

SRNL to study applicability of solar cell coatings

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A project under way at the U.S. Department of Energy's Savannah River National Laboratory will study how special coatings that mimic structures found in nature can increase the usefulness of solar energy as a vital part of the nation's future energy strategy.

Working with Peng Jiang of the University of Florida, SRNL's Dr. Marie Kane is evaluating nanostructured coatings to determine the readiness of this new approach for increasing the productivity of [solar cells](#) by reducing reflection. They are studying application of the new coatings for a variety of long-term uses, including commercial and home-based solar cells, as well as harsh environments, such as those encountered by satellites in space. This work is sponsored by the DOE Office of Energy Efficiency and Renewable Energy Nanomanufacturing Program, and funded by the American Recovery and Reinvestment Act (ARRA).

"Solar energy is a tremendous force, but harnessing it for use is not always as simple as it seems," Dr. Kane says. "With most types of solar cells, you lose about one-third of the energy because the sunlight is simply reflected away." There are, however, new engineered coatings that, by mimicking the way a moth's eye absorbs light, reduce unwanted reflection from 30 percent to less than 2 percent on a typical silicon solar cell.

The SRNL project includes durability testing of these nanostructured coatings applied to various solar cell substrates to determine the

feasibility of use in harsh environments, including heat, humidity, and the radiation encountered in outer space.

Nanotechnology, the understanding and control of matter at the atomic or molecular level, has the potential for major improvements in energy applications. Over the past seven years, the U.S. government has invested \$8.3 billion in nanotechnology and made great strides in gaining fundamental knowledge at the nanometer scale.

An important next step in realizing the promise of nanotechnology is to improve production and manufacturing techniques for nanomaterials and nano-enabled products, many of which are "stuck at the lab scale." Projects selected by EERE's Nanomanufacturing Program will advance the state of nanomanufacturing, in part by improving the reliability of nanomaterials production.

Source: DOE/Savannah River National Laboratory

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