

Seven Phase 2 FY2012 Fossil Energy Projects Chosen by DOE's Small Business Innovative Research (SBIR/STTR) Program

Washington, D.C. — The Department of Energy has selected ten new projects under the Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Program. Taken as a whole, the Department of Energy's (DOE) Fossil Energy (FE) research and development activities help ensure that as the nation strives to reduce its reliance on imported energy sources, new technologies and methodologies will be in place to promote the efficient and environmentally sound use of America's abundant fossil fuels.

The selections will provide research grants in three topic areas — advanced coal research, advanced fossil energy research, and climate control technologies for fossil energy applications — and will be funded at a maximum of \$1,100,000 for 24 months. The projects are managed by the DOE's Office of Fossil Energy and the National Energy Technology Laboratory. The selections mark the 33rd round of the Department's SBIR program. Over 29 years, the DOE SBIR Program has issued 33 Phase I solicitations in SBIR, reviewed approximately 43,216 proposals, and selected 6,094 Phase I projects and 2,167 Phase II projects for funding valued in excess of \$2.07 billion.

A summary of the topic areas and the selected projects include:

TOPIC AREA 1

Advanced Coal Research

Solid Oxide Fuel Cell Cathode Enhancement through Infiltration Techniques

Research was sought that employs infiltration processing techniques to develop enhanced performance solid oxide fuel cell (SOFC) cathodes operating at 650 °C to 850 °C.

- **Materials and Systems Research, Inc., Salt Lake City, UT** — This project provides a viable means for SOFC performance enhancement that furnishes an impetus to commercialization of these highly-efficient environmentally-benign power generation technologies. (DOE Share: \$1,000,000)

TOPIC AREA 2

Advanced Coal Research

Self-Powered (energy harvesting) Wireless Sensors for High Temperature Environments in Fossil energy Power Systems

Grant applications were sought for the development of a highly capable sensor package that can self-power and wirelessly communicate data from the sensor to a suitable hub/node.

- **Mesoscribe Technologies, Inc., Saint James, NY** — 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. (DOE Share: \$ 999,998)

TOPIC AREA 3

Advanced Fossil Energy Research

High Performance Materials for Long Term Fossil Energy Applications

Grant applications were sought for the development of materials technology that enable the deployment of combustion gas turbines, advanced ultra-supercritical steam power plant cycles, and oxy-fueled combustion systems in the next 5 – 15 years.

- **Questek Innovations, LLC, Evanston, IL** — 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 project will utilize a fundamental, computational, Materials by Design[®] approach to design and develop improved, weldable alloys to enable high efficiency power plants. (DOE Share: \$999,920)

TOPIC AREA 4

Advanced Fossil Energy Research

Other

- **Makel Engineering, Inc., Chico, CA** — Novel sensor materials are being developed for the detection of gas species in harsh environments. 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. (DOE Share: \$997,062)

Climate Control Technologies for Fossil Energy Applications

Advanced Solvents for CO₂ Capture from Existing Coal-fired Power Plants

Grant applications were sought to develop solvent based technologies that can substantially lower the cost of CO₂ capture from flue gas produced by existing coal-fired power plants.

- **Green Technology Ltd Co., Louisville, KY** — This project will develop a novel solvent technology to reduce CO₂ emissions at existing coal-fired power plants by at least 90%. (DOE Share: \$1,010,000)

TOPIC AREA 5

Climate Control Technologies for Fossil Energy Applications

CO₂ Utilization for Chemicals and Solid Products

Applications were sought to develop novel technologies for the use of captured CO₂ as a feedstock for chemical synthesis into valuable products.

- **Sustainable Innovations, LLC, Glastonbury, CT** — 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 renewable, this technology forms the basis of a carbon-negative, efficient, industrially scalable system. (DOE Share: \$998,130)

TOPIC AREA 6

Climate Control Technologies for Fossil Energy Applications

Other

- **TDA Research, Inc., Wheat Ridge, CO** — 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. (DOE Share: \$1,000,000)

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