

# SBIR/STTR Fiscal Year 2012 Phase II Awards Sorted by State

[AZ](#) | [CA](#) | [CO](#) | [CT](#) | [FL](#) | [IL](#) | [KY](#) | [MA](#) | [MD](#) | [MI](#) | [MN](#) | [NH](#) | [NJ](#) | [NM](#) | [NY](#) | [OH](#) | [OK](#) | [OR](#) | [PA](#) | [SC](#) | [TN](#) | [TX](#) | [UT](#) | [VA](#) | [VT](#) | [WA](#) |

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## Arizona

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**Topic:**

Ancillary Technologies for Accelerator Facilities

**Company:**

Advalue Photonics Inc  
3708 E. Columbia Street, Suite 100  
Tucson, AZ 85714-3413

**Project Title:**

High Energy Sub-100 Femtosecond Fiber Lasers at 2 Micron

**Project Summary:**

DoE requires an ultrafast high peak power laser system for Enhanced Self-Amplified Spontaneous Emission application. AdValue Photonics proposes a high-energy 2 $\mu$ m femtosecond fiber CPA laser system that could deliver pulses energy as high as 5mJ and duration of sub-100 fess to meet the need.

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**Topic:**

High-Speed Electronic Instrumentation for Data Acquisition and Processing

**Company:**

Ridgetop Group, Inc.  
3580 West Ina Road  
Tucson, AZ 85741-2276

**Project Title:**

Radiation-Hardened Low-Power ADC for Particle Detectors

**Project Summary:**

Particle detectors for nuclear physics and high energy physics experiments require highly accurate and sensitive radiation hardened digitizers for read-out electronics. This program meets those needs through design and fabrication of a high performance, highly integrated, very low power chip that reduces the cost of the next generation of detectors.

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**Topic:**

Nuclear Physics Accelerator Technology

**Company:**

Ridgetop Group, Inc.  
3580 West Ina Road  
Tucson, AZ 85741-2276

**Project Title:**

High-Performance ADC for Particle Accelerator Instrumentation Applications

**Project Summary:**

The study of high-energy sub-atomic particle behavior is limited by speed, resolution, power, and radiation tolerance of components used in instruments that control accelerators. This solution addresses all these issues with a novel data converter that exceeds state-of-the-art performance for generating and controlling particle beams necessary to conduct required experiments.

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## California

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**Topic:**

Atmospheric Measurement Technology

**Company:**

Aerosol Dynamics Inc.  
935 Grayson Street  
Berkeley, CA 94710-2640

**Project Title:**

Aerosol Mobility Imaging for Rapid Size Distribution Measurement

**Project Summary:**

Airborne particles, many of them originating from energy-related activities, adversely affect climate, human health and visibility. These effects depend on the particle size. An instrument will be developed for rapid measurement of these sized particles, with wide-ranging applications to research and industry.

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**Topic:**

Instrumentation for Advanced Chemical Imaging

**Company:**

Anasys Instruments Corp  
121 Gray Avenue, Suite 100  
Santa Barbara, CA 93101-1809

**Project Title:**

High Speed Wideband Infrared nano-Spectroscopy

**Project Summary:**

This project will address a major unmet need in materials science and industry by developing a novel microscope platform that will enable chemical analysis at the nanoscale. This new microscope will accelerate the development of new high performance materials and will enable new scientific discoveries.

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**Topic:**

Data Management and Storage

**Company:**

Antek Peripherals Inc.  
21451 Continental Circle  
Saratoga, CA 95070-6505

**Project Title:**

Significantly Enhance Hard Disk Drive Performance by Using Titanium Foil Disk Substrates

**Project Summary:**

The Internet, computing and data storage are a large part of our daily lives as these enable social networking, communication, business, entertainment and Government. Research done in this project will allow the popular hard disk drive to store more data, transfer it faster, and consume significantly less energy.

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**Topic:**

Accelerator Technology for the International Linear Collider

**Company:**

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

**Project Title:**

10 MW Annular Beam Klystron for Accelerators

**Project Summary:**

This project will develop a 10 MW, 1.3 GHz annular beam klystron (ABK). The advanced design of the ABK will reduce system costs below that for systems using conventional klystrons. The ABK will be useful for research and medical accelerators, and other DoD and commercial applications.

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**Topic:**

Fusion Science and Technology

**Company:**

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

**Project Title:**

Advanced Output Coupling for High Power Gyrotrons

**Project Summary:**

Successful development of a direct coupler and broad band, high power window will enable more efficient operation of fusion research devices while saving approximately \$500,000 for each gyrotron installation. It would establish the U.S as the leader in high power gyrotron technology.

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**Topic:**

Flywheel Energy Storage

**Company:**

Calnetix Technologies, LLC

23695 Via Del Rio  
Yorba Linda, CA 92887-2715

**Project Title:**

Shaft-less, Hub-less High Strength Steel Flywheel

**Project Summary:**

This cost effective flywheel system provides (1) boost power to maintain frequency regulation for blackout prevention (2) temporary large scale energy storage at solar or wind farms to store energy that can be transmitted during times of increased demand, or (3) for ramping power to prevent grid impact as renewable source output varies.

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**Topic:**

Smart Facilities and Green Networks

**Company:**

Decision Detective Corporation  
4354 Town Center Blvd. Suite #114-250  
El Dorado Hills, CA 95762-7116

**Project Title:**

Power Management Optimization Platform for High Performance Computing and Data Centers

**Project Summary:**

Decision Detective software creates accurate and timely intelligence from monitored High Performance Computing and datacenter climate conditioning equipment that saves significant energy and lowers operational costs, all while maintaining high computing system availability and reliability.

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**Topic:**

Global Nuclear Safeguards Research and Development

**Company:**

Dirac Solutions Inc.  
6773 Sierra Ct., Suite C  
Dublin, CA 94568-2650

**Project Title:**

Ultra-secure RF Tags for Safeguards and Security

**Project Summary:**

This project builds on the work of the DOE national laboratories to develop UHF and Ultra-wideband (UWB) RFID tags for safeguards and security needs in the DOE and other agencies. The resulting tags will be reliable, perform in harsh environments, and incorporate sophisticated security features.

