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DOE Funds 18th Round of University Coal Research Grants; **Seeks Innovative Options for Clean, Efficient Coal Use**

Secretary of Energy Federico Peña announced today that 14 university coal research projects will share \$2.8 million in federal funds in a program that combines science education for students with research that can benefit the Nation's energy future.

The 14 projects, selected in a national competition run by the Department of Energy's Office of Fossil Energy, will bring together teachers and students in research teams at 18 different colleges and universities in 14 states. The professor-student teams will explore topics ranging from innovative ways to change coal into new and cleaner forms to several new approaches for reducing smog- and ozone-forming nitrogen oxide pollutants when coal is burned.

"The University Coal Research Program is a textbook example of how DOE can help train tomorrow's scientists while, at the same time, advancing the science of clean energy," Peña said. "It has produced innovations that are now in commercial practice. Equally important, it has provided a new generation of scientists and engineers with valuable hands-on research experience in an academic environment. Today's energy industries are stronger because of the technical concepts and experienced graduates that have come from this investment."

Since the University Coal Research Program began in 1979, more than 1250 students have participated in the research projects and received science or engineering degrees.

This year's competition included special emphasis on innovative solutions for nitrogen oxide - or NOx - emissions. NOx is a particular problem for many urban areas and has been a focus of tightened air quality regulations. It is one of the pollutants responsible for the haze and high levels of ground-level ozone that have caused respiratory health concerns.

Five universities - Brown University, the University of Arizona, the University of Iowa, the University of Pennsylvania, and the University of Cincinnati - will each receive approximately \$200,000 to study ways to reduce NOx pollutants. A sixth - the University of Utah - will team with Brigham Young University and two industrial developers to study NOx controls for multiple burner coal-fired boilers. The university/industry team will receive approximately \$400,000 from DOE with another \$199,079 provided by the industrial partners.

Four universities were selected for research into new catalysts, the chemical compounds that can help convert coal into alternative fuel forms. Clark Atlanta University will team with the University of Tennessee Space Institute and Georgia Institute of Technology in a multi-university project to study how catalysts can improve the conversion of coal into a gaseous fuel. Virginia Polytechnic Institute & State University will team with Penn State University and the Englehard Corporation to explore ways catalysts can be used to coprocess coal and solid wastes. DOE will support each project with a \$400,000 grant with additional funding provided by the research participants. The other two universities proposing advanced catalyst research are the

University of Delaware and North Carolina State University, each of which will receive federal grants of \$200,000.

Four university projects were selected in a category for unique coal concepts that have progressed past the conceptual stage. Michigan Technological University will study a way to use fly ash from coal boilers as a binder for iron ore pellets. The University of Kentucky will examine a way to use electrostatic charges to separate impurities from coal particles in a fluidized bed combustor. Iowa State University will study a way to clean potential pollutants from coal using a technique called "gas agglomeration." The University of Connecticut will examine a new type of ceramic material that could be used in high-temperature, advanced power plants.

The four universities in this category will each receive approximately \$50,000 in federal research funding. Because of the smaller grant amounts, these projects do not require that a student receive compensation for the research, although DOE strongly encourages students to be involved in the research efforts.

The 14 winning proposals were selected from 73 applications received from colleges and universities. The proposals were judged by more than 20 academic, industrial and government coal experts. Actual grant awards are expected to be in place by September. A complete listing of the projects is attached:

LEADING PROFESSOR/INSTITUTION/TITLE	Funding DOE \$	Funding Cost Share \$
Joseph Calo, Brown University , 164 Angell Street, Providence, RI 02912, "Development of High Activity, Coal-Derived, Promoted Catalysts Systems for NOx Reduction at Low Temperatures"	200,000	20,000
Jennifer Sinclair, University of Arizona , P.O. Box 210011, Tucson, AZ 85721-0011, "Optimization of Coal Particle Flow Patterns in Low-NOx Burners"	200,000	40,320
Ravindra Datta, University of Iowa , Iowa City, IA 52242, "Mechanistic Studies and Design of Highly Active Cuprate Catalysts for the Direct Decomposition and Selective Reduction of Nitric Oxide by Hydrocarbons to Nitrogen for Abatement of Stack Emissions"	200,000	
David Pershing, University of Utah , 2202 MEB, Salt Lake City, Utah 84112, "Minimization of NO Emissions from Multi-Burner Coal-Fired Boilers" Teaming with: Brigham Young University, Reaction Engineering International, and DB Riley	400,000	199,079
Noam Lior, University of Pennsylvania , 220 S. 33rd St., Philadelphia, PA 19104, "Development of a Novel Radiatively/Conductively Stabilized Burner for Significant Reduction of NOx Emissions and for Advancing the Modeling	200,000	69,301

and Understanding of Pulverized Coal Combustion and Emissions"

Panagiotis Smirniotis, University of Cincinnati , ML #0171, Department of Chemical Engineering, Cincinnati, OH 45221-0171, "Development of Multi-Task Catalysts for Removal of NOx/Toxic Organic Compounds in Coal Combustion"	199,999	
Yaw Yeboah, Clark Atlanta University , 223 James P. Brawley Drive SW, Atlanta, GA 30314, "Catalytic Coal Gasification Using Eutectic Salt Mixtures" Teaming with: University of Tennessee Space Institute, Georgia Institute of Technology	400,000	133,333
S. Ted Oyama, Virginia Polytechnic Institute & State University , 301 Burruss Hall, Blacksburg, VA 24061, "Novel Supported Bimetallic Carbide Catalysts for Coprocessing of Coal with Waste Materials" Teaming with: Penn State University, Englehard Corporation	400,000	292,655
Michael T. Klein, University of Delaware , 210 Hullihen, Newark, DE 19716, "Study of Solvent and Catalyst Interactions in Direct Coal Liquefaction"	200,000	28,125
George W. Roberts, North Carolina State University , Box 7514, Raleigh, NC 27695-7514, "Promoted Zinc Chromite Catalysts for Higher Alcohol Synthesis in a Slurry Reactor"	199,811	
S.K. Kawatra, Michigan Technological University , 1400 Townsend Drive, Houghton, MI 49931-1295, "High-Carbon Fly-Ash as a Binder for Iron Ore Pellets"	49,990	15,700
Heng Ban, University of Kentucky, Center for Applied Research , 201 Kinkead Hall, Lexington, KY 40506, "Preferential Recycling/Rejection in Circulating Fluidized Bed/Fluidized Bed Combustion Systems Using Triboelectrostatic Separation"	49,995	16,798
Thomas D. Wheelock, Iowa State University , 213 Beardshear Hall, Ames, IA 50011, "Coal Cleaning by Gas Agglomeration"	50,000	20,382
Joseph J. Helble, University of Connecticut , 343 Mansfield Road, Storrs, CT 06269, "Orthorhombic Nanoscale Zirconia as a High-Temperature Ceramic: Development of a Non-Equilibrium Material for Power Applications"	49,925	

Synopses of each project can be obtained by calling DOE's Federal Energy Technology Center at 412/386-6126