

SBIR/STTR Fiscal Year 2012 Release 2 Phase I Awards Sorted by State

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Alabama

Topic:

Remote Sensing

Company:

Polaris Sensor Technologies Inc. 200 Westside Square Huntsville, AL 35801-4875

Project Title:

Spectropolarimetric Measurement of the Complex Refractive Index of Powders

Project Summary:

This project endeavors to remotely identify unknown powders using a light scattering measurement in combination with an advanced light scattering theory. The technique will measure the powder's unique complex refractive index from which the powder may be identified.

Arkansas

Topic:

High Voltage DC-Link Power Conversion System for Energy Storage Applications

Company:

Arkansas Power Electronics International Inc. 535 W. Research Center Blvd. Fayetteville, AR 72701

Project Title:

Design and Development of a Low Cost Manufacturable High Voltage Power Module for Energy Storage Systems

Project Summary:

This project will design and develop a high performance high voltage SiC MCPM that is low cost manufacturable reliable and reworkable. The target utility scale energy storage applications include power conversion systems for grid-tie solar array wind turbine and vehicle-to-grid to aid in load leveling frequency control voltage fluctuations in order to improve the overall power quality and reliability

Arizona

Topic:

Selected Energy Efficiency Technologies

Company:

Arbsource LLC1235 W LAIRD STTempe, AZ 85281-5321

Project Title:

Using ARB Biotech for H2 Generation and Efficient Commercial Wastewater Treatment

Project Summary:

Food and beverage processors are burdened with huge costs managing wastewater totaling six or seven figures per year just in operations. This project will cut this cost in half by supplying low-energy high quality wastewater treatment for customers and can deliver a two year payback period.

California

Topic:

Selected Energy Efficiency Technologies

Company:

Applied Spectra Inc.46661 Fremont Blvd.Fremont, CA 94538-6410

Project Title:

Real-Time In-Situ Metrology for Lithium-Ion Battery R&D and Manufacturing

Project Summary:

This projec will develop a benchtop optical sensor for direct real-time measurements of the chemical composition of battery materials and electrode/electrolyte interfaces with depth resolution down to the nanometer range.

Topic:

Selected Renewable Energy Technologies

Company:

Berkeley Air Monitoring Group Inc.2124 Kittredge St. #57Berkeley, CA 94704-1486

Project Title:

Platform for Integrated Cookstove Assessment (PICA)

Project Summary:

The Platform for Integrated Cookstove Assessment (PICA) project will create an integrated software platform for collection management analysis and reporting of in-field cookstove performance data update the current sensors for measurement of stove usage indoor air pollution and emissions and integrate these and other sensors into the PICA system.

Topic:

Selected Renewable Energy Technologies

Company:

Cirrus Sense LLC 2356 Pelham Avenue Los Angeles, CA 90064-2212

Project Title:

Wireless Instrument for Automated Measurement of Clean Cookstove Usage and Black Carbon Emissions

Project Summary:

This project will develop a low-cost geotemporally referenced sensor for monitoring and reporting cookstove usage and black carbon emissions generated by biomass burning.

Topic:

Selected Energy Efficiency Technologies

Company:

Farasis Energy Inc. 21363 Cabot Blvd. Hayward, CA 94545-1657

Project Title:

Recycling Technology for Low Cost Li-ion Cells

Project Summary:

This project will develop a novel approach to recycling Li-ion cells. Use of the technology could lower the cost of Li-ion cells and decrease the environmental impact of batteries from electric and hybrid electric vehicles.

Topic:

Crosscutting Fossil Energy Research

Company:

General Cybernation Group Inc. 2868 Prospect Park Drive Rancho Cordova, CA 95670-6065

Project Title:

Self-Organizing Sensing and Actuation for Advanced Process Control

Project Summary:

This project will result in a novel advanced process control architecture with Self-Organizing Sensing (SOS) and Self-Organizing Actuation (SOA) methods technologies and products. They can make a big impact on

the industry and help the U.S. strengthen its energy security economic health and movement towards a cleaner environment.

Topic:

Climate Control Technologies for Fossil Energy Applications

Company:

Groundmetrics Inc.3895 Clairemont DriveSan Diego, CA 92117-5833

Project Title:

Permanent Electromagnetic Monitoring of CO2 Sequestration in Deep Reservoirs

Project Summary:

This project will develop and build a system for long- term monitoring of CO2 reservoirs to confirm the integrity of the seal. The purpose of storing CO2 is to mitigate its effect on the atmosphere and climate.