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**Topic:**

Advanced Concepts and Technology for High Energy Accelerators

**Company:**

Far-tech, Inc.  
10350 Science Center Drive Suite 150

San Diego, CA 92121-1136

**Project Title:**

Rapidly Tunable RF Cavity for Accelerators

**Project Summary:**

An innovative accelerating structure is being developed for use in high intensity fixed-field alternate gradient accelerators to be used for basic physics research, industrial, accelerator driven subcritical nuclear reactor, and medical cancer therapy applications.

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**Topic:**

Nuclear Physics Accelerator Technology

**Company:**

Far-tech, Inc.  
10350 Science Center Drive Suite 150  
San Diego, CA 92121-1136

**Project Title:**

Integrated Modeling Tool for Electron-Beam Based Ion-Sources

**Project Summary:**

This project will develop a numerical modeling tool that will guide and optimize electron-beam based ion-sources for research and industrial applications. The tool will minimize trial and error experiments in current experiments, and help design future advanced devices, which is crucial for rare isotope ion sources that are needed in nuclear physics research, and further in medical and industrial applications.

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**Topic:**

Advanced Cooling And Waste Heat Recovery Technologies

**Company:**

Innosense, LLC  
2531 West 237th Street SUITE 127  
Torrance, CA 90505-

**Project Title:**

Aerogel Impregnated Polyurethane Piping and Duct Insulation

**Project Summary:**

This project will develop an eco-friendly product, InsuGel, which will serve a growing market that focuses on energy-saving construction and renovation methods. InsuGel is compliant with the mission of the "Building America" program delivering building retrofit measures to assist in improving efficiency of existing homes.

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**Topic:**

Carbon Cycle Measurements of the Atmosphere and the Biosphere

**Company:**

Los Gatos Research  
67 East Evelyn Avenue Suite 3

Mountain View, CA 94041-1518

**Project Title:**

Isotopic Carbon Dioxide Analyzer for Flux Measurements

**Project Summary:**

This project will develop a novel instrument based on a new laser technology called Off-Axis ICOS to measure carbon dioxide with unprecedented speed, accuracy and precision. The instrument may be applied for environmental studies of the carbon cycle, medical diagnostics for disease detection, and industrial monitoring.

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**Topic:**

Production of Bioenergy and Biofuels From Cellulosic and Non-Food Biomass

**Company:**

Lygos, Inc  
1534 Innes Ave.  
San Francisco, CA 94124-

**Project Title:**

Microbial production of dicarboxylic acids

**Project Summary:**

This project will develop renewable routes to produce commodity and specialty chemicals currently made from petroleum. Lygos' processes can be applied domestically to convert waste agricultural material into chemicals that are predominantly manufactured abroad today.

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**Topic:**

Advanced Fossil Energy Research

**Company:**

Makel Engineering, Inc.  
1585 Marauder Street  
Chico, CA 95973-9064

**Project Title:**

Integral Packaging of High Temperature Sensors for In-Situ Measurements

**Project Summary:**

Novel sensor materials are being developed for the detection of gas species in harsh environment. These materials enable enhanced process control of advanced power generation systems, such as coal gasification and turbines. Process control enables increased efficiency and reduced emissions.

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**Topic:**

Advanced Sources for Accelerator Facilities

**Company:**

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

**Project Title:**

Praseodymium Undulator with Textured Dysprosium Poles for Compact X-ray FEL Applications

**Project Summary:**

Synchrotron radiation light source facilities provide critical capability to material science, chemistry, structural biology, pharmaceutical research and medicine. In this project a novel magnetic device is proposed to significantly enhance the performance of existing and future light sources.

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**Topic:**

Ancillary Technologies for Accelerator Facilities

**Company:**

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

**Project Title:**

A User-Friendly, Modular Simulation Tool for Laser-Electron Beam Interactions

**Project Summary:**

Present accelerator simulation software is narrowly focused with very steep learning curves. We will develop a user-friendly code with an intuitive interface for experimental design and analysis.

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**Topic:**

Instrumentation for Electron Microscopy and Scanning Probe Microscopy

**Company:**

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

**Project Title:**

Novel Ultrafast Electron Diffraction System

**Project Summary:**

The proposed "streaked"-Ultra Electron Diffraction system (SUED) will produce innovative and groundbreaking results in many scientific areas, such as materials science, biology and chemistry. This will be possible thanks to a further improvement in the understanding of ultrafast phenomena with the SUED system.

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**Topic:**

Imaging and Radiochemistry

**Company:**

Sofie Biosciences, Inc.  
6162 Bristol Parkway  
Culver  
State CA 90230-6604

**Project Title:**

## Commercialization of a Microscale, Point of Use Radiosynthesis Device for the Development and Production of PET Probes

### **Project Summary:**

Positron Emission Tomography (PET) provides images of the biology of living systems, from microorganisms in the environment to disease pathways in patients. An affordable, compact, chip-based device to produce PET probes on-demand will enable scientists to image diverse biological systems by eliminating barriers that currently restrict probe availability and diversity.

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### **Topic:**

Advanced Technology Applications for Buildings

### **Company:**

Soraa, Inc.  
6500 Kaiser Drive  
Fremont, CA 94555-3613

### **Project Title:**

Large-Area Semipolar Ammonothermal GaN Substrates for High-Power LEDs

### **Project Summary:**

This project will develop disruptive substrate technology for gallium nitride based light emitting diodes (LEDs) to improve performance and reduce costs. The new technology could revolutionize solid state lighting and lead to enormous energy savings.

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### **Topic:**

Enhanced Availability of Climate Model Output

### **Company:**

Vertum Partners LP  
2400 Beverly Blvd  
Los Angeles, CA 90057-1002

### **Project Title:**

Assessing Climate Change Effects on Wind Energy Phase II

### **Project Summary:**

This project will develop a software tool that will quantify and reduce the uncertainties of atmospheric factors in wind energy production. This will allow wind farm project analysts and risk assessors the ability to lower costs of wind energy production and plan for the benefits and risks of a changing climate.

