

CENTER FOR RESEARCH IN ENERGY AND ENVIRONMENT (CREE)

101 Engineering Research Laboratory Jonathan Kimball (Interim Director)

The mission of the Center for Research in Energy and the Environment (CREE) is to support research in the broad field of energy—including traditional and alternative energy sources, energy storage, and energy delivery and usage—as well as research in biological, chemical, and physical systems involving emerging contaminants in natural and engineered systems. CREE brings together researchers from across the campus—including faculty in both the College of Engineering and Computing and the College of Arts, Sciences, and Business—to address the multi-faceted challenges of maintaining energy security while mitigating human impact on the environment.

Recent projects include a study of nano-engineered catalysts for producing syngas; 3D printing of battery components; extreme fast charging of electric vehicles; phytoforensics for contaminant tracking; and innovative approaches to obtain critical minerals needed for alternative energy. CREE research is supported by a wide range of industry sources as well as federal agencies such as the National Science Foundation, Department of Education, Department of Transportation, Nuclear Regulatory Commission, and the Environmental Protection Agency.

CREE laboratories support advanced research with chemical analysis instruments including high performance liquid chromatography (HPLC), gas chromatography with mass spectrometry (GC-MS), inductively coupled plasma-optical emission spectrometer (ICP-OES) and inductively coupled plasma mass spectrometry (ICP-MS), plus a variety of instruments used for sample preparation. CREE also includes the Center of Excellence for Aerospace Particulate Emissions Research, funded by NASA, FAA, the Department of Defense, and the EPA, with novel instruments tailored specifically to measuring and analyzing airborne particulates. Finally, CREE supports the unique Solar Village and EcoVillage living laboratories, which comprise six small houses with extensive solar, energy storage, and energy efficiency features.