

### Summary

This project will develop a membrane technology that will lower the energy costs of acetic acid recovery by at least 50%.

## TOPIC: Energy Savings Technologies for Commodity Manufacturing Industries

[top of page](#)

### Company

Los Gatos Research  
67 East Evelyn Avenue Suite 3  
Mountain View, CA 94041-1529

### Title

Real-Time Industrial Sensors for Process Control

### Summary

This project will develop an optical sensor that will enable glass furnace and other industrial natural gas burners to automatically adjust and optimize their flames. The smart burner technology promises to make gas-fired industrial furnaces cleaner and more fuel efficient.

### Company

OG Technologies, Inc.  
4300 Varsity Drive Suite C  
Ann Arbor, MI 48108

### Title

SICS: A Sensor-Based In-Line Control System for the Surfaces of Continuously Cast Slabs

### Summary

This project will develop a new product to improve current continuous casting practices with innovations in the areas of in-line inspection and advanced process control. The expected benefits include energy savings, improved yields, simplified processes, and reduced carbon dioxide release in the steel industry.

### Company

Spectral Sciences, Inc.

4 Fourth Avenue  
Burlington, MA 01803-3304

**Title**

Structured Emission Thermometry Sensor for Burner Control

**Summary**

This project will develop an optical sensor that will enable glass furnace and other industrial natural gas burners to automatically adjust and optimize their flames. The smart burner technology promises to make gas-fired industrial furnaces cleaner and more fuel efficient.

**TOPIC: Fusion Science and Technology**

[top of page](#)

**Company**

Calabazas Creek Research, Inc.  
690 Port Drive  
San Mateo, CA 94404-1010

**Title**

Development of a 2 MW CW Waterload for Electron Cyclotron Heating Systems

**Summary**

This project will develop the high power waterload necessary to meet the U.S. obligation to the ITER program for fusion energy research. It will also provide a waterload for other fusion facilities around the world.

**Company**

Eagle Harbor Technologies, Inc.  
Suite D3, #179 321 High School Rd. NE  
Bainbridge Island, WA 98110-1619

**Title**

A Robust Modular IGBT Power Supply for Innovative Confinement Concepts

**Summary**

This project will develop a robust, cost effective, configurable, solid state power supply that will provide a significant increase in capabilities over currently available power supplies used in DOE supported research and industry.

**Company**

Virginia Diodes, Inc.  
979 Second Street SE  
Charlottesville, VA 22902-6172

**Title**

Multi-Band Power Source for ITER Reflectometry

**Summary**

This project will develop new technologies that are critical for the US contribution to the international ITER experiment, which will show that fusion can be used to generate useful electrical power. A unique millimeter-wave and terahertz technology will be extended to supply the high frequency power and frequency agility that is required for the ITER diagnostic instruments that are critical to understanding and controlling the burning plasma.

**Company**

Tech-X Corporation  
5621 Arapahoe Ave  
Boulder, CO 80303-1379

**Title**

Parallel Validation Tools for Fusion Simulations

**Summary**

This project will develop software that will facilitate the testing of codes against experiments, which will lead to improved forecasting of fusion experiments. Better forecasting of fusion experiments gives greater confidence that ITER will succeed, and enable improved fusion performance.

**TOPIC: Geothermal Technologies**

[top of page](#)

**Company**

MagiQ Technologies  
11 Ward Street  
Somerville, MA 02143

**Title**

Seismic Sensor

**Summary**

This project will use ultra-sensitive optical measurement techniques to develop a technique intended to help geologists map the micro-scale tremors of rocks in order to harness geothermal energy.

**Company**

Physical Optics Corporation  
20600 Gramercy Place, Bldg.100  
Torrance, CA 90501-1821

**Title**

Fiber Optic High Temperature Seismic Sensor

**Summary**

This project will develop an innovative seismic sensor based on fiber optics to monitor geothermal wells, making them safer and easier to locate. This sensor will outperform all conventional devices in terms of temperature endurance and fast response.

**TOPIC: High Energy Density Laboratory Plasma (HEDLP)**

[top of page](#)

**Company**

Tech-X Corporation  
5621 Arapahoe Ave  
Boulder, CO 80303-1379

**Title**

Plasma Jet Modeling for MIF

**Summary**

This project will explore (through computer models) an emerging fusion concept while improving plasma modeling tools. This is one step toward realizing the potential of nuclear fusion to produce clean, inexpensive energy for the United States.