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### **Topic:**

Nuclear Physics Electronics Design and Fabrication

### **Company:**

Xia, LLC  
31057 Genstar Road  
Hayward, CA 94544-0000

### **Project Title:**

## High Density Low Cost Readout Electronics for Large Scale Radiation Detectors

### **Project Summary:**

Development of affordable, high performance digital readout electronics is vital to support cutting- edge nuclear science research at the nation's nuclear facilities and universities. This proposed work will help maintain U.S. scientific and technological leadership role in the world, educate and train future nuclear science workforce, and improve homeland security.

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## Colorado

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### **Topic:**

Instrumentation for Materials Research Using Ultra-Bright or Ultra-Fast X-Ray Sources

### **Company:**

Kapteyn-murnane Laboratories Inc.  
1855 S 57th Ct  
Boulder, CO 80301-2811

### **Project Title:**

Tunable Narrow-Band High Harmonic Beamline Optimized for Ultrafast Soft X-Ray Photoemission and Imaging

### **Project Summary:**

This project will develop a tunable, tabletop, ultrafast soft X-ray beamline that is not available commercially for the study of new materials and nano-devices. This beamline is developed by integrating an extreme ultraviolet and soft X-ray light source based on nonlinear up-conversion and a novel monochromator optimized for this light source.

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### **Topic:**

Fusion Science and Technology

### **Company:**

Lodestar Research Corporation  
2400 Central Ave. P-5  
Boulder, CO 80301-2843

### **Project Title:**

ArbiTER: A Flexible Eigenvalue Solver for Edge Fusion Plasma Applications

### **Project Summary:**

A computer program is proposed to assist in testing other simulation codes used in fusion research. This program is designed to be flexible enough to be applied to a wide variety of such codes, thus saving programming effort compared to codes that simulate a single physics model.

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### **Topic:**

Atmospheric Measurement Technology

### **Company:**

Spec Incorporated  
3022 Sterling Circle Suite 200  
Boulder, CO 80301-2377

**Project Title:**

Tethered Balloon Systems for Arctic Measurements in the Near-Surface Atmosphere

**Project Summary:**

Long-term measurements in Arctic stratus clouds are needed to improve climate prediction models. The Arctic is a region which is warming at twice the rate of the global average is thought to be a harbinger of global warming. A second-generation tethered balloon system with sophisticated sensors for measuring Arctic cloud properties will be built and deployed to the DOE site at Oliktok Point, Alaska. The demonstration field project will show proof-of-concept for collecting long-term data in Arctic stratus clouds.

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**Topic:**

Advanced Technologies for Nuclear Energy

**Company:**

Sporian Microsystems, Inc.  
515 Courtney Way Suite B  
Lafayette, CO 80026-8821

**Project Title:**

Advanced SiCN Materials and Sensors for Generation IV Reactors

**Project Summary:**

A novel high temperature ceramic material and sensing technology is proposed to support the design and safe operation of Generation IV nuclear power systems.

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**Topic:**

Climate Control Technologies for Fossil Energy Applications

**Company:**

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

**Project Title:**

A Novel Sorbent to Reduce CO2 Emissions from Existing Coal-Fired Power Plants

**Project Summary:**

This project will develop a new low cost material to effectively remove CO2 from the effluents of existing coal-fired power plants. This process is a highly efficient and environmentally responsible way to generate electricity without emitting greenhouse gases and to overcome the economic and environmental problems that limit the full utilization of coal

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**Topic:**

Advanced Sources for Accelerator Facilities

**Company:**

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

**Project Title:**

Software for Modeling and Design of Robust GaAs Photocathodes

**Project Summary:**

Novel high-current, high-brightness, low emittance electron sources are required for free electron lasers, major upgrades of X-ray light source and particle accelerator facilities in the portfolio of the Department of Energy to enable the development of new energy efficient, medical, and military technologies. High-fidelity software is being developed with new capabilities to design photocathodes for modern applications.

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**Topic:**

Collaboration, Scientific Visualization and Data Understanding

**Company:**

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

**Project Title:**

Visualizing Staggered Vector Fields

**Project Summary:**

Visualization artifacts due to the misplacement of electromagnetic in computer simulations carry a cost in accuracy and lost productivity. We will remedy this problem by extending the leading, DOE funded, visualization tool VisIt and by developing a commercial product (PerceptEM), which will satisfy the needs of the electromagnetic modeling community.

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**Topic:**

Instrumentation and Tools for Materials Research Using Neutron Scattering

**Company:**

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

**Project Title:**

Genetic Algorithm Driven Molecular Structure Determination and Visualization for Real-Time Decision Support

**Project Summary:**

The Genetic Algorithm Driven Decision Support System (GADDSS) will enable the real-time molecular structure determination of the leadership Spallation Neutron Source and High Flux Isotope Reactor instruments experiment samples. Working together with existing systems at the facility we are able to provide our scientists and engineers more automated experiment analysis than ever before.

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**Connecticut**

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**Topic:**

Climate Control Technologies for Fossil Energy Applications

**Company:**

Sustainable Innovations, LLC  
160 Oak Street Unit 412  
Glastonbury, CT 06033-2336

**Project Title:**

Electrochemical Polymer Precursor Generation (EPPG)

**Project Summary:**

This project is focused on the development of technology that electrochemically transforms waste carbon dioxide into commodity chemicals that are critical to the manufacture of polymers and durable goods. When coupled with renewables, this technology forms the basis of a carbon-negative, efficient, industrially scalable system

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## Florida

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**Topic:**

High Performance Computing Systems

**Company:**

Accellogic, LLC  
13680 NW 14TH STREET, SUITE 5  
Sunrise, FL 33323-2845

**Project Title:**

Extreme-Speed Eigensolver Suite

**Project Summary:**

To pursue DOE's scientific priorities, quantum increases in large- scale computing and simulation/modeling speeds are needed. The project goal is to develop breakthrough, low-cost technology that reduces computational times from months to hours or days to seconds, thus revolutionizing entire industrial design cycles and the way we do science in general.

