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FOR IMMEDIATE RELEASE

SRNL Awarded Two DOE Contracts Providing Innovations in Chemical Processing and Drying R&D

Aiken, S.C. (February 9, 2021) – Savannah River National Laboratory (SRNL) is working on innovation projects in advanced manufacturing as part of two teams that won \$8.6 million in awards from the Department of Energy Advanced Manufacturing Office (AMO) within the Office of Energy Efficiency and Renewable Energy (EERE).

The partnerships are an example of the collaborations expected to blossom when SRNL begins operating the Advanced Manufacturing Collaborative facility on the campus of the University of South Carolina-Aiken. The laboratory is a leader in contributing to DOE's vision for harvesting the benefits of advanced manufacturing.

SRNL is leading a \$5.4M project with partners Bechtel Corporation, the National Renewable Energy Laboratory, the Induction Food Systems, the RAPID Manufacturing Institute, the Electric Power Research Institute (EPRI) and the University of South Carolina-Columbia that focuses on improving thermocatalytic ethylene production using targeted radio frequency induction heating. Ethylene is one of the world's most widely used chemicals as a feedstock for plastics. The use of electromagnetics to provide heat allows for the use of renewable electricity to power a reactor, while consuming carbon dioxide, resulting in a tremendous reduction in the carbon footprint of the ethylene production process.

"Our project provides a new, innovative approach to reduce the energy required and waste in high temperature processes such as ethane cracking to produce ethylene," said SRNL's EERE Program Manager, Dr. Scott McWhorter. "We incorporate a process that we refer to as electromagnetic thermocatalysis to evenly heat and carry out the ethane to ethylene conversion in the presence of carbon dioxide."

The project looks at the fundamental interaction of electromagnetics with susceptors, catalyst design, preparation and testing while also scaling the device to industry relevant scales. Susceptors are material used to absorb electromagnetic energy and convert it to heat. Additionally, the team will study the costs and benefits of the process, as well as the impact to the grid and to the chemical manufacturing sector.

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The second project led by the University of Minnesota, working with the RAPID Manufacturing Institute and EPRI, was an award of \$3.2M to develop an integrated radio frequency (RF) and ultrasonic (US) drying technology for water removal in paper sheets and other biomaterial applications. SRNL will focus on advancing the understanding of RF and US energies in the drying process and work with the project partners to scale and integrate the technologies.

“The approach could increase efficiency, decrease the processing costs and drying equipment footprint required for paper production and improve the speed of drying paper sheets; bringing innovation to an industry that routinely operates at low margins,” said Dr. Jay Gaillard, the SRNL Principal Investigator working on the project.

“These two projects are an example of how SRNL is supporting the commercial sector with innovative research and development that the public doesn’t necessarily hear about,” said Dr. McWhorter. “We are proud to apply science in coming up with practical, dual-use solutions to the nation’s manufacturing challenges.”

DOE AMO supports R&D projects, R&D consortia, and early-stage technical partnerships with national laboratories, for-profit and nonprofit companies, state and local governments, and universities through competitive, merit reviewed funding opportunities designed to reduce cost and energy use in the manufacturing sectors.

The United States Department of Energy (DOE) Savannah River National Laboratory (SRNL) is a multi-program Federally Funded Research and Development Center that puts science to work to protect the nation by providing practical, cost-effective solutions to the nation’s environmental, nuclear security, nuclear materials management, and energy manufacturing challenges.

[Photo below]

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The Savannah River National Laboratory is one of 17 premiere National Laboratories for the Department of Energy, and is located in Aiken, South Carolina. It works closely with public and private sector entities applying science today for a better tomorrow.

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