**TOPIC: High Energy Physics Computer Technology**

[top of page](#)

**Company**

EVOGH, Inc.  
1876 Braeburn RD  
Altadena, CA 91001-

**Title**

EVO-HD: A Globally Scalable Standards-based Full-HD Environment for Immersive Collaboration

**Summary**

This project will develop EVO-HD, a low cost, extensible, globally scalable High Definition (HD) standards-based multimedia collaboration system to work over existing and future generation networks, which will be packaged for widespread corporate, research, and in-home use.

**Company**

Tech-X Corporation  
5621 Arapahoe Ave  
Boulder, CO 80303-1379

**Title**

QuAI - A Quality Assurance Infrastructure for Data-Centric Applications

**Summary**

This project will develop a customizable and secure infrastructure that provides quality assurance in distributed data processing for large HEP and NP experiments and NASA missions.

**TOPIC: High Energy Physics Detectors**

[top of page](#)

**Company**

LightSpin Technologies, Inc.  
4407 Elm Street  
Chevy Chase, MD 20815

**Title**

Radiation Hard GaAs Photomultiplier Chip(TM)

**Summary**

This project will develop the world's most sensitive camera, able to withstand bombardment by the world's highest energy particle. This camera will help physicists probe the composition of matter, doctors peer into the body to find cancer early, and security experts to find illicit radioactive materials.

**TOPIC: High Performance Networks**

[top of page](#)

**Company**

Acadia Optronics, LLC  
1395 Piccard Drive Suite 210  
Rockville, MD 20850-4348

**Title**

FPGA-Based End-Station Security for High-Performance Networking

**Summary**

This project will develop and deploy a high-performance cyber-security platform designed to significantly enhance the security of next-generation networked computing.

**Company**

RNET Technologies, Inc.  
240 West Elmwood Drive Suite 2010  
Dayton, OH 45459-4248

**Title**

Enhancement of GridFTP Performance Through GMPLS Integration and Hardware Offloading

**Summary**

This project will develop an application that improves file-transfer performance crucial to research projects. This project will implement several

improvements, including hardware acceleration and integration of scheduling services to better utilize emerging networks.

---

**Company**

Telescent Inc.  
2118 Wilshire Blvd. #1001  
Santa Monica, CA 90403-5784

**Title**  
Physical Layer Network Management Tools Based on Automated Fiber Optic Patch-Panels

**Summary**  
This project will develop an advanced fiber optic switching technology that automates the provisioning and testing of fiber optic communications networks. This technology automatically reconfigures, monitors, and maps all physical interconnections through network management software, reducing operating costs while improving network efficiency, agility, and reliability.

---

**Company**

Telescent Inc.  
2118 Wilshire Blvd. #1001  
Santa Monica, CA 90403-5784

**Title**  
RFID Overlay Network for Automated Discovery at the Physical Network Layer

**Summary**  
This project will develop an RFID overlay network that automates the discovery of the physical network layer forming the foundation of all communication networks. Using resonant energy transfer, fiber optic connections are automatically monitored and mapped through software, reducing the operating cost and downtime, while accelerating service provisioning and improving security and disaster recovery.

**TOPIC: High-Field Superconductor and Superconducting Magnet Technologies for High Energy Particle Colliders**

[top of page](#)

**Company**

Global Research and Development, Inc  
539 Industrial Mile Road  
Columbus, OH 43212-1155

**Title**  
High Count Restacks Nb3Sn using Subelements with over 3000 A/mm2 non-Cu Jc at 12T and 4.2K

**Summary**  
This project will develop a much improved Nb3Sn superconductor wire for next generation High Energy Physics accelerator magnets. This will be accomplished by developing an improved Nb3Sn superconductor strand with a higher number of sub-elements in the restack billet.

---

**Company**

Hyper Tech Research, Inc.  
539 Industrial Mile Road  
Columbus, OH 43228-2412

**Title**  
Development of MgB2 Current Distribution Systems for High Energy Particle Colliders

**Summary**  
This project will develop an affordable, high-quality magnesium diboride superconductor for next generation High Energy Physics accelerator magnets and components.

---

**Company**

Supercon, Inc.  
830 Boston Turnpike  
Shrewsbury, MA 01545-3301

**Title**  
A Modified Internal Tin Tube Nb3Sn Conductor for Higher Non-Copper Critical Current Density

**Summary**  
This project will increase the performance of Nb3Sn conductors in order to attain the required high magnetic fields utilizing a novel materials approach.