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**Topic:**

Nuclear Physics Instrumentation. Detection Systems and Techniques

**Company:**

Sinmat Inc.  
1912 NW 67th Place  
Gainesville, FL 32653-1649

**Project Title:**

Novel Polishing Process to Fabricate Ultra Low Thickness Variation Diamond Substrates for Next Generation Beam Tracking Detectors

**Project Summary:**

This project will develop a novel technology to produce ultra-flat diamond crystals that may lead to advancement in the fields of nuclear physics research, X-ray, optical, and next generation computer applications.

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## Illinois

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**Topic:**

Advanced Concepts and Technology for High Energy Accelerators

**Company:**

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

**Project Title:**

Helical Muon Beam Cooling Channel Engineering Design

**Project Summary:**

A novel system of superconducting magnets and RF cavities will reduce the size of muon beams for muon colliders, to regain the energy frontier, and for a range of applications in discovery science, energy production, homeland defense, and material science.

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**Topic:**

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

**Company:**

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

**Project Title:**

Fiber Optic Quench Detection Via Optimized Rayleigh Scattering in High-field YBCO Accelerator Magnets

**Project Summary:**

Coated conductors offer the potential of generating the highest magnetic fields possible with superconducting materials. A new approach to protecting YBCO magnets is essential and will be investigated here.

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**Topic:**

Nuclear Physics Accelerator Technology

**Company:**

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

**Project Title:**

## High Radiation Environment Nuclear Fragment Separator Magnet

### **Project Summary:**

New generations of high-temperature superconducting wire have opened up new technological possibilities for magnet coils in high radiation and high heat load environments. Large magnets to test this concept are being designed and prototyped for the Facility for Radioactive Ion Beams.

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### **Topic:**

Advanced Fossil Energy Research

### **Company:**

Questek Innovations LLC  
1820 Ridge Avenue  
Evanston, IL 60201-3621

### **Project Title:**

Computational Design of Weldable High-Cr Ferritic Steel

### **Project Summary:**

Higher operating temperatures at coal-fired power plants can increase efficiency and reduce CO2 emission while also enhancing national security, domestic employment, balance of trade and U.S. GDP. This SBIR program will utilize a fundamental computational Materials by Design® approach to design and develop improved, weldable alloys to enable high efficiency power plants.

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## Kentucky

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### **Topic:**

Climate Control Technologies for Fossil Energy Applications

### **Company:**

Green Technology Ltd Co.  
3903 Spring Valley Way  
Louisville, KY 40241

### **Project Title:**

A Contaminant Tolerant Solvent/Stripping Chemical Hybrid Process for Carbon Capture in Existing Coal-Fired Power Plants

### **Project Summary:**

This project is to develop a novel solvent technology to reduce CO2 emissions at existing coal-fired power plants by at least 90%.

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## Massachusetts

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### **Topic:**

Atmospheric Measurement Technology

**Company:**

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

**Project Title:**

Volatility and Polarity Separated (VAPS) Total Organic Aerosol using Thermal Desorption Modulated Chromatography

**Project Summary:**

Small airborne particles generated from energy-related activities can adversely impact global climate, human health, and visibility. Atmospheric aerosol particles are known to contain a large fraction of organic components. We propose to develop an instrument with unique capabilities for identifying and measuring the organic constituents of aerosol particles, leading to a better understanding of the sources, transformations and fates of atmospheric particulate matter.

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**Topic:**

Atmospheric Measurement Technology

**Company:**

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

**Project Title:**

High Sensitivity HNO<sub>3</sub> Monitor using Continuous Wave Quantum Cascade Laser IR Absorption

**Project Summary:**

Improved measurement techniques for atmospheric gas phase nitric acid are needed to better understand global climate change because nitric acid affects cloud formation. This novel instrument for nitric acid detection can be used to elucidate cloud condensation, droplet activation, and nitrate aerosol processes in the atmosphere.

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**Topic:**

Atmospheric Measurement Technology

**Company:**

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

**Project Title:**

Expanded Wavelength CAPS-Based Particle SSA Monitor

**Project Summary:**

Ambient atmospheric aerosols generated through human activities can exert an influence on the earth's radiation budget (and thus the 'greenhouse effect') comparable in magnitude with greenhouse gases such as carbon dioxide and methane. This device will enable scientist to measure critical optical properties of such aerosols in a routine fashion in order to provide better predictions of climate change.

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**Topic:**

## Carbon Cycle Measurements of the Atmosphere and the Biosphere

### **Company:**

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

### **Project Title:**

Quantum Cascade Laser System for Simultaneous Measurements of  $^{13}\text{CO}$  and  $\text{C}^{18}\text{O}$  Carbon Monoxide Isotopologues

### **Project Summary:**

Carbon monoxide ( $\text{CO}$ ) is an atmospheric trace gas with an important role in atmospheric chemistry and global change. This project will produce a laser based isotopic carbon monoxide monitor to quantify sources of atmospheric  $\text{CO}$  based on their distinct isotopic signatures to assess their impact on the atmosphere and climate change.

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### **Topic:**

Production of Bioenergy and Biofuels From Cellulosic and Non-Food Biomass

### **Company:**

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

### **Project Title:**

Biomass to Hydrocarbons by Catalytic Fast Pyrolysis

### **Project Summary:**

The U.S. has a pressing need to develop technologies to convert non-food biomass resources into renewable commodities, including fuels, plastics, and specialty chemicals. This work will develop technologies that target direct conversion of inedible, waste components of biomass into chemicals that can be used as additives or replacements to gasoline or to synthesize plastics.

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### **Topic:**

Energy Efficient Membranes for Industrial Applications

### **Company:**

Aspen Products Group, Inc.  
184 Cedar Hill St.  
Marlborough, MA 01752-3017

### **Project Title:**

High Permeance Hybrid Membranes for  $\text{CO}_2$  Separation

### **Project Summary:**

The capability to efficiently remove carbon dioxide from gas streams is desirable for a wide variety of applications, including carbon sequestration. Aspen Products Group, Inc. is developing a high temperature carbon dioxide permeable membrane to separate carbon dioxide from hydrogen, water, nitrogen, oxygen, and other gases.

