

DOE - Fossil Energy Techline - Issued on: July 28, 2011

## Four Minority Universities Selected for Fossil Energy Research Grants

July 28, 2011 - 1:00pm

**Washington, DC** - The Department of Energy has selected four universities to receive grants under the department's annual competition for fossil energy research ideas from Historically Black Colleges and Universities and Other Minority Institutions (HBCU/OMI).

"I want to congratulate the winners of this year's competition, and thank them for their hard work," said Charles McConnell, Chief Operating Officer of DOE's Office of Fossil Energy. "Identifying the next generation of leaders and innovators is one of the keys to strengthening our economy and creating the clean energy jobs of tomorrow."

Projects selected will conduct research in computational energy sciences, material sciences, and sensors and controls for use in fossil fuel power plants.

Established in 1984, the HBCU/OMI program was designed to encourage cooperative fossil energy research and development projects between HBCU/OMI and federal agencies. Carried out by the National Energy Technology Laboratory (NETL) 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 fossil fuels.

The following universities and projects were selected:

- **Tuskegee University**, Tuskegee, Ala.--The objective is to address effects of particle rotation in gas-solid flows with the following specific aims: (1) direct impact of particle rotation on the average particle-fluid drag force of a particle suspension at various Reynolds numbers; (2) indirect impact of particle rotation on the drag force through the change in the particle concentration distribution, or the microstructure of a flow; and (3) role of particle rotation in energy dissipation of a particle-fluid system. (DOE share: \$200,000; project duration: 36 months)
- **Florida International University**, Miami, Fla.--The proposed work will develop an accurate drag correlation for gas-solid multiphase flow with clustered particles in fluidized beds using experimental testing and direct numerical simulations (DNS). The experiments will involve utilization of high-speed imaging to capture instantaneous solid volume fraction and particle velocities. (DOE share: \$199,234; project duration: 36 months)
- **Southern University**, Baton Rouge, La.--This project is an integrated method combining high-performance computer (HPC) simulation and experimental validation in material sciences to study the elastic constants, interface bonding, high-temperature microstructures, melting points, diffusion coefficients, and oxidation resistance of the

proposed bond coat and top coat of niobium-based alloys. (DOE share: \$200,000; project duration: 24 months)

- **University of Texas**, El Paso, El Paso, Texas--The objective of the proposed work is to investigate and deliver high-temperature oxygen sensors based on pure and doped gallium oxide ( $\text{Ga}_2\text{O}_3$ ) nanostructures operating at 800 °C and above in a corrosive atmosphere. The experimental approaches and methods are specifically designated to address the issues and technical barriers related to the growth, microstructure-property relationship, and sensor performance evaluation of  $\text{Ga}_2\text{O}_3$ -based oxygen sensors. (DOE share: \$200,000; project duration: 36 months)