---

**Company**

SupraMagnetics, Inc.  
214 Canal Street  
Plantsville, CT 06479-1742

**Title**  
A Novel Quaternary Low-Cost PIT Nb3Sn Conductor for HEP Magnet Applications above 12 Tesla

**Summary**  
This project will develop a new economical Nb3Sn superconductor with advanced performance for high field magnets utilized in high energy physics research, fusion machines, and MRI and NMR instruments.

**TOPIC: Hydrogen, Fuel Cells, and Infrastructure Technologies**

[top of page](#)

**Company**

Giner Electrochemical Systems, LLC  
89 Rumford Avenue  
Newton, MA 02466-1311

**Title**

Unitized Design for Home Refueling Appliance for Hydrogen Generation to 5000 psi

**Summary**

This project will develop a "unitized" electrolyzer design that can be used as a home refueling appliance and will result in a safe, high efficiency, low capital cost system that will provide competitively-priced hydrogen for fuel-cell vehicles.

---

**Company**

H2 Pump, LLC  
11 Northway Lane  
North Albany, NY 12110

**Title**

Process Intensification of Hydrogen Unit Operations Using an Electrochemical Device

**Summary**

This project will develop a technology that is a simplified, multi-functional device which pumps, purifies, and pressurized hydrogen in a single, low cost, efficient, non-mechanical process.

---

**Company**

Proton Energy Systems  
10 Technology Drive  
Wallingford, CT 06492-1955

**Title**

Hydrogen by Wire Home Fueling System

**Summary**

This project will develop a high pressure hydrogen system that eliminates major noise pollution and frequent maintenance requirements. It is also an attractive option for backup power when integrated with a PEM fuel cell and has advantages over batteries in factors such as available life and safety.

**TOPIC: Imaging, Radiochemistry, and Artificial Retina**

[top of page](#)

**Company**

Radiation Monitoring Devices, Inc.  
44 Hunt Street  
Watertown, MA 02472-4699

**Title**

Dual Modality Small Animal Imaging

**Summary**

This project will develop a promising detector technology which will have a major impact in scientific studies, health care, homeland defense, and oil exploration, as well as have industrial applications.

---

**Company**

Radiation Monitoring Devices, Inc.  
44 Hunt Street  
Watertown, MA 02472-4699

**Title**

New Detectors for Small Animal SPECT

**Summary**

This project will investigate a promising nuclear detector material which will have major impact in scientific studies, medical imaging, homeland defense, and oil exploration, as well as in industrial applications.

---

**Company**

Radiation Monitoring Devices, Inc.  
44 Hunt Street  
Watertown, MA 02472-4699

**Title**

Next Generation SPECT Detectors

**Summary**

This project will continue to develop detector technology for Single Photon Emission Computed Tomography (SPECT), a powerful, noninvasive medical imaging modality that mathematically reconstructs the three dimensional distribution of a radionuclide throughout the body of a human patient or research animal.

**TOPIC: Improved Characterization of Waste in Tanks and Ancillary Piping**

[top of page](#)

**Company**

EIC Laboratories, Inc.  
111 Downey Street  
Norwood, MA 02062-2612

**Title**

Development of a Compact Fiber Optically Coupled Raman Telescope for the In Situ Standoff Characterization of Residual Wastes

**Summary**

This project will develop a fiber optically coupled Raman probe telescope that will be able to detect and identify chemicals at a standoff distance. The telescope Raman probe will be used as a characterization tool for residual wastes in nuclear waste storage tanks.

---

**STTR Project****Company**

EIC Laboratories, Inc.  
111 Downey Street  
Norwood, MA 02062-2612

**Title**

An Integrated In Situ Raman and Turbidity Sensor for High Level Waste Tanks

**Summary**

This project will develop a sensor that can be placed in high level nuclear waste storage tanks to continuously monitor the chemical composition to ensure safe and environmentally compliant operation. This technology will also eliminate the need for expensive, time consuming, and hazardous sampling and laboratory analysis.

**TOPIC: Improved Motor Designs and Power Electronics Advancements for Hybrid and Plug-In Electric Vehicles**

[top of page](#)

**Company**

NBE Technologies, LLC  
2200 Kraft Drive, Suite 1425  
Blacksburg, VA 24060-

**Title**

High-temperature Packaging of Planar Power Modules by Low-Temperature Sintering of Nanoscale Silver Paste

**Summary**

This project will develop a nanomaterial technology that will lower the cost of electrical vehicles, strengthen their market position, and reduce carbon emissions and reliance on petroleum imports.