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**Topic:**

Flywheel Energy Storage

**Company:**

Beacon Power Corporation  
65 Middlesex Road  
Tyngsboro, MA 01879-2041

**Project Title:**

Development of a High-power Motor/Generator for the ARPA-E Hub-Less Flywheel

**Project Summary:**

ARPA-E is funding development of the critical components for a low-cost energy storage flywheel for firming of renewables. The power capability must be increased for this flywheel to be applicable to grid applications like frequency regulation, This SBIR project will develop both material and configuration improvements to allow a four-times increase in power capacity.

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**Topic:**

Radiation Detection

**Company:**

Capesym, Inc.  
6 Huron Drive  
Natick, MA 01760-1325

**Project Title:**

Novel Method for Growth of Detector-Grade CZT Crystals

**Project Summary:**

This program is focused on development of a novel method for production of semiconductor material for detection of X- and g-ray radiation with applications in homeland security inspection, medicine, nuclear science and geophysics.

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**Topic:**

Wind Energy Technology Development

**Company:**

Conispire, LLC  
337 Summer St.  
Boston, MA 02210-1707

**Project Title:**

Development of On-Site Conical Spiral Welders for Large Turbine Towers

**Project Summary:**

This project's innovative technology allows large wind turbine towers to be produced on-site, eliminating the transportation constraints that currently hold back the wind industry. This enables larger and taller towers which reach stronger winds, significantly reducing the cost of wind energy. By producing towers that are larger and more valuable than what can be shipped, we give domestic manufacturing a significant cost advantage over towers produced in low wage countries

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**Topic:**

Instrumentation and Tools for Materials Research Using Neutron Scattering

**Company:**

Nova Scientific, Inc.  
10 Picker Road  
Sturbridge, MA 01566-1251

**Project Title:**

Very Large Area Microchannel Plate Neutron Detectors for Neutron Scattering

**Project Summary:**

This project will establish a solid-state neutron imaging detector capable of fully replacing existing  $^3\text{He}$  gas tube detectors which are now a limited national resource. This instrumentation will provide new capabilities to Oak Ridge and others, advancing US leadership in science

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**Topic:**

Advanced Technologies for Nuclear Energy

**Company:**

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

**Project Title:**

Non-contact, High Speed Inspection of Zirconium Power Plant Components

**Project Summary:**

This project will develop new, deeply penetrating solid-state sensor arrays for through wall inspection of nuclear power plant components.

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**Topic:**

Technology to Support BES User Facilities

**Company:**

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

**Project Title:**

Engineering a High Resolution Scintillator for Next-Generation High Frame Rate Detectors

**Project Summary:**

The proposed development will allow the utilization of the full potential of current state-of-the-art X-ray detectors used in synchrotron applications, medical imaging, X-ray scanning equipment for border control, detectors for homeland security, and small animal research, which is essential to the development of new drugs in a rapid, cost-effective manner.

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**Topic:**

Technology to Support BES User Facilities

**Company:**

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

**Project Title:**

High Efficiency High Resolution Sensor for Hard X-Ray Micro tomography

**Project Summary:**

Development of this scintillator material will enable exploitation of the full potential of current state-of-the-art X-ray detectors in synchrotron applications, as well as medical imaging, homeland security (e.g. X-ray scanning equipment at airports and border crossings), and small animal research (essential to the rapid and cost-effective development of new medications).

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## Maryland

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**Topic:**

Modeling and Simulation of Industrially-Relevant Problems

**Company:**

Dynaflow, Inc.  
10621-J Iron Bridge Road  
Jessup, MD 20790-9381

**Project Title:**

Multiscale Two-Phase Bubbly Flow Modeling

**Project Summary:**

This project will develop a computational fluid dynamics code which is able to simulate complex bubbly flows while addressing issue at all scales. This tool will benefit chemical, oil and gas, nuclear, and marine industries to improve efficiency of industry systems involving bubbly mixture flows.

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## Michigan

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**Topic:**

Advanced Concepts and Technology for High Energy Accelerators

**Company:**

Arbor Photonics, Inc.  
251 Jackson Plaza Unit A1  
Ann Arbor, MI 48103-1955

**Project Title:**

Fiber-laser Array Pumped OPCPA Laser-Plasma Accelerator Driver

**Project Summary:**

A novel laser system makes compact, tabletop-sized accelerators more realistic, and can dramatically increase the rate of acceleration possible with traditional high energy particle accelerators with dramatic decreases in machine dimensions, all the while putting the cost within reach of a range of university labs and industry.

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**Topic:**

Genomic Science and Related Biotechnologies

**Company:**

Namesforlife, LLC  
325 Grand River, Suite 300  
East Lansing, MI 48823-4324

**Project Title:**

The NamesforLife Semantic Index of Phenotypic and Genotypic Data for Systems Biology

**Project Summary:**

This project will develop a novel technology that resolves uncertainty about the meaning of biological names or other dynamic terminologies. It uses those terms to create persistent links to related information, goods, and services available on the Internet, even if the terms have changed.

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**Topic:**

Ancillary Technologies for Accelerator Facilities

**Company:**

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

**Project Title:**

Development of a Superconducting RF Multi-Spoke Cavity for Compact Light Sources

**Project Summary:**

Light source facilities require high current electron accelerators. During this SBIR, Niowave, in collaboration with Old Dominion University, will develop superconducting multi-spoke cavities that offer several advantages over the existing elliptical structures used to accelerate electrons near the speed of light.

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**Topic:**

Ancillary Technologies for Accelerator Facilities

**Company:**

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

**Project Title:**

Development of a Superconducting RF 500 MHz Quarter Wave Resonator for Synchrotron Light Sources

**Project Summary:**

Electron-beam-driven light sources generate high energy light used in a wide variety of scientific disciplines. In this SBIR, Niowave will build and test a cost-effective design for a new superconducting accelerating cavity applicable to light source projects, reducing the capital and operating costs to participate in this kind of research.

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## Minnesota

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**Topic:**

Nuclear Physics Accelerator Technology

**Company:**

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

**Project Title:**

Enhanced Quantum Efficiency of Photocathodes with Polarized Emission

**Project Summary:**

This project seeks to advance the tools available for experimental physics research.

