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SRNL Wins a Share of \$87 Million in Funding to Support Solar Energy Technologies

Last week, the U.S. Department of Energy announced \$87 million in funding to support solar energy technologies. Of local interest, a Savannah River National Laboratory project, led by Dr. Elise B. Fox in collaboration with SRNL researchers Ann Visser, Nick Bridges, and Josh Gray, was selected for one of these awards. (Follow the link at the end of the announcement, then select "National Lab PV and CSP Projects.") Solar energy is separated into two distinct branches: photovoltaics and solar concentrators. This work was selected to support the development of concentrating solar power (CSP). CSP technology captures the energy of the sun through thermal heat collection and transfer. They operate by concentrating solar radiation onto a receiver tube, which is filled with a heat transfer fluid. The heat transfer fluid absorbs the radiant heat, which is used to create steam at the power turbines. The operational efficiency is limited by the heat transfer fluid's properties.

SRNL, in collaboration with its partners the University of Notre Dame and the University of South Carolina, will focus on the evaluation of nanoparticle enhanced ionic liquids, or NEILs, as heat transfer fluids for the advancement of solar thermal energy. Ionic liquids are low temperature organic molten salts. This work will lead to the development of high temperature heat transfer fluids which will increase the energy and cost efficiency of concentrating solar power plants through increased operation temperatures. If successful, this could result in a 10% - 40% improvement in thermal conductivity.

About this project, Dr. Fox says, "The investigation of NEILs incorporates the use of green chemistry and the rapidly growing field of nanotechnology to develop new materials to support solar energy. Current CSP technology is limited due to the temperature limitation of the current heat transfer fluids. These new materials will help increase the temperature at which CSP can work, which increases the process efficiency."

The Laboratory award is part of the \$117.6 million in American Recovery and Reinvestment Act funding allocated for specific activities within DOE's Solar Energy Technologies Program nationwide, announced in May 2009.