**TOPIC: Increasing Efficiency in Traditional Lighting Technologies**

[top of page](#)

**Company**

Energy Focus, Inc.  
32000 Aurora Road  
Solon, OH 44139-2814

**Title**

Arc Tube Coating System for Metal Halide Color Consistency

**Summary**

This project will develop an automated color modification system for metal halide lamps in a unique system to reduce their color variations to equal that of incandescent lamp.

---

**STTR Project****Company**

NEMOmetrics Corp.  
3 Tremont St, Suite 202  
Charlestown, MA 02129-3108

**Title**

Lighting with No Watt Left Behind

**Summary**

This project will develop inexpensive, easy to install technology that will use lights themselves to detect occupancy, turn off lights, and substantially reduce wastage, eliminating the large amounts of energy consumed and wasted by lighting unoccupied or underoccupied buildings.

---

**Company**

Redwood Systems, Inc.  
3839 Spinnaker Court  
Fremont, CA 94538-6537

**Title**

Networked Lighting Power and Control Platform for Solid State Lighting in Commercial Office Applications

**Summary**

This Project will develop a new, energy efficient LED lighting system that revolutionizes how lighting is powered and controlled. Borrowing technologies from the Internet, a lighting network will be created that is intelligent, automated, scalable, and can potentially save 50% to 75% of the energy used to light a commercial office space.

**TOPIC: Instrumentation for Electron Microscopy and Scanning Probe Microscopy**

[top of page](#)

**Company**

Radiation Monitoring Devices, Inc.

44 Hunt Street  
Watertown, MA 02472-4699

**Title**

High Bandwidth Optical Detector for Scanning Probe Microscopy

**Summary**

This project will develop a unique instrument that can be used to help characterize and manipulate nanoscale materials. This instrument will be used in areas of scientific study such as renewable energy, cancer detection, and environmental clean-up.

**TOPIC: Instrumentation for Materials Research Using Synchrotron Radiation**

top of page

**Company**

Radiation Monitoring Devices, Inc.  
44 Hunt Street  
Watertown, MA 02472-4699

**Title**

Fast, Photon Counting Detector Arrays with Internal Gain

**Summary**

This project will investigate a new x-ray radiation detector design that will advance scientific studies, as well as have commercial applications.

**Company**

Radiation Monitoring Devices, Inc.  
44 Hunt Street  
Watertown, MA 02472-4699

**Title**

Low Cost, High Speed, High Sensitivity Detector for Material Science Studies

**Summary**

This project will develop a detector that can allow further utilization of advanced photon sources. In addition to unveiling basic functions of biological systems, this development will have a direct impact on important applications, such as baggage scanning and homeland security.

**Company**

Voxtel, Inc.  
15985 NW Schendel Avenue Suite 200  
Beaverton, OR 97006-6703

**Title**

High-Dynamic-Range, Rad-Hard, Time-Resolved, Correlated X-Ray Photon Detector

**Summary**

This project will allow users of the X-ray beamline to conduct experiments faster, while also greatly improving the X-ray detectors' performance. This will reduce the time demand on the X-ray beamline, which is very expensive, as well as reduce pressure on existing infrastructure.

**Company**

XIA, LLC  
31057 Genstar Road  
Hayward, CA 94544-7831

**Title**

Electronics for Large Superconducting Tunnel Junction Detector Arrays for Synchrotron Soft X-ray Research

**Summary**

This project will develop low cost digital electronics to support large arrays of cryogenic detectors used to detect and measure the energy of very low energy x-rays. These detectors will be used at the nation's synchrotron x-ray facilities to support research in materials science, biology, geology and environmental science.

**TOPIC: Nanotechnology**

top of page

**Company**

MesoCoat, Inc.  
24112 Rockwell Dr.  
Euclid, OH 44117-1252

**Title**

Fused Nanocomposite Claddings for Oil and Energy Applications

**Summary**

This project will develop novel materials and processes capable of operating at elevated temperatures in high wear and corrosive environments, thereby eliminating the high temperature wear and corrosion that currently bar the ability to reach energy reserves.

**TOPIC: Nuclear Physics Accelerator Technology**

top of page

**Company**

FAR-TECH, Inc.  
3550 General Atomics Ct Building 15 Suite 155  
San Diego, CA 92121-1122

**Title**

An Energy-Efficient RF Power Source for the Jefferson Laboratory CEBAF Linac

**Summary**

This project will build and test a more modern and energy-efficient amplifier to replace the aging klystron technology used to power an accelerator complex.