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## New Hampshire

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**Topic:**

Smart Facilities and Green Networks

**Company:**

Cognitive Electronics LLC  
16 Cavendish Ct., Suite 2F  
Lebanon, NH 03766-1441

**Project Title:**

Power Efficient Supercomputing

**Project Summary:**

A novel computer system based on certain characteristics of brain circuitry has been demonstrated to perform supercomputing tasks at drastically lower power than standard datacenter servers. Additional development and testing will allow us to make it available to new users while verifying its power efficiency and preparing it for manufacturing.

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**Topic:**

Instrumentation and Tools for Materials Research Using Neutron Scattering

**Company:**

Xemed, LLC

16 Strafford Avenue  
Durham, NH 03824-1908

**Project Title:**

Polarized <sup>3</sup>He Circulating Technologies for Neutron Analyzers

**Project Summary:**

Neutron scattering advances technology for telecommunications, energy, manufacturing, plastics, transportation, and biotechnology. The newest class of wide-angle polarized neutron spectrometers requires polarized <sup>3</sup>He production and delivery at unprecedented rates. This project develops gas circulation technologies that deliver polarized <sup>3</sup>He gas from a new large-capacity polarizer, sited remotely, to a wide-angle neutron analyzer.

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## New Jersey

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**Topic:**

Advanced Technology Applications for Buildings

**Company:**

Mechanical Solutions, Inc.  
11 Apollo Drive  
Whippany, NJ 07981-1423

**Project Title:**

Supercharger for Heat Pumps in Cold Climates

**Project Summary:**

This project will enable existing and new design heat pump-based heating systems to efficiently operate at sub-zero temperatures. This will save energy and extend heat pump use to regions cold climates and those without gas or oil.

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## New Mexico

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**Topic:**

Remote Sensing

**Company:**

Mesa Photonics, LLC  
1550 Pacheco St  
Santa Fe, NM 87505-3914

**Project Title:**

Chemical remote sensor for proliferation

**Project Summary:**

This project will develop an unobtrusive sensor that uses sunlight to detect possible clandestine nuclear processing. Successful completion of the Phase II project will provide a validated prototype sensor that is fully automated, compact, portable, and operates continuously at low power.

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**Topic:**

Technology to Support BES User Facilities

**Company:**

Mesa Photonics, LLC  
1550 Pacheco St  
Santa Fe, NM 87505-3914

**Project Title:**

Complete Characterization of Ultrafast X-Ray Pulses

**Project Summary:**

This project will develop low-cost, high precision instruments to improve the performance of high-brightness x-ray sources. These sources can improve medical diagnostics and improve detection for Homeland Security.

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**Topic:**

Instrumentation for Materials Research Using Ultra-Bright or Ultra-Fast X-Ray Sources

**Company:**

Star Cryoelectronics, LLC  
25 Bisbee Court, Suite A  
Santa Fe, NM 87508-1338

**Project Title:**

Superconducting Tunnel Junction Detectors for High-Resolution X-Ray Spectroscopy

**Project Summary:**

Detector development for X-ray spectroscopy has lagged behind advances at the Nation's synchrotron facilities leading to constraints on productivity. This project advances the state of the art with the development of high speed and high energy resolution detectors specifically for synchrotron science applications that will enhance research capabilities and throughput.

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**Topic:**

Carbon Cycle Measurements of the Atmosphere and the Biosphere

**Company:**

Vista Photonics, Inc.  
3 N. Chamisa Drive, Suite 1  
Santa Fe, NM 87508-9463

**Project Title:**

Fully Integrated Low-Cost High-Precision Carbon Dioxide Analyzer

**Project Summary:**

Inexpensive high-performance carbon dioxide sensors are required in the field to understand global warming. The proposed laser sensor technology will provide the required measurements for an exceptional value.

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# New York

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**Topic:**

Energy Efficient Membranes for Industrial Applications

**Company:**

Bettergy Corp.  
8 John Walsh Blvd., Suite 321  
Peekskill, NY 10566-5347

**Project Title:**

A Novel Composite Membrane for High Temperature Hydrogen Separation

**Project Summary:**

Successful completion of this program will make significant contribution toward gaining our nation's energy independence through developing key technologies for the new hydrogen economy. It will also create a new vibrant industry and generate a tremendous amount of new, highly skilled job opportunities for the United States.

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**Topic:**

Enhanced Availability of Climate Model Output

**Company:**

Kitware Inc.  
28 Corporate Drive  
Clifton Park, NY 12065-8688

**Project Title:**

Climate Pipes: User-Friendly Data Access, Data Manipulation, Data Analysis and Visualization of Community Climate Models

**Project Summary:**

The proposed work provides non-researchers simple access to and analysis tools for computer model output resulting from high-resolution, long-term, climate change projections performed as part of the U.S. Global Change Research Program.

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**Topic:**

Advanced Coal Research

**Company:**

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

**Project Title:**

Self-Powered Wireless Sensors for Gas Turbine Power Systems

**Project Summary:**

This project will develop self-powered wireless sensors for condition monitoring of industrial gas turbines by integrating novel high temperature Direct Write sensor technologies with power harvesting modules and industrial wireless transmitters. The technology will improve turbine efficiency, prevent forced shutdowns, and reduce operational and sustainment costs.

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**Topic:**

100 GigE Networking Components

**Company:**

Reservoir Labs, Inc.  
632 Broadway Suite 803  
New York, NY 10012-2614

**Project Title:**

Bro-Intelligent Load Balancer Towards Terabit-Scale Cyber-Security

**Project Summary:**

Network-based infrastructures, while critical to ensure the productivity of our private and public organizations, are threatened by an increasing number of ever more sophisticated cyber-attacks. To protect them from these cyber-threats, we are developing a new cyber-security defense system that will be able to support terabit per second traffic rates.

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**Topic:**

Modeling and Simulation of Industrially-Relevant Problems

**Company:**

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

**Project Title:**

Reliable Parallel Electromagnetic Simulations on High-Order Unstructured Meshes (38A)

**Project Summary:**

This project will provide simulation automation tools for the application of a new generation simulation technologies which represent the only viable means of reliably providing the high accuracy results needed for design of critical systems. These tools will be applied to electromagnetic design problems ranging from threat detection, to antenna design, to wireless device design, to the treatment of cancer, to billion dollar high-energy scientific accelerators.