Topic:

Climate Control Technologies for Fossil Energy Applications

Company:

Innosense LLC2531 West 237th StreetTorrance, CA 90505

Project Title:

Polymer Nanowire Sensor Array for Subsurface CO2 Monitoring

Project Summary:

This project will support the DOE program objectives of lowering the cost of CO2 capture and ensure that this greenhouse gas can be stored in geologic formations safely and permanently.

Topic:

Oil and Gas Technologies

Company:

Optiphase Inc.7652 Haskell AvenueVan Nuys, CA 91406-2005

Project Title:

Enhanced Fiber Optic Distributed Acoustic Sensing for Reservoir Imaging

Project Summary:

High-resolution fiber optic based distributed acoustic sensing is applied to the enhancement of oil and gas reservoir imaging with the prospect to increase the recovery rate of performing wells. Increases in the oil recovery rate will have a considerable positive effect on the environment as the remaining oil from marginal fields can be extracted with the existing infrastructure.

Topic:

Selected Renewable Energy Technologies

Company:

Physical Optics Corporation 1845 West 205th Street Torrance, CA 90501

Project Title:

Geothermal Alternative Thermoelectric Electricity Regeneration

Project Summary:

America's geothermal resources are largely untapped because existing technologies require significant temperatures to run traditional power plants on the surface. To recover unutilized geothermal energy potential POC proposes a new and unique downhole thermoelectric energy extraction technology based on nanoporous materials developed for fuel cells

Topic:

Advanced Technologies for Nuclear Energy

Company:

Ultramet 12173 Montague Street Pacoima, CA 91331-2210

Project Title:

Advanced Vented Fuel Concept for Deep Burn Reactors

Project Summary:

Development of a high temperature vented fuel form is required to enable deep burn reactor designs that reduce proliferation risk and minimize transuranic waste. The vented foam fuel is ideal for small modular reactors that fully utilize all the energy content require no refueling or spent fuel storage and may consume existing spent fuel stockpiles.

Colorado

Topic:

Selected Renewable Energy Technologies

Company:

Aqwest LLC 8276 Eagle Road Larkspur, CO 80118-8224

Project Title:

Magnetocaloric Generator for Geothermal Heat Energy Recovery

Project Summary:

This project will develop and demonstrate an innovative magnetocaloric generator for production of electric power from geothermal heat at high thermodynamic efficiency. Projected benefits to the public include US dependence on fossil fuels (especially foreign oil) the cost of electric power and GHG emissions.

Topic:

Selected Renewable Energy Technologies

Company:

Cool Energy Inc.5541 Central Ave.Boulder, CO 80301-2876

Project Title:

Low-Temperature Stirling Engine for Geothermal Electricity Generation

Project Summary:

A novel power system will be designed for geothermal wells and oil and gas wells. If widely deployed this approach could replace up to 100 fossil fuel power plants.

Topic:

Climate Control Technologies for Fossil Energy Applications

Company:

Ion Engineering LLC3052 Sterling CircleBoulder, CO 80301

Project Title:

Carbon Capture Process Simplifications and Performance Improvements Using Novel Polymer Membranes for the Facilitated Transport of CO₂

Project Summary:

The use of advanced polymer membranes for CO₂ capture at power plants can provide an economical and energy efficient means of drastically reducing emissions while continuing to utilize conventional fuel sources for electric power generation. This project will develop materials that can achieve this goal and accelerate the utilization of inexpensive clean energy.

Topic:

Advanced Technologies for Nuclear Energy

Company:

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

Project Title:

Advanced High Temperature Control Rod Position Sensor for Nuclear Power Systems

Project Summary:

A novel high temperature ceramic sensor is proposed to help ensure safe operation of existing and future

nuclear power plants and nuclear power systems

Topic:

Crosscutting Fossil Energy Research

Company:

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

Project Title:

Advanced Ceramic Materials and Packaging Technologies For Sensors Operable 1800C in Advanced Energy Generation Systems

Project Summary:

This project will develop a novel technology based on advanced high temperature materials to support the implementation of new sensor technologies that can increase the fuel efficiency of fossil fuel energy generation systems.

Topic:

Selected Renewable Energy Technologies

Company:

Symbios Technologies LLC 3185 Rampart Rd Fort Collins, CO 80523-0922

Project Title:

Improved Cellulosic Biorefinery Economics via a Novel Catalytic Membrane Reactor for Biomass Hydrolysis

Project Summary:

This project will develop, validate and commercialize a proprietary membrane-reactor technology that—for the first time—could enable cost-competitive production of sugars from cellulosic biomass feedstocks for making cellulosic ethanol and related biofuels and other high-value bioproducts allowing the U.S. to meet federal mandates/goals for alternative fuels production.

