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News from the
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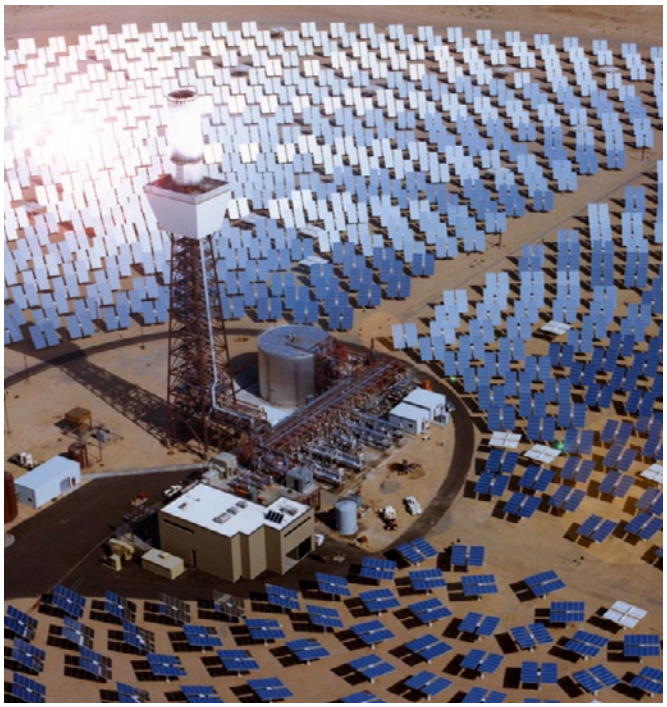
For Immediate Release

SRNL Researchers Awarded $6.3 Million in DOE Solar Grants

AIKEN, SC (October 16, 2012) -- Savannah River National Laboratory (SRNL) researchers have received two separate grant awards as part of the U.S. Department of Energy's (DOE) SunShot Initiative, a collaborative national effort that aims to drive solar energy to be cost-competitive with other energy sources by 2020.

The two awards have a combined value of more than $6.3 million over a three-year period.

SunShot will work to bring down the cost of solar power from photovoltaics and Concentrating Solar Power (CSP) to achieve "grid parity" with other sources. SRNL's research will focus on improving CSP systems that use mirrors to focus sunlight onto receivers that heat a fluid used to generate electricity using a turbine. The SRNL projects include efforts to improve both thermal storage and materials durability.



A concentrating solar power (CSP) array in Barstow, California.

The two SRNL projects are:

Fundamental Corrosion Studies in High-Temperature Molten Salt Systems for Next Generation Concentrated Solar Power Systems

A multi-disciplinary SRNL-led team will investigate corrosion in heat transfer systems at temperatures needed to drive high efficiency power cycles. Concentrating Solar Power (CSP) systems use mirrors to focus sunlight onto receivers to heat fluid that is used to generate electricity using a turbine. Today's state of the art heat transfer fluids are capable of operating at temperatures up to about 550° Centigrade. Temperatures in excess of 650° Centigrade are needed to reach efficiencies greater than 50

percent (which allow CSP plants to capture more energy). The SRNL project focuses on identifying corrosion resistant materials and corrosion prevention strategies that will allow operation at temperatures up to 1000° Centigrade.

SRNL is partnered with the United Technologies Research Center of East Hartford, Connecticut, the University of South Carolina and the University of Alabama, Tuscaloosa. Principal SRNL researchers are Dr. Brenda Garcia-Diaz and Dr. Josh Gray. Other SRNL research team members include Dr. Luke Olson and Dr. Michael Martinez-Rodriguez.

Low-Cost Metal Hydride Energy Storage for Concentrating Solar Power Systems

For a Concentrating Solar Power (CSP) system, Thermal Energy Storage systems offer a range of potential advantages in long-term storage, higher energy densities and adaptability over a wide range of operating conditions. Metal Hydride systems, which have been developed and refined by SRNL for hydrogen storage, have properties that could substantially lower the size and capital cost of many CSP storage systems. A new class of metal hydrides, often referred to as complex metal hydrides, offers much higher capacities and operating temperatures; this project will screen several promising metal hydride candidate materials, ultimately leading to the design, fabrication and evaluation of a prototype metal hydride energy storage system aimed at meeting the SunShot cost and performance targets. SRNL is partnered with Curtin University of Perth, Australia. The SRNL research team is led by Dr. Ragaiy Zidan, Dr. Ted Motyka and Dr. Bruce Hardy.

“Both of these projects show how we apply our world-class materials expertise to meet new national challenges,” said Dr. Terry Michalske, Director of SRNL. “With the SunShot initiative, Secretary of Energy Chu has identified an ambitious and important goal, and it’s exciting to be able to work with our partners on technologies that support our nation’s energy security. This is another step that puts the Enterprise SRS vision into action.”

Inspired by President Kennedy’s “Moon Shot” program that put the first man on the moon, the SunShot Initiative has created new momentum for the solar industry by highlighting the need for American competitiveness in the clean energy race.

Sponsored by DOE’s Office of Environmental Management, SRNL is DOE’s applied research and development national laboratory located at the Savannah River Site. SRNL puts science to work to support DOE and the nation in the areas of environmental stewardship, national security and clean energy. The management and operating contractor for SRNL is Savannah River Nuclear Solutions, LLC, a Fluor Partnership comprised of Fluor, Newport News Nuclear and Honeywell.

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