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## Ohio

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**Topic:**

Accelerator Technology for the International Linear Collider

**Company:**

Euclid Techlabs, LLC

5900 Harper Rd. Suite 102  
Solon, OH 44139-1866

**Project Title:**

High Power Rf Testing Of A 3-Cell Superconducting Traveling Wave Accelerating Structure

**Project Summary:**

This project will design and demonstrate a prototype of a new kind of superconducting particle accelerator. This device could significantly reduce the cost of the International Linear Collider

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**Topic:**

Radio Frequency (RF) Devices and Components for Accelerator Facilities

**Company:**

Euclid Techlabs, LLC  
5900 Harper Rd. Suite 102  
Solon, OH 44139-1866

**Project Title:**

Chirped Electron Bunch Energy Compensation For An X-Ray Light Source

**Project Summary:**

Accelerators used by DoE for nuclear-physics research require huge amounts of electrical power. The proposed grant will develop a high-efficiency power amplifier that is adaptable to many applications and will significantly reduce electricity consumption, thus reducing operating costs, importation of foreign petroleum, pollution, and greenhouse-gas emissions.

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**Topic:**

Radio Frequency Accelerator Technology for High Energy Accelerator and Colliders

**Company:**

Euclid Techlabs, LLC  
5900 Harper Rd. Suite 102  
Solon, OH 44139-1866

**Project Title:**

A New Conical Half-Wave Superconducting Cavity

**Project Summary:**

We propose to design a new kind of superconducting cavity that reduces cost by occupying less space in a proton accelerator. This device will be useful not only as a component of accelerators for basic research but also for the transmutation of nuclear waste

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**Topic:**

Radio Frequency Accelerator Technology for High Energy Accelerator and Colliders

**Company:**

Euclid Techlabs, LLC  
5900 Harper Rd. Suite 102  
Solon, OH 44139-1866

**Project Title:**

High Gradient Test of a Standing Wave Dielectric Loaded Accelerating Structure

**Project Summary:**

An ultra-high gradient (acceleration rate) is preferred for cost and other reasons in future high energy collider designs. The standing wave Dielectric Loaded Accelerating (DLA) structure proposed for this project has a unique possibility of achieving a very high gradient with a low Rf power requirement.

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**Topic:**

Advanced Sources for Accelerator Facilities

**Company:**

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

**Project Title:**

Nb<sub>3</sub>Sn Wound Superconducting Undulators for Synchrotron Light Sources

**Project Summary:**

The research is directed towards the development of improved superconducting undulators, the devices that convert the energy of a dedicated synchrotron's electron beam into short wavelength light or x-rays. The research will lead to the emergence of improved light (or "photon") sources for use in materials research, industry, and medicine. For example, this includes the processing of semiconductor chips for computers, determining the age of materials through radiocarbon dating, sterilizing medical equipment and food products and the diagnosing and treatment of cancer.

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**Topic:**

Nuclear Physics Instrumentation. Detection Systems and Techniques

**Company:**

Integrated Sensors, LLC  
2403 Evergreen Road  
Ottawa Hills, OH 43606-2323

**Project Title:**

High-Performance Plasma Panel Based Micropattern Detector

**Project Summary:**

A low mass, position sensitive, fast, charged particle radiation detector is proposed for a variety of applications in nuclear physics including low to medium energy ion beam research. Integrated Sensors is teamed on this project with the Physics Division at Oak Ridge National Laboratory and the Physics Department at the University of Michigan.

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**Topic:**

Innovative Solar Power: Lowering The Cost of Novel Photovoltaics, Solar Designs for Desalination, and Distributed Concentrating Solar Power

**Company:**

Xunlight 26 Solar, LLC

3145 Nebraska Ave.  
Toledo, OH 43607-3102

**Project Title:**

Transparent, Flexible CdTe Modules for High Efficiency Tandem PV

**Project Summary:**

This project will make 1'x4' prototype flexible solar modules using carbon nanotubes and ultrathin semiconductor layers. The project will deliver flexible see-through solar modules, help maintain U.S. leadership in photovoltaics technology, and lower the cost of clean, renewable electricity generation.

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## Oklahoma

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**Topic:**

Advanced Separations Chemistry Tools

**Company:**

Microchem Solutions  
212 Tisbury Road  
Norman, OK 73071-7178

**Project Title:**

High Pressure Open Channel Electroosmotic Pump

**Project Summary:**

Miniaturized high-pressure liquid chromatography (HPLC) has a wide range of applications. A problem toward miniaturized HPLC is the lack of a high-pressure micropump. In this project, we will develop a high-pressure micropump to address this problem.

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## Oregon

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**Topic:**

Advanced Cooling And Waste Heat Recovery Technologies

**Company:**

Architectural Applications LLC  
4109 NE Davis Street  
Portland, OR 97232-3444

**Project Title:**

Building-Integrated Heat and Moisture Exchange-Engineering Development and Field Demonstration

**Project Summary:**

This technology is a large-scale, membrane-based heat and moisture exchanger that works efficiently by virtue of its large scale. The large size is accommodated by integrating it into the building wall systems, where it provides additional benefit as a highly improved insulator.

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**Topic:**

Technologies Related to Energy Storage for Electric Drive Vehicles

**Company:**

Onto Technology, LLC  
63221 Service Road Suite 6/F  
Bend, OR 97701-8740

**Project Title:**

Advanced Battery Recycling

**Project Summary:**

This project develops environmentally friendly processes for recycling batteries from portable electronics or electric vehicles. The technology developed will reduce manufacturing costs and be foundational for jobs supporting the nation's sustainability and energy independence.

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**Topic:**

High-Speed Electronic Instrumentation for Data Acquisition and Processing

**Company:**

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

**Project Title:**

Wafer-Scale Geiger-mode Silicon Photomultiplier Arrays Fabricated Using Domestic CMOS Fab

**Project Summary:**

A single-photon-sensitive detector technology, manufactured using domestic CMOS suppliers, will be made available to system developers using 3D circuit stacking technology to configure high-performance detector arrays.