Topic:

Coal Gasification Technologies

Company:

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

Project Title:

Warm Gas Multi-contaminant Removal System

Project Summary:

The use of environmentally responsible coal-based processes is hindered by the presence of a wide spectrum of contaminants present in coal. This project will develop a clean-up technology to remove these contaminants.

in a cost-effective way to support the widespread utilization of coal in environmentally responsible power generation and production of transportation fuels.

Topic:

Selected Energy Efficiency Technologies

Company:

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

Project Title:

High Performance Activated Carbons for Advanced Lead-Acid Battery Hybrid Electric Vehicles

Project Summary:

This project will develop high performance carbon additives for the lead-acid batteries used in start/stop HEVs. Start/stop HEVs get 5 – 8% higher gas mileage than conventional cars with additional cost less than \$1000.

Topic:

Technologies for Clean Fuels and Hydrogen from Coal

Company:

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

Project Title:

Enhanced Fischer-Tropsch Catalysts for Conversion of Biomass and Coal to Transportation Fuels

Project Summary:

The liquid fuels produced by FT synthesis using coal-derived syngas can provide an immediately viable alternative to crude oil required to help provide energy independence to the U.S. TDA's new catalyst offers several key benefits that can increase the cost-effectiveness of the FT process.

CONNECTICUT

Topic:

Selected Energy Efficiency Technologies

Company:

Proton Energy Systems10 Technology DriveWallingford, CT 06492-1955

Project Title:

Low-Noble-Metal-Content Catalysts/Electrodes for Hydrogen Production by Water Electrolysis

Project Summary:

Proton OnSite manufactures hydrogen generation systems which can be integrated with renewable energy sources to generate hydrogen fuel while producing minimal carbon footprint. This project aims to reduce the cost of this technology through development of improved electrode materials designed to reduce use of expensive raw materials and overall system capital cost

Florida

Topic:

Advanced Turbine Technology for IGCC Power Plants

Company:

Florida Turbine Technologies Inc.1701 Military Trail Suite 110Jupiter, FL 33458-7887

Project Title:

Air Riding Seal Technology for Advanced Gas Turbine Engines

Project Summary:

This project will develop an innovative design approach to provide a highly durable “contactless” air riding rotating-to-static seal. Rotating-to-static seals are critical components of all gas turbine engines. The seals can significantly affect the efficiency operability and durability of a gas turbine engine.

Georgia

Topic:

Fuel Cell Technologies for Central Power Generation with Coal

Company:

Ngimat Co.1824 Willow Trail PkwyNorcross, GA 30093

Project Title:

Low Cost Spray-On Coatings for Protection of SOFC Interconnects and BOP Components

Project Summary:

Solid Oxide Fuel Cells (SOFCs) represent a clean and efficient power generation method; however current technology is cost prohibitive. This project proposes the use of novel nano-coatings that will enable decreased manufacturing and operating cost increased reliability and increased lifetimes for SOFCs.

Illinois

Topic:

Fuel Cell Technologies for Central Power Generation with Coal

Company:

Questek Innovations LLC1820 Ridge AvenueEvanston, IL 60201-3621

Project Title:

Low-Cost Alloys for High-Temperature SOFC System Components

Project Summary:

This project will apply a computational alloy design methodology and experience with high-Cr stainless ferritic alloy and oxidation modeling to create a novel low-cost alloy for SOFC with low Cr volatility and high oxidation resistance that is also weldable to resolve a major technical challenge in SOFC commercialization.

Massachusetts

Topic:

Selected Energy Efficiency Technologies

Company:

Advanced Thermal Technologies LLC91 South St.Upton, MA 01568

Project Title:

Low-Cost Integrated Package and Heat Sink for High-Temperature Power Modules

Project Summary:

The proposed packaging and heat sink technology will support increased heat dissipation that will lead to improved efficiency and reliability for HEV power conversion systems as well as a range of other industrial and commercial power electronics systems. The technology will support enabling packaging solutions for more efficient next generation semiconductor materials that will provide benefits to society in the form of more efficient products that consume less energy and contribute to improved environmental quality by reducing greenhouse gas emissions.

