

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

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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:

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.

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.

Company:

Ceramic Tubular Products LLC
15815 Crabbs Branch Way
Rockville, 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.

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.

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.

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.

Company:

Radiation Monitoring Devices Inc.
44 Hunt Street
Watertown, 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.

Company:

Radiation Monitoring Devices Inc.
44 Hunt Street
Watertown, 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.

Company:

Sporian Microsystems Inc.
515 Courtney Way Suite B
Lafayette, 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

Company:

Thor Technologies Inc.
3013 Aztec Road NE
Albuquerque, NM 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.

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.

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TOPIC: Advanced Turbine Technology for IGCC Power Plants

Company:

Florida Turbine Technologies Inc.
1701 Military Trail Suite 110
Jupiter, 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.

Company:

Mikro Systems Inc.
1180 Seminole Trail
Charlottesville, 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.

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TOPIC: Climate Control Technologies for Fossil Energy Applications

Company:

Groundmetrics Inc.
3895 Clairemont Drive
San 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.

Company:

Innosense LLC
2531 West 237th Street
Torrance, 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.

Company:

Ion Engineering LLC
3052 Sterling Circle
Boulder, 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.

Company:

Materials Modification Inc
2809-K Merrilee Drive
Fairfax, 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.

Company:

United Environment & Energy LLC
111 Ridge Road
Horseheads, 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.

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TOPIC: Coal Gasification Technologies

Company:

Advanced Cooling Technologies Inc.
1046 New Holland Ave
Lancaster, 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.

Company:

Creare Incorporated
16 Great Hollow Road
Hanover, 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.

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 environmentally responsible coal-based processes is hindered by the presence of a wide spectrum

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.

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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.

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.

Company:

Habsonic LLC
604 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.

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.

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TOPIC: Fuel Cell Technologies for Central Power Generation with Coal**Company:**

Nextech Materials Ltd.
404 Enterprise Drive
Lewis 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.

Company:

Ngimat Co.
1824 Willow Trail Pkwy
Norcross, 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.

Company:

Questek Innovations LLC
1820 Ridge Avenue
Evanston, 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.

TOPIC: Global Safeguards

Company:

Tetramertechnologies L.I.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.

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

Company:

Genesic 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.

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.

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TOPIC: Oil and Gas Technologies**Company:**

Optiphase Inc.
7652 Haskell Avenue
Van 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.

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TOPIC: Radiation Detection**Company:**

Euclid Techlabs LLC
5900 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.

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.

Company:

Radiation Monitoring Devices Inc.
44 Hunt Street
Watertown, 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).

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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 (5 μ m) to beyond longwave (10 μ m) 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.

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.

Company:

Xiomas Technologies LLC
1317 Skyway Drive
Ypsilanti, 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.

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TOPIC: Selected Energy Efficiency Technologies

Company:

Advanced Thermal Technologies LLC
91 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.

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.

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 project 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.

Company:

Arbsource LLC
1235 W LAIRD ST
Tempe, 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.

Company:

Axion Power International Inc.
3601 Clover Lane
New 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 PbCO 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.

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.

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.

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.

Company:

Hybrid Plastics Inc.
55 WL Runnels Industrial Drive
Hattiesburg, 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.

Company:

Materials Modification Inc
2809-K Merrilee Drive
Fairfax, 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.

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.

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.

Company:

Microstrain Inc.
459 Hurricane Lane
Williston, 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 scalable low-cost self-powered wireless sensing network which couples miniature environmental monitoring with novel occupant comfort feedback sensors for enhanced HVAC understanding and control.

Company:

Proton Energy Systems
10 Technology Drive
Wallingford, 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.

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.

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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.

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.

Company:

Berkeley Air Monitoring Group Inc.
2124 Kittredge St. #57
Berkeley, 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.

Company:

Biolite
68 Jay St Suite 309
Brooklyn, 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.

Company:

Cerahelix Inc
20 Godfrey Drive
Orono, 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.

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.

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.

Company:

E3tec Service LLC
11865 Tall Timber Drive
Clarksville, 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.

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.

Company:

Forest Concepts LLC
3320 West Valley Highway
N Auburn, 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.

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.

Company:

Kse Inc
665 Amherst Road
Sunderland, 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.

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.

Company:

Microxact Incorporated
295 Industrial Drive
Christiansburg, 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

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.

Company:

Seachange Group LLC
28 Stone Road Cape
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.

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.

Company:

Tau Science Cororation
15250NW Greenbrier Pky
Beaverton, 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.

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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.

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TOPIC: Technology to Facilitate Monitoring for Nuclear Explosions**Company:**

Retriever Technology Lp
1600 Lena St.
Santa Fe, NM 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.

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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.