---

**Company**

FM Technologies, Inc.  
4431-H Brookfield Corporate Dr  
Chantilly, VA 20151-1691

**Title**

Chemical Free Surface Processing for High Gradient Superconducting RF Cavities

**Summary**

This project will develop a new process that will enhance quality of the superconducting radio-frequency cavities and allow acceleration of charged particles to much higher energies. The process also will improve the cavity manufacturing and result in substantial cost reduction of superconducting radio-frequency high-energy particle accelerators.

---

**STTR Project**

**Company**

Muons, Inc.  
552 N. Batavia Ave  
Batavia, IL 60510

**Title**

Phase and Frequency Locked Magnetrons for SRF Sources

**Summary**

This project will develop magnetrons with much improved phase stability and frequency characteristics.

---

**Company**

Niowave, Inc.  
1012 North Walnut Street  
Lansing, MI 48906-5061

**Title**

Development of a Tunable 28 MHz Superconducting RF Cavity for RHIC

**Summary**

This project will develop a new accelerating system for the Relativistic Heavy Ion Collider at Brookhaven National Lab, using the high fields possible in superconducting RF cavities. This will break new ground for low-frequency, tunable, superconducting RF structures.

---

**Company**

Saxet Surface Science  
3913 Todd Lane Suite 303  
Austin, TX 78744-1057

**Title**

Improved Ion Resistance for III-V Photocathodes in High Current Guns

**Summary**

This project will test the limits of a chemically stabilized surface layer to withstand charged particle induced deterioration and to withstand electron stimulated recovery to act as a substitute for cesium dosing.

---

**Company**

Tech-X Corporation  
5621 Arapahoe Ave  
Boulder, CO 80303-1379

**Title**

High-Fidelity Modulator Simulations of Coherent Electron Cooling Systems

**Summary**

This project will develop high-performance software for the Electron Ion Collider to assist DOE scientists in the design of an electron cooling section that will enable such a facility to meet performance requirements.

---

**TOPIC: Nuclear Physics Electronics Design and Fabrication**

[top of page](#)

**Company**

Blue Sky Electronics, LLC  
401 Studewood, Ste 203  
Houston, TX 77007-2733

**Title**

Electronics for Fast Vertex Position Measurement

**Summary**

This project will develop new electronics to quickly measure, process and distribute extremely fast timing measurements. It will increase the efficiency of particle collider experiments and provide an important building block for advanced instruments used in the life sciences, medical imaging, manufacturing, and environmental monitoring.

## TOPIC: Nuclear Physics Instrumentation, Detection Systems and Techniques

[top of page](#)

### Company

Applied Nanotech, Inc.  
3006 Longhorn Blvd. Suite 107  
Austin, TX 78758-7631

### Title

Carbon Stripper Foil for the Next Generation Rare Isotope Beam Facility

### Summary

This project will continue to develop recent advances in carbon nanomaterials and low-cost manufacturing techniques to generate carbon foils that can be used current and future accelerators.

---

### Company

PHDs Co.  
777 Emory Valley Road Suite B  
Oak Ridge, TN 37830-7048

### Title

Segmented Rectifying and Blocking Contacts on Germanium Planar Detectors

### Summary

This project will develop detector fabrication techniques that will provide the basis for more sensitive, reliable, and cost effective instruments for the detection of gamma rays in Nuclear Physics experiments.

## TOPIC: Oil and Gas Technologies

[top of page](#)

### Company

Eltron Research & Development Inc.  
4600 Nautilus Court South  
Boulder, CO 80301-3241

### Title

Unconventional High Temperature Nanofiltration for Produced Water Treatment

### Summary

This project will develop a proprietary high temperature nanofiltration technology that will remove salt and other dissolved solids from produced water originating from domestic oil and gas production. Treated water can be re-used in the extraction process without cooling/re-heating costs or can be recycled as an acceptable supply of source water.

## TOPIC: Production of Biofuels from Biomass

[top of page](#)

### Company

Forest Concepts, LLC  
3320 West Valley Highway N Suite D110  
Auburn, WA 98001

### Title

Optimization and Low Energy Production of Woody Biomass Particles

### Summary

This project will reduce the cost and energy for comminution of biomass and is likely to increase the conversion efficiency for second generation biofuels producers.