Topic:

Selected Renewable Energy Technologies

Company:

Kse Inc665 Amherst RoadSunderland, MA 01375-9420

Project Title:

Process Intensification for the Production of Furandicarboxylic Acid

Project Summary:

Terephthalic acid is large volume global commodity chemical used in the production of polyester fibers

beverage bottles and a variety of other commercial products. Current technologies are complex energy intensive and based on hydrocarbon feedstocks resulting in inefficient use of hydrocarbon resources and excessive greenhouse gas emissions. The novel technology will provide a commercially viable route for the production of commodity polyester polymers from biomass-based carbohydrate feedstocks.

Topic:

Selected Energy Efficiency Technologies

Company:

Metal Matrix Cast Composites LLC 101 Clematis Avenue Waltham, MA 02453

Project Title:

High Performance Low-Cost IGBT Power Module Thermal Management for HEV/EV Applications

Project Summary:

This project will provide a low cost high performance power module packaging solution for advanced HEVs/EVs "green" automobiles buses trucks construction mining traction vehicles and military armored vehicles and trucks. Enhanced power module technologies will increase fuel efficiency and reduce the cost of HEV/EV for the consumer.

Topic:

Selected Energy Efficiency Technologies

Company:

Metal Oxygen Separation Technologies Inc. 11 Michigan Drive Natick, MA 01760-1334

Project Title:

Environmentally Clean Low-cost Low Emission Zero Carbon Rare Earth Metal Primary Processing

Project Summary:

This project will adapt the technology for primary rare earth production using a clean western-compatible processing capability unique to MOxST.

Topic:

Advanced Technologies for Nuclear Energy

Company:

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

Project Title:

Improved Silicon Carbide Components for Nuclear Applications

Project Summary:

This project will develop silicon carbide materials for nuclear reactor components that will ensure America's

leadership in the development of safe next generation nuclear systems that will help the nation regain energy independence.

Topic:

Advanced Technologies for Nuclear Energy

Company:

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

Project Title:

Solid-State Neutron Detector for Nuclear Material Accounting

Project Summary:

Helium-3 tubes have been the gold standard for detection of neutrons and worldwide shortage of Helium-3 supply severely limits nuclear material accounting capabilities in the domestic nuclear fuel cycle. A Helium-3 replacement detector will be developed to ensure proper nuclear material management and public safety to secure a clean energy.

Topic:

Advanced Technologies for Nuclear Energy

Company:

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

Project Title:

New ^3He Replacement Sensors for DOE Material Control and Accountability

Project Summary:

This project will develop large area neutron detectors that can be economically scaled for numerous DOE and homeland security applications. This technology will be commercially relevant to fill the void created by an inadequate ^3He supply.

Topic:

Radiation Detection

Company:

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

Project Title:

Advanced Plastic Scintillators for Nuclear Non-Proliferation Monitoring

Project Summary:

This project will investigate a novel detector technology that will be very useful for nuclear non-proliferation. It will also be very beneficial for scientific studies (such as space research) as well as

commercial applications (such as oil exploration medical imaging and non-destructive testing).

Maryland

Topic:

Advanced Technologies for Nuclear Energy

Company:

Ceramic Tubular Products LLC15815 Crabbs Branch WayRockville, MD 20855-6636

Project Title:

Low Cost Silicon Carbide Fibers Tapes and Architecture for Accident Tolerant Nuclear Fuel Cladding and Components

Project Summary:

This project will develop a new affordable nuclear fuel cladding that promises major improvements in nuclear plant safety during accidents and also higher fuel burnup thereby reducing the volume of nuclear waste.

Topic:

Selected Renewable Energy Technologies

Company:

E3tec Service LLC11865 Tall Timber DriveClarksville, MD 21029-1203

Project Title:

Process Intensification by Integrated Reaction and Distillation for Synthesis of Bio-Renewable Organic Acid Esters

Project Summary:

Bio-based "green" chemicals are emerging replacements for petroleum derived plasticizers and solvents for which strong global competition is expected. Therefore strong public-private partnerships are required to develop advanced synthesis processes and thereby keeping the U. S. chemical industry competitive to global competition.

Maine

Topic:

Selected Renewable Energy Technologies

Company:

Cerahelix Inc20 Godfrey DriveOrono, ME 04473-3610

Project Title:

High Flux Ti Nanofiltration Membrane for Efficient Processing of Bioproducts

Project Summary:

This project will develop a breakthrough technology to increase the process efficiency for converting cellulosic biomass to fuels and chemicals.

