

DEPARTMENT OF MECHANICAL & AEROSPACE ENGINEERING

WILLIAM MAXWELL REED SEMINAR SERIES

“Multiscale Modeling to Inform TPS Design and Manufacturing”

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Abstract:

