

UNIVERSITY OF CALIFORNIA, IRVINE

DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING

Is Proud To Host A Seminar By

***“Engineering Materials for Next Generation
Energy Applications: Research roles of
Academia, Government, and Industry”***



DATE

Thursday, November 12, 2026



TIME

2:00 PM – 3:00 PM



LOCATION

McDonnell Douglas
Engineering Auditorium



Dr. James Dorman

Subject Matter Expert &
Program/Project Manager
Department of Energy and
Associate Professor
Louisiana State University

Abstract: James Dorman – General Atomics – Electromagnetic Systems

The development of new and more efficient energy sources relies on scientists and engineers to discover new materials and approaches to control specific properties. The atomic-level precision associated with new synthesis and processing approaches, along with the emergence of artificial intelligence, has accelerated materials discovery. However, the transition from lab to fab is difficult. In this talk, I will focus on the roles of scientists across sectors and the different aspects of a project that are considered as these technologies progress along the technology readiness level (TRL). In the first part of the talk, I will cover my research program in the Chemical Engineering Department at Louisiana State University and the evolution from rare-earth materials and their optical properties to their uses as catalysts. During this time, my group targeted specific hierarchical structures to engineer reaction pathways to prevent undesirable secondary reactions for plastic upcycling and methane reforming. As part of reaction engineering, we compared reaction pathways under thermal and electromagnetic excitation (radio-frequencies) to elucidate how localized heating can be utilized to obtain more desirable products. Next, I will discuss the mission space of a program manager, specifically within the Basic Energy Sciences of the Department of Energy, for the advancement of fundamental and applied research projects. Finally, I will present on our work at General Atomics in advancing technologies within the TRL “valley of death” (TRL 4-6) for next generation energy and domestic security applications. Specifically, I will discuss some of our work on the development of materials for nuclear fusion and fission applications, and the unexpected ways my work as a group leader and program manager are impacting these projects.

Bio: Dr. Dorman is serving as an engineer in the manufacturing division at General Atomics – Electromagnetic Systems (EMS) since 2025. He serves as a subject matter expert and program/project manager for projects transitioning technologies from bench scale to manufacturing. Previously, Dr. Dorman served as the Synthesis and Processing Science Program Manager for the Department of Energy in the Basic Energy Sciences division, where he oversaw university and national laboratory projects aimed at understanding the impact of non-traditional driving forces and processing methods on non-equilibrium and metastable materials. Additionally, Dr. Dorman was an Associate Professor in the Chemical Engineering Department at Louisiana State University. His research has been recognized with several international research awards, including a Fulbright Fellowship and the Alexander von Humboldt Fellowship.