Topic:

Selected Renewable Energy Technologies

Company:

Seachange Group LLC28 Stone RoadCape Elizabeth, ME 04107-5005

Project Title:

A Thermal Deoxygenation Process for Cellulosic Biomass Conversion to Energy-Dense Biofuels

Project Summary:

This project will determine optimal conditions for a direct thermochemical conversion of biomass into drop-in transportation fuels. "Thermal Deoxygenation" will be readily incorporated into existing biomass processing and fuel distribution infrastructures. The commercial potential is large and economic benefit will be centered in traditionally under-developed rural communities.

Michigan

Topic:

Remote Sensing

Company:

Xiomas Technologies L.L.c.1317 Skyway DriveYpsilanti, MI 48197-8952

Project Title:

Hyperspectral Wide Area Imager

Project Summary:

This project will develop a high performance full spectrum Airborne imaging system suitable for a wide variety of applications of interest to the Department of Energy Remote Sensing community.

Missouri

Topic:

Crosscutting Fossil Energy Research

Company:

Habsonic LLC604 Germann Ct.Rolla, MO 65401-4728

Project Title:

Development of Robust Distributed Ceramic Coaxial Cable Sensors for High Temperature Harsh Environment Applications

Project Summary:

One of a kind low-cost sensors and associated instrumentation will be developed for advanced control and optimization of various energy systems to achieve greater efficiency and reduced emissions.

Mississippi

Topic:

Selected Energy Efficiency Technologies

Company:

Hybrid Plastics Inc.55 WL Runnels Industrial DriveHattiesburg, MS 39401

Project Title:

Solid Polymer Electrolytes with High Lithium Ion Conductivity and Transport Number for Hybrid Electric Power-train Systems

Project Summary:

In order to replace liquid electrolytes in lithium batteries for hybrid electric power train systems solid polymer electrolytes which have the advantages of safety and flexibility must attain conductivities of $> 10^{-3}$ S/cm. Using newly developed multi-ionic POSS-based lithium salts in which the Si-O-Li are replaced with Si-O-BF₃Li groups solid polymer electrolytes with ionic conductivities $> 10^{-3}$ S/cm will be prepared.

New Hampshire

Topic:

Coal Gasification Technologies

Company:

Creare Incorporated16 Great Hollow RoadHanover, NH 03755-3116

Project Title:

A Low-Cost Environmentally Friendly Thermal Storage for CO2 Sequestration

Project Summary:

This project will develop a low-cost combined thermal and CO2 storage system to enable power plants to increase electrical output during peak demand periods without increasing CO2 emission.

Topic:

Selected Energy Efficiency Technologies

Company:

Creare Incorporated 16 Great Hollow Road Hanover, NH 03755-3116

Project Title:

Improved Battery Pack Thermal Management to Reduce Cost and Increase Energy Density

Project Summary:

Electric Vehicles (EVs) and Hybrid Electric Vehicles (HEVs) provide substantial environmental benefits though markets are currently limited due to high cost poor energy density and safety concerns as evidenced by recent HEV fires. The thermal management system resulting from this research will reduce vehicle cost while increasing safety and energy density. This project will greatly improve the overall outlook for HE

New Jersey

Topic:

Advanced Technologies for Nuclear Energy

Company:

Energy Research Company 1250 South Ave. Plainfield, NJ 07062-1920

Project Title:

A New Laser Based Sensor for Nuclear Fuel Reprocessing Safeguards

Project Summary:

This project will develop technology for making spent nuclear fuel reprocessing safe and economical. This technology will expand reprocessing of spent nuclear fuel into new fuel reducing the need for building and safeguarding storage sites for spent fuel as well as reducing the environmental impact of uranium mining.

Topic:

Selected Renewable Energy Technologies

Company:

Exelus Inc. 110 Dorsa Ave Livingston, NJ 07039-1037

Project Title:

Structured Catalyst for Efficient Production of Renewable Jet Fuel

Project Summary:

A new process to make renewable jet fuel from vegetable oil is being developed. The new process can cost-effectively produce drop-in renewable Jet A-1 grade fuel using an advanced chemistry to maximize the yield of fuel from each gallon of vegetable oil.

Topic:

Radiation Detection

Company:

Inrad Optics Inc. 181 Legrand Ave. Northvale, NJ 07647-2404

Project Title:

Mixed Diphenylacetylene-Stilbene Crystals for Fast Neutron Detection

Project Summary:

This project will develop growth and fabrication techniques for mixed diphenylacetylene (DPAC)-stilbene crystals and evaluate the potential for commercialization of this new fast neutron detection material.