---

### Company

Streamline Automation, LLC  
3100 Fresh Way SW  
Huntsville, AL 35805

### Title

High-Efficiency Microalgae Biofuel Harvest and Extraction Using Ionic Liquids

### Summary

This project will develop a new biomass processing technology that can lower the price of renewable transportation fuels 10- times or more without any drawbacks. This key breakthrough will directly help the US reach energy independence and curb greenhouse gas emissions.

## TOPIC: Radio Frequency Accelerator Technology for High Energy Accelerators and Colliders

[top of page](#)

### STTR Project

### Company

Niowave, Inc.  
1012 North Walnut Street  
Lansing, MI 48906-5061

### Title

Development of a 400 MHz Superconducting RF Crabbing Cavity

### Summary

This project will develop a new type of the superconducting deflecting cavity. This accelerator technology can be successfully used for broad applications in both circular as well as linear accelerators of charged particle beams.

---

## **STTR Project**

### **Company**

Omega-P, Inc.  
258 Bradley St., 2nd fl.  
New Haven, CT 06510-1106

### **Title**

Anti-Breakdown Coatings for High-Gradient Accelerator Structures

### **Summary**

This project will develop high-gradient cavities that allow structures to sustain higher electric fields without breakdown, thus enabling operation at higher energy. This technology will advance progress in elementary particle high-energy physics, as well as open up commercial applications with improved clinical accelerators.

## **TOPIC: Remote Sensing**

top of page

## **STTR Project**

### **Company**

Opto-Knowledge Systems, Inc. (OKSI)  
19805 Hamilton Ave.  
Torrance, CA 90502-1341

### **Title**

Single Mode Long-Wave Infrared (LWIR) Waveguides

### **Summary**

This project will develop a new line of fiber optics that can improve the utility and effectiveness of laser systems used to detect specific chemical compounds and molecules. Such improvements are important in efforts to prevent the proliferation of weapons of mass destruction.

---

### **Company**

Space Computer Corporation  
12121 Wilshire Boulevard Suite 910  
Los Angeles, CA 90025-1123

### **Title**

Spectrally-Assisted Tracking of Moving Vehicles

### **Summary**

This project will combine hyperspectral color signature matching techniques with existing spatial trackers into a generalized spatial-spectral tracking prototype framework, thereby eliminating the challenges associated with the long-term surveillance and tracking of target vehicles in urban environments.

## **TOPIC: Scalable Middleware and Grid Technologies**

top of page

### **Company**

Galois, Inc.  
421 SW Sixth Avenue Suite 300  
Portland, OR 97204-1629

### **Title**

Grid 2.0: Collaboration and Sharing on the Grid

### **Summary**

This project will develop efficient online tools for scientists collaborating on the nation's grid computing infrastructure. This will allow support for users collaborating on grid computing systems. This project addresses the need to bring efficient, online tools to scientists collaborating on the nation's grid computing infrastructure.

## **TOPIC: Scientific Visualization and Data Understanding**

top of page

### **Company**

Dimension Technologies, Inc.  
315 Mount Read Boulevard  
Rochester, NY 14611-1982

### **Title**

2D Switchable/Multiview Autostereoscopic 3D Display

### **Summary**

This project will develop a prototype desktop and large screen displays that produce high resolution 3D images which can be viewed without 3D glasses by scientists viewing complex multi dimensional data sets or simulations. These displays could also be used in conference rooms and eventually home TV.

## **TOPIC: Search, Discovery, and Communication of Scientific and Technical Knowledge in Distributed Systems**

top of page

### **Company**

David Wojick  
391 Flickertail Lane  
Star Tannery, VA 22654-1908

### **Title**

Deployable Concepts for Discovery of Web Based STEM Education Content and Resources

**Summary**

This project will develop a toolkit that can be used to find federally funded science education content, as well as to create it.

---

**Company**

Deep Web Technologies, LLC  
301 N. Guadalupe Suite 201  
Santa Fe, NM 87501-5501

**Title**

An Analysis of the Performance Bottlenecks in the Federated Search Information Flow

**Summary**

This project will develop performance improvements on the Phase I project, in which a number of potential bottlenecks in federated search technologies that hinder research in the public and private sectors were assessed.