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## Pennsylvania

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**Topic:**

Radio Frequency (RF) Devices and Components for Accelerator Facilities

**Company:**

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

**Project Title:**

Passivation Coatings for RF Power Devices

**Project Summary:**

A core technology is proposed for improved corrosion resistance in water cooled radio frequency devices. An innovative approach to deposit highly uniform ceramic coatings will significantly extend operation lifetime,

thus decreasing maintenance costs and downtime of DOE accelerator facilities

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**Topic:**

Energy Efficient Membranes for Industrial Applications

**Company:**

Media And Process Technology Inc  
1155 William Pitt Way  
Pittsburgh, PA 15238-1368

**Project Title:**

An Industrial Membrane System Suitable for Distributed Used Oil Re-Refining

**Project Summary:**

This waste oil re-refining technology can be used to produce high quality lubricant from waste oils thereby reducing crude oil imports, reducing air pollution and GHG emission, and creating new jobs.

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**Topic:**

Radio Frequency Accelerator Technology for High Energy Accelerator and Colliders

**Company:**

Strategic Polymer Sciences, Inc  
200 Innovation Blvd  
State College, PA 16803-6602

**Project Title:**

Unconventional Compact Wound Glass Capacitors for Pulsed Power System in RF Accelerators

**Project Summary:**

This program will develop high performance energy storage glass capacitors with ultrahigh energy density, high reliability, and low cost. The advanced capacitors can be used in military pulsed power weapon systems, medical defibrillators, hybrid electric vehicles, wind turbine, and photovoltaic panels.

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## South Carolina

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**Topic:**

Hydrogen and Fuel Cells

**Company:**

Tetramertechologies, LLC.  
657 South Mechanic Street  
Pendleton, SC 29670-

**Project Title:**

New High Performance Water Vapor Membranes To Improve Fuel Cell Balance of Plant Efficiency and Lower Costs

**Project Summary:**

This project's new water vapor membrane technology will create 20 high paying jobs in South Carolina while helping the US lower its dependence on foreign oil. Already growing modestly in the US, the fuel cell commercial enterprise will be accelerated with the higher performance and lower costs targeted in Phase II.

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## Tennessee

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**Topic:**

Advanced Technologies for Nuclear Energy

**Company:**

Analysis And Measurement Services Corporation  
9119 Cross Park Drive  
Knoxville, TN 37923-4505

**Project Title:**

Rod Control System On-Line Condition Monitoring and Advanced Diagnostics for Existing and Next Generation Nuclear Power Plants

**Project Summary:**

This project offers to enhance the rod control systems of nuclear reactors with diagnostic capabilities to provide continuous monitoring and automated system health assessment. This technology can prevent unplanned reactor trips and shorten refueling outage times which will help provide safe and reliable power to the general public.

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**Topic:**

Smart Facilities and Green Networks

**Company:**

Enhanced Systems Consulting, Inc.  
3201 Hanover Road  
Johnson  
State TN 37604-1463

**Project Title:**

Dynamically Controlled Electric Demand Management System

**Project Summary:**

Variable electric demands force costly inefficiencies and risks to the nation's electric grid. DCEDMS is a systematic software solution that monitors and manages electricity distribution by synchronizing and balancing generation and consumption with scalable, secure and sustainable smart grid technologies.

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**Topic:**

Nuclear Physics Instrumentation. Detection Systems and Techniques

**Company:**

Phds Co.  
3011 Amherst Road

Knoxville, TN 37921-3713

**Project Title:**

Thin-Window P-Type Point-Contact Germanium Detectors for Rare Particle Detection 45c

**Project Summary:**

The DOE Office of Nuclear Physics requires larger, more sensitive and lower cost detectors for rare-particle detection experiments. The new variety of germanium detectors being developed will provide a new generation of improved detectors for this critical DOE mission and for the detection of radioactive materials in general.

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## Texas

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**Topic:**

Hydrogen and Fuel Cells

**Company:**

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

**Project Title:**

Ultra Lightweight High Pressure Hydrogen Fuel Tanks Reinforced with Carbon Nanotubes

**Project Summary:**

Carbon fiber is very expensive, ranging from \$20-\$50 per kilogram. This work will develop technologies that will reduce the dependence on carbon fiber material needed in CFRP tanks through CNT reinforcement. Using nano-reinforcement upon the composite resin matrix will result in a reduced amount of required carbon fiber for CFRP tanks while making them more light-weight and efficient.

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**Topic:**

Nuclear Physics Isotope Science and Technology

**Company:**

Isotherapeutics Group LLC  
1004 S. Velasco  
Angleton, TX 77515-5250

**Project Title:**

High Specific Activity Sm-153 by Post Irradiation Isotope Separation

**Project Summary:**

Development of promising cancer therapies is being hindered by the lack of suitable radioisotopes. This project aims to demonstrate that samarium-153 can be produced in high specific activity form by electromagnetic separation. Successful deployment of the technology could enable the creation of a new generation of targeted cancer therapies.

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**Topic:**

## High Energy Physics Computer Technology

### **Company:**

Semantic Designs Inc.  
13171 Pond Springs Road  
Austin, TX 78729-7102

### **Project Title:**

Refactor++: Automated Support for Program Enhancements

### **Project Summary:**

Scientific understanding of physics, drugs, biochemistry, and also engineering, is held back by the inability of scientists and engineers to organize the millions of lines of code that supercomputers will run for continuing experimentation. This work will harness automated programming methods and supercomputing itself to enable users to reshape their C++ software into more pliable forms.

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### **Topic:**

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

### **Company:**

Shear Form, Inc.  
207 Dellwood St.  
Bryan, TX 77801-2520

### **Project Title:**

Tantalum Tube for Diffusion Barriers

### **Project Summary:**

Increased deformability and uniformity in Ta tube used in Nb<sub>3</sub>Sn superconducting wire will be achieved by an improved materials processing method to refine the microstructure in conductor components. The improved microstructure will be produced in Ta tube by a severe plastic deformation processing method to reduce the average grain size, improve microstructural uniformity, and heal seam-welds, improve material ductility, improve Nb<sub>3</sub>Sn wire fabrication yield and lower Nb<sub>3</sub>Sn wire manufacturing costs, and enable improved Nb<sub>3</sub>Sn superconductor performance (higher current carrying capacity in higher magnetic fields).