



Florida Solar Energy Center and Partners to Receive \$3.99 Million from U.S. Department of Energy for Hydrogen Research

October 21, 2004, Cocoa Florida – In partnership with Science Applications International Corporation (SAIC) of San Diego, CA, the Florida Solar Energy Center (FSEC) and Universidad del Turabo (UT) will receive \$3,999,805 from the U.S. Department of Energy (DOE). The funding will support research on the production of hydrogen by thermochemical water-splitting cycles. This project is the only funded work in Florida and one of 36 research projects that will receive more than \$75 million to support the President's Hydrogen Fuel Initiative announced on October 19 by DOE (http://www.energy.gov/engine/content.do?PUBLIC_ID=16784&BT_CODE=PR_PRESSRELEASES&TT_CODE=PRESSRELEASE).

Florida Solar Energy Center, jointly with the Science Applications International Corporation and Universidad del Turabo, will conduct a multi-year program of research and development leading to the demonstration of a cost-effective water-splitting cycle for hydrogen production using state-of-the-art high-flux solar concentrators. Past research in solar thermochemical cycles has been focused on two-step processes involving metal oxides that utilize only the thermal component of the solar spectrum. The FSEC-SAIC-UT team will develop and demonstrate a hydrogen production technique that splits water by a solar high-temperature process with “quantum boost” from solar photons to stimulate chemical reactions.

The project involves three phases: In Phase 1, FSEC will assess the state-of-the-technology for solar thermochemical hydrogen production based on high-temperature water-splitting cycles. SAIC will work with FSEC to develop a preliminary design of the pilot-scale solar reactor and solar concentrator and to perform economic analysis. The result of the Phase 1 work will be identification of one or two promising cycles/processes and a receiver/reactor and solar concentrator concept that will produce hydrogen at the DOE cost goals. Gas separation and purification issues will be addressed by the researchers at UT. In Phase 2, the SAIC-FSEC team will develop a thermochemical reactor/solar receiver system for use with the selected cycle, test a bench-scale system, and develop a pilot-scale unit using a SAIC dish concentrator. Finally, the Phase 3 work will involve the installation and demonstration of a 50-kWth solar-powered hydrogen production unit in Tempe, Arizona.

The Hydrogen Fuel Initiative projects address major recommendations from the recent National Research Council (NRC) report, "The Hydrogen Economy: Opportunities, Costs, Barriers and R&D Needs," such as the NRC's call for shifting towards more exploratory research on sustainable, carbon-free pathways for hydrogen production.

When private cost share is included, the 36 projects come to a nearly \$100 million investment and involve more than 115 organizations, including academia, industry, and DOE national laboratories. Projects were chosen through a merit-review, competitive solicitation process.

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