---

**Company**

WebLib, LLC  
5101 River Road, Apt. 1918  
Bethesda, MD 20816-1574

**Title**

A Scalable Distributed Client Based Meta Search and Discovery Infrastructure

**Summary**

This project will implement highly scalable and affordable next generation search and discovery capabilities to run inside the web browsers of individual users. This will allow the cost-effective implementation of many desirable Web search applications, such as tapping into the high quality educational content in DOE, NASA, NIH and other government scientific and technical databases for tens of millions of students and teachers in U.S. classrooms without the need for prohibitively costly server farms and network bandwidth.

**TOPIC: Seismic Signal Analysis**

[top of page](#)

**Company**

Weston Geophysical Corp.  
181 Bedford St., Suite 1  
Lexington, MA 02420-4430

**Title**

A Software Toolbox for Systematic Evaluation of Seismometer-Digitizer System Responses

**Summary**

This project will develop and test Graphical User Interfaces (GUIs) that provide seismologists with easy access to software and databases in a system response recovery toolbox that can recover the sensor/digitizer response function from raw seismic data. It can then be easily used by seismologists to monitor the data quality recorded on worldwide seismic networks.

**TOPIC: Sensors and Controls for Fossil Energy Power Generation Systems**

[top of page](#)

**Company**

MesoScribe Technologies, Inc.  
7 Flowerfield Suite 28  
Saint James, NY 11780-1514

**Title**

Development of Packaging and Integration of Sensors for On-Line Use in Harsh Environments

**Summary**

This project will develop improved sensor packaging techniques for use in advanced power systems. The technology will enable steam turbines, boilers, and other critical components to be monitored and operated efficiently to prevent unforced shutdowns, reduce maintenance costs, and reduce emissions.

**TOPIC: Software Libraries and Applications Maintenance and Scaling to Petascale**

[top of page](#)

**Company**

Simmetrix, Inc. 10  
Executive Park Drive  
Clifton Park, NY 12065-5630

**Title**

Interoperable Components to Support Unstructured Mesh Simulations on Massively Parallel Computers

**Summary**

This project will support the reliable automatic generation and control of the computer representations used by software to perform complex physical simulations. These tools will execute automatically in seconds to minutes of computer time thus eliminating the hours to months of time of experts currently spend on such processes.

---

**Company**

Tech-X Corporation  
5621 Arapahoe Ave  
Boulder, CO 80303-1379

**Title**

Extending Chombo with PETSc

## Summary

This project will interface an existing highly scalable and efficient library (Chombo) to a library of solvers (PETSc) for improved numerical robustness.

## TOPIC: Solar Energy

[top of page](#)

### Company

MicroLink Devices, Inc.  
6457 West Howard St  
Niles, IL 60714-3301

### Title

Backside Contact Multijunction Solar Cells for High Concentration Applications

### Summary

This project will develop a novel method for producing solar cells in which all electrodes are formed on the backside of the cell. This will increase the efficiency of solar cells used for power generation.

### Company

SVV Technology Innovations, Inc.  
1832 Tribute Road, Ste C  
Sacramento, CA 95815-4309

### Title

Concentrator PV Receiver Based on Crystalline Si Cells

### Summary

This project will develop and demonstrate a new approach for making inexpensive modular systems for generating electricity from sunlight. It will make viable the large-scale, distributed energy production from renewables and help meet the national goals of energy independence, reduction of carbon emissions and fostering the job growth and economic progress.

### Company

TDA Research, Inc.  
12345 W. 52nd Ave.  
Wheat Ridge, CO 80033-1916

### Title

A New Three-Part Architecture for Efficient and Stable Bulk Heterojunction OPV Devices

### Summary

This project will develop a new combination of materials that will simultaneously increase the efficiency and the stability of organic solar cells so that they become suitable for commercialization.

## TOPIC: Solid Oxide Fuel Cell Technology for Coal-Based Power Plants

[top of page](#)

### Company

NexTech Materials, Ltd.  
404 Enterprise Drive  
Lewis Center, OH 43035-9423

### Title

Manufacturing Analysis of SOFC Interconnect Coating Processes

### Summary

This project will develop new manufacturing techniques for coating metals in order to lower the cost and improve the durability of Solid Oxide Fuel Cells. These fuel cells will allow for more efficient use of fossil fuels, bio-fuels, and biomass, with less pollution compared to combustion approaches.

## TOPIC: Solid State Lighting

[top of page](#)

### Company

Universal Display Corporation  
375 Phillips Blvd.  
Ewing, NJ 08618-1428

### Title

Ultra High Efficiency 100 lm/W Phosphorescent White OLED Lighting Panel

### Summary

This project will increase the efficacy of highly efficient solid state lighting based on phosphorescent organicslight-emitting devices, and thereby enable replacement of inefficient incandescent bulbs, which consume over 8% of the electricity produced in the United States. This will enable the development of high-efficiency, environment-friendly, solid-state, white-lighting sources.