Topic:

High Voltage DC-Link Power Conversion System for Energy Storage Applications

Company:

United Silicon Carbide Inc. 7 Deer Park Drive Monmouth Junction, NJ 08852-1921

Project Title:

6.5 kV Silicon Carbide Half-Bridge Power Switch Module for Energy Storage System Applications

Project Summary:

This project will develop SiC switch technology to address the need for cheaper power conversion and energy storage management which further enable reliable penetration of renewable resources such as wind and solar power.

New Mexico

Topic:

Technology to Facilitate Monitoring for Nuclear Explosions

Company:

Retriever Technology Lp1600 Lena St.Santa Fe, New Mexico 87505

Project Title:

Intelligent Trace Analysis for Automatic Extraction of Analog Seismographic Data

Project Summary:

This project will develop accurate and automated software to extract digital X-Y trace information from historical analog seismograph data.

Topic:

Advanced Technologies for Nuclear Energy

Company:

Thor Technologies Inc.3013 Aztec Road NEAlbuquerque, New Mexico 87107-4301

Project Title:

Advanced Materials Technology for Nuclear Fuel Research and Development

Project Summary:

This project will develop a new nuclear fuel rod material and design to correct issues limiting the lifetime and safety margins of fuel cladding particularly during loss of coolant including poor corrosion resistance and failure due to excessive heat buildup.

New York

Topic:

Selected Renewable Energy Technologies

Company:

Biolite68 Jay St Suite 309Brooklyn, NY 11201-8360

Project Title:

Clean Fan Stove Combustion Technology Development

Project Summary:

This project will demonstrate the feasibility of creating an affordable long- lasting clean cook stove solution that delivers at least 90% emissions reduction and 50% lower fuel usage than traditional biomass stoves.

Topic:

Climate Control Technologies for Fossil Energy Applications

Company:

United Environment & Energy LLC111 Ridge RoadHorseheads, NY 14845-1507

Project Title:

High Performance Low Cost Bio-Polymer Building Material From CO2 and Recycled Wastes

Project Summary:

This project will develop a high performance low cost and environmentally friendly bioasphalt technology for building applications which will bring significant energy and cost savings to the end-users protect the environment and improve human health and reduce the use of petroleum based fuel.

Ohio

Topic:

Radiation Detection

Company:

Euclid Techlabs LLC5900 Harper Rd.Solon, OH 44139-1866

Project Title:

Improved Capillary Guided Laser Wakefield Accelerators based on Diamond Materials

Project Summary:

This project will develop a key component that will enable the construction of high intensity portable gamma ray sources to be used for detection of smuggled nuclear materials.

Topic:

Fuel Cell Technologies for Central Power Generation with Coal

Company:

Nextech Materials Ltd.404 Enterprise DriveLewis Center, OH 43035-9423

Project Title:

SOFC Protection Coatings Based on a Cost-Effective Aluminization Process

Project Summary:

The project will develop a commercially viable aluminization process that is amenable to high volume SOFC manufacturing.

Topic:

Advanced Technologies for Nuclear Energy

Company:

Powdermet Inc. 24112 Rockwell Drive Euclid, OH 44117-1252

Project Title:

Advanced Processing and Cladding of High Density U-Mo Dispersion Fuels

Project Summary:

This project will establish a national capability to rapidly produce higher burn-up coated and clad nuclear fuel particles to enable the experimental study of the life performance and metallurgical interactions in proliferation-resistant nuclear fuels.

Oregon

Topic:

Selected Renewable Energy Technologies

Company:

Asat Incorporated 79093 Highway 99 Cottage Grove, OR 97424-9568

Project Title:

Improved Biomass Cooking Stoves and Improved Stove Emission Equipment

Project Summary:

ASAT Inc. is helping to usher in a new generation of clean burning biomass cookstoves that will help protect the health of the world's most vulnerable populations and reduce climate change. In addition ASAT's next generation emission testing equipment will revolutionize how biomass cooking stoves are monitored and improved in field operations around the globe.

Topic:

Tools Techniques Infrastructure and Demonstrations

Company:

Oregon Physics LLC 2704 SE 39th Loop Hillsboro, OR 97123-8692

Project Title:

Ultra High Brightness Plasma Ion Source for SIMS Imaging of Actinides at the Theoretical Resolution Limit.

Project Summary:

Nuclear forensics is a rapidly advancing branch of analytical science that has proven to be enormously beneficial in efforts to curtail nuclear proliferation amongst rogue nations and terrorist organizations. This project aims to dramatically enhance the precision and speed of analysis when characterizing nuclear material recovered from suspicious facilities.

