



THE Ames Laboratory
Creating Materials & Energy Solutions

Research Programs

Division of Materials Sciences and Engineering

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Conducts research ranging from grand challenge and discovery research that addresses fundamental limitations in our understanding of complex states of matter to research that guides the design of new materials with promise to impact energy technologies. DMSE performs world-leading research in five fundamental areas: light generation and control; growth, structure and deformation of materials; correlated electrons and magnetism; bioinspired materials; and, solid-state nuclear magnetic resonance. DMSE's portfolio includes applied research to demonstrate and deploy these new materials into innovative technologies. DMSE seeks to transform the way society generates, transmits, stores and utilizes energy.

Division of Chemical and Biological Sciences

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Develops and applies cutting-edge theoretical, computational and experimental methods to the study of surface reaction phenomena, cluster science and nucleation, biological processes and catalysis. World-leading research is conducted

at the interface between homogenous and heterogenous catalysis. Enhanced chemical & biological process imaging & analysis are hallmarks of this division.

Applied Mathematics and Computational Sciences

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Advances the use of scalable computing in scientific and engineering computation. The AMCS program develops new programming paradigms for novel hardware, most recently for accelerators, such as graphical processing unit (GPUs). The AMCS researchers collaborate with others to develop novel methods for adaptive programming, computational quality of service, sparse matrix solvers, and graphical interfaces. AMCS researchers are among the leaders in the development of petascale and exascale computing.

Environmental and Protection Sciences

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Focuses on identifying and developing new technologies that can be applied to national problems that affect the environment, national security and forensic investigations.

Simulation, Modeling and Decision Science

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Builds the algorithms, heuristics, and computational tools needed to model the richness, fullness, and complexity of engineered, human, and natural systems that comprise our world. Then develops the integrated computational environments that enable informed and holistic decision making for these systems. This complex systems-based approach is critical to addressing issues of energy system design, environmental impact, and sustainability.

CONTACT INFORMATION:

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