## TOPIC: Technologies Related to Energy Storage for Hybrid and Plug-In Hybrid Electric Vehicles

[top of page](#)

### Company

Farasis Energy, Inc.  
23575 Cabot Blvd. Suite 206  
Hayward, CA 94545-1657

### Title

Novel High Performance Li-ion Cells

### Summary

This project will develop a novel approach to increasing the performance and capacity of Li-ion cells. Use of the technology could accelerate the adoption of efficient distributed power systems and EVs by greatly increasing the life of the battery systems.

---

### **STTR Project**

#### **Company**

Ionova Technologies, Inc.  
182 Thomas Johnson Drive Suite 204L  
Frederick, MD 21702

#### **Title**

3-D Nanofilm Asymmetric Ultracapacitor

#### **Summary**

This project will apply advances in nanotechnology to create a new ultracapacitor capable of storing significantly more energy, of scaling to the voltage needs of important new applications and of providing improvements in safety, cost, and environmental impact. This will eliminate the issues of low energy density, cost, and safety concerns that plague current generation ultracapacitors.

---

#### **Company**

Tiax, LLC.  
35 Hartwell Avenue  
Lexington, MA 02140--230

#### **Title**

Implantation, Activation, Characterization and Prevention/Mitigation of Internal Short Circuits in Lithium-Ion Cells

#### **Summary**

This project will develop technology to improve the safety of lithium-ion batteries for PHEVs and HEVs, making these vehicle technologies more commercially viable, and thus increasing the likelihood that they will yield their potential environmental, economic and political benefits.

### **TOPIC: Technology to Support BES User Facilities**

[top of page](#)

#### **Company**

RadiaBeam Technologies LLC  
1717 Stewart Street  
Santa Monica, CA 90404-4021

#### **Title**

A High-Resolution Transverse Diagnostic Based on Fiber Optics

#### **Summary**

This project will develop a diagnostic for advanced accelerator facilities that will profile electron beam distributions with extremely high-resolutions.

---

#### **Company**

Radiation Monitoring Devices, Inc.  
44 Hunt Street  
Watertown, MA 02472-4699

#### **Title**

Bright Quantum Dot Scintillator for High Frame Rate Imaging

#### **Summary**

This project will develop a scintillator that will enable advanced research, improved homeland protection, and the rapid, cost-effective development of novel drugs.

### **TOPIC: Use of Algae for Fuels Production**

[top of page](#)

#### **Company**

Exelus, Inc.  
110 Dorsa Ave  
Livingston, NJ 07039-1003

#### **Title**

Jet Fuels from Algae

#### **Summary**

This project will develop a new, cost-effective method for converting algae into aviation fuel. It uses new chemistry and catalysts to produce clean, renewable jet fuel of identical quality to conventional fuels.

### **TOPIC: Wind Energy Technology Development**

[top of page](#)

#### **Company**

3TEX, Inc.  
109 MacKenan Drive  
Cary, NC 27511

#### **Title**

Improved Wind Blade Joints Based on 3D Fiber Architecture

#### **Summary**

This project will develop 3D fiber architecture joining elements for wind blades that will eliminate the most common failure area of the blades. This new architecture will provide up to two-fold increases in joint strength and will reduce the labor involved in wind blade manufacture.

---

**Company**

Ebert Composites Corporation  
651 Anita St. STE B8  
Chula Vista, CA 91911

**Title**

Tapered Composite Wind Turbine Tower Utilizing CNC-Machined Pultruded Lineals

**Summary**

This project will develop a hybrid composite wind turbine tower that meets industry needs, and will outperform traditional steel, improving weight and corrosion resistance. These towers will offer a support for very large off-shore installations.

---

**Company**

Resodyn Corporation  
130 North Main Suite 600  
Butte, MT 59701-1394

**Title**

An Advanced Vibrothermography Approach for Wind Turbine Applications

**Summary**

This project will develop a reliable, portable instrumentation deployment system to be utilized during wind turbine composite members manufacturing, delivery, and development. This method has the potential to reduce the yearly wind turbine maintenance costs dramatically making power to the consumer cost less per kWh.

---

[\(Back to the SBIR Awards Page\)](#)

Page Last Updated: October 6, 2010