Topic:

Selected Renewable Energy Technologies

Company:

Tau Science Cororation15250NW Greenbrier PkyBeaverton, OR 97006-5764

Project Title:

Apparatus for Optimizing Photovoltaic Solar Manufacturing Efficiency through Real-Time Process Feedback and Spectral Binning of Cells

Project Summary:

This project will develop a non-contact spectral response (Quantum Efficiency) system capable of monitoring critical process parameters in the solar manufacturing line.

Pennsylvania

Topic:

Coal Gasification Technologies

Company:

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

Project Title:

Hybrid Solar Coal Gasifier

Project Summary:

The liquid fuels produced by FT synthesis using coal-derived syngas can provide an immediately viable alternative to crude oil required to help provide energy independence to the U.S. This project will develop a new catalyst that offers several key benefits that can increase the cost-effectiveness of the FT process.

Topic:

Selected Energy Efficiency Technologies

Company:

Axion Power International Inc.3601 Clover LaneNew Castle, PA 16105-

Project Title:

Development of High Charge Acceptance PbC® Batteries for Low Cost, High Efficiency Micro Hybrid Vehicles

Project Summary:

This project will investigate the potential for high efficiency low-cost micro-hybrids by combining the features of their patented lead-carbon PbC® battery with a standard lead-acid battery. This dual-mode approach to micro-hybrid vehicle architecture has the potential to significantly increase the fuel efficiency and lower CO2 emissions without significantly increasing costs.

Topic:

Selected Renewable Energy Technologies

Company:

Lehighon Electronics Inc. 208 Memorial Drive Lehighon, PA 18235-0328

Project Title:

Using Coupled Eddy Current and Open-Circuit Voltage Technology to Improve PV Manufacturing Processes

Project Summary: This research will lead to cost reductions in PV module manufacturing processes by defining semiconducting materials with fewer variations in defects and impurities, which typically reduce solar cell device efficiency and lead to rejected material in the manufacturing process.

South Carolina

Topic:

Selected Energy Efficiency Technologies

Company:

Dreamweaver International 3 Research Dr. Greenville, SC 29607

Project Title:

Super Low Cost Sub \$1/m² Battery Separator Based on Microfiber Nanofiber Paper

Project Summary:

This project will study the use of nanofiber-nonwovens to lower the cost of batteries for electric and hybrid vehicles by replacing expensive membranes with nanofiber-based papers.

Topic:

Global Safeguards

Company:

Tetramertechologies L.L.C. 657 South Mechanic Street Pendleton, SC 29670

Project Title:

Development and Commercialization of Nanocomposite Coating Technologies

Project Summary:

This project will synthesize new patentable composite materials for advanced tamper-indicating coatings for the seals used in verification and authentication of highly sensitive materials to support the nuclear Global Safeguards effort.

Tennessee

Topic:

Advanced Technologies for Nuclear Energy

Company:

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

Project Title:

Online Monitoring in Small Modular Reactors

Project Summary:

Small modular reactors (SMRs) are slated for deployment in the United States and other countries for economical safe and secure power generation. This project will provide the SMR designers vendors and utilities with optimum instrumentation that is amenable to online condition monitoring for safer and more efficient operation.

Topic:

Advanced Technologies for Nuclear Energy

Company:

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

Project Title:

Advanced Diagnostics for the Control Element Drive Mechanism System in Pressurized Water Reactors

Project Summary:

This project will enhance the reactor control system of existing and new nuclear reactors by developing diagnostic capabilities and improved condition monitoring for the control element drive mechanism system. This technology promotes superior safety reliability and economic performance for existing and next generation reactors.

Topic:

Crosscutting Fossil Energy Research

Company:

Emerging Measurements (emco) 9910 Kay Meg Way Knoxville, TN 37922-6387

Project Title:

Thermographic Phosphors in Improved Thermal Management of Fossil Fuel Power Plants

Project Summary:

This project will develop high temperature optical based thermographic phosphor sensors for fossil fuel fired power plants.

Texas

Topic:

Selected Energy Efficiency Technologies

Company:

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

Project Title:

High Performance Thermal Packaging Substrate

Project Summary:

Thermal management is a critical part of hybrid electric vehicle technology and in particular represent a difficult and costly area for power electronics production. The proposed research will exploit recent advances in nanotechnology to provide increased thermal and electrical conductivity for power electronic materials by develop CarbA1™-based advanced dielectric thermal management materials. The proposed solution has application for increasing lifetime and reliability in all power electronic devices including solid-state lighting (LEDs) and displays.

Topic:

Remote Sensing

Company:

Intelliepi-ir Inc. 1250 E. Collins Blvd. Richardson, TX 75081-2401

Project Title:

Improvement of Sb-based III-V SLS Epi Materials for IR FPA Applications

Project Summary:

III V superlattice based detectors incorporating antimony allow high performance infrared detection in key midwave (5µm) to beyond longwave (10µm) wavelengths. Overcoming technical challenges related to the epitaxial growth will enable a large cost reduction and performance boost to remote sensing in the infrared. This effort will focus on defect reduction in strained layer superlattice (SLS) detectors to improve focal plane array (FPA) pixel operability imaging performance.

Virginia

Topic:

High Voltage DC-Link Power Conversion System for Energy Storage Applications

Company:

Genesis Semiconductor Inc 43670 Trade Center Place Dulles, VA 20166-2123

Project Title:

15 kV Phase Leg Modules with SiC Monolithically Integrated JBS Rectifier with Super Junction Transistor (MIDSJT) Devices

Project Summary:

This project will develop novel silicon carbide based high-efficiency power modules for power conversion at 12.47 kilo Volt line voltages. This breakthrough technology will significantly enhance the grid-connected energy storage and distributed solar/wind farms.

Topic:

Climate Control Technologies for Fossil Energy Applications

Company:

Materials Modification Inc2809-K Merrilee DriveFairfax, VA 22031

Project Title:

New Solvent system for Carbon Dioxide Capture

Project Summary:

Capture and storage of CO₂ is a key component of President's vision for a cleaner more secure energy future. This project will focus on ionic liquid based flue gas purification for CO₂ capture.

Topic:

Selected Energy Efficiency Technologies

Company:

Materials Modification Inc2809-K Merrilee DriveFairfax, VA 22031

Project Title:

Next Generation Processes for Carbonate Electrolytes for Battery Applications

Project Summary:

This project will use a core shell catalyst to significantly improve the formation of dimethyl carbonate and help inject vitality and new technology to a emerging market for batteries that are planned for use in numerous industrial applications.

Topic:

Selected Renewable Energy Technologies

Company:

Microxact Incorporated295 Industrial DriveChristiansburg, VA 24073-2538

Project Title:

Real time PV Manufacturing Diagnostic System

Project Summary:

An enabling technique for in-line PV manufacturing diagnostics is proposed to increase the productivity of PV manufacturing lines and reduce the cost of solar energy thus reducing the US dependency on foreign oil while simultaneously reducing emission of greenhouse gasses.

Topic:

Advanced Turbine Technology for IGCC Power Plants

Company:

Mikro Systems Inc.1180 Seminole TrailCharlottesville, VA 22901-5713

Project Title:

Advanced Filtration to Improve Single Crystal Casting Yield

Project Summary:

This project will develop ceramic filters that will optimize filtration performance while enabling directional flow of molten alloy during the SX casting process. These performance advantages will be enabled through the geometric design of the filter. Another anticipated benefit is the ability to design part-specific filtration schemes for advanced airfoil castings.

Vermont

Topic:

Selected Energy Efficiency Technologies

Company:

Microstrain Inc.459 Hurricane LaneWilliston, VT 05495-7824

Project Title:

Scalable Network of Low-Cost Self-Powered Wireless Sensors For Commercial Buildings

Project Summary:

Monitoring the quality and condition of indoor environments in commercial buildings is essential for optimizing energy efficiency energy cost-savings worker health and worker productivity. This project will develop a calable low-cost self-powered wireless sensing network which couples miniature environmental monitoring with novel occupant comfort feedback sensors for enhanced HVAC understanding and control.

Washington

Topic:

Selected Renewable Energy Technologies

Company:

Forest Concepts LLC 3320 West Valley Highway NAuburn, WA 98001-2457

Project Title:

Process Intensification Through Improved Dryer Engineering Data and Design

Project Summary:

New biomass feedstock comminution and drying technologies being developed will reduce capital and operating costs of biofuels facilities while increasing the profitability and sustainability of advanced biofuels conversion from woody and herbaceous biomass.

Topic:

Selected Renewable Energy Technologies

Company:

Innovatek Inc. 3100 George Washington Way Richland, WA 99354

Project Title:

The Use of Micro-Channel Reactors for Process Intensification in the Production of Transportation Fuels from Biomass

Project Summary:

This project will improve the economics of biofuel production by developing catalysts enzymatic extraction and micro-structured processing technology. Wheat straw a predominant agricultural waste in the Pacific Northwest will be used as the biomass feedstock in this project.