

Eight Minority Universities Selected for Fossil Energy Research Grants

College Students to Focus on Projects for Clean, Efficient Use of Coal

Washington, DC — The Department of Energy has awarded grants to eight institutions for energy research through the Historically Black Colleges and Universities and Other Minority Institutions (HBCU) program.

“It is a pleasure to see strong interest and participation in the HBCU program by such a promising group of college students,” said Mark Maddox, principal deputy assistant secretary for fossil energy. “These bright minds are the key to fossil energy research of the future. The opportunity to participate in the program will not only benefit the students’ educational growth but will also help secure our Nation’s energy future.”

Carried out under DOE’s Office of Fossil Energy, the program gives minority students valuable hands-on experience in developing technologies to promote the efficient and environmentally safe use of coal, oil and natural gas. The projects will be managed by DOE’s National Energy Technology Laboratory and awards range from \$20,000 to \$200,000.

The funding opportunity announcement, issued in November 2004, offered financial assistance grants in eight technical topic areas. Five of the grants relate to coal, and three enable faculty and students to conduct exploratory research training as a team.

The selected universities and their projects include the following:

- **Hampton University** — Researchers at Hampton University in Virginia will use a novel absorption process called “phase transitional absorption” to capture carbon dioxide from flue gas. Phase transitional absorption has the advantages of significantly saving on regeneration energy and, with the selection of the proper solvent, significantly increasing the absorption rate. DOE share: \$200,000. Project duration: 36 months.
- **West Virginia State University R&D Corp.** — Scientists will create a catalyst to convert carbon dioxide in the presence of sunlight into a useful fuel such as methane or methanol. The project will employ a previously studied homogeneous catalyst and convert it into a heterogeneous catalyst, allowing easy separation of the conversion product. DOE share: \$199,053. Project duration: 36 months.
- **University of Texas at El Paso** — Researchers from the University of Texas at El Paso and Argonne National Laboratory will explore super-high-temperature (in excess of 1,000 Å°C) alloys and composites from niobium-tungsten-chromium systems. They will examine critical requirements for properties of the alloys—including oxidation resistance,

high-temperature strength and creep resistance, and low-temperature formability capabilities—in an effort to extend power plant application temperatures to 1,300 °C. DOE share: \$200,000. Project duration: 36 months.

- **Colorado State University at Pueblo** — Researchers will explore the viability of combining fly ash and woody biomass waste into a fuel briquette for testing in a laboratory setting and in a coal-fired power plant. The project is also a study of the technical requirements and economic feasibility of establishing a fly-ash/sawdust briquette manufacturing facility. DOE share: \$73,963. Project duration: 12 months.
- **North Carolina A&T State University** — Scientists will develop a composite membrane based on palladium and palladium-silver alloy for hydrogen separation. The researchers will use steam reforming of methanol by equilibrium shift to demonstrate the membrane as a membrane-reactor-separator. The reactor-separator as a fuel processor will provide high-purity hydrogen for use in fuel cells and could be integrated into the fuel cell system for vehicles. DOE share: \$199,996. Project duration: 36 months.
- **University of Houston** — Researchers will use spectroscopy, remote sensing data, and geochemistry data to identify and map chemical and mineralogical alterations in rocks and soils caused by long-term hydrocarbon microseepages in the Patrick Draw area of southwest Wyoming. The information will be used to develop a new methodology for remotely mapping alteration zones produced by hydrocarbon microseepages. This work can be used for mapping buried oil shales, tar sands, or other hydrocarbons. DOE share: \$19,995. Project duration: 12 months.
- **University of Texas at El Paso** — Researchers will study the flame dynamics of syngas for the production of fundamental combustion data to aid the design of fuel-flexible and low-emission gas turbine combustors. The data collected will be essential for the development of advanced computational tools capable of predicting syngas flame characteristics at realistic combustor conditions. DOE share: \$20,000. Project duration: 12 months.
- **California State University, Los Angeles** — Scientists will develop catalysts that will promote important carbon-carbon bond formation reactions under mild conditions using small molecules that can be derived from coal. The processes will be efficient, generating minimum byproducts that would otherwise need to be disposed of or used in other processes. DOE share: \$20,000. Project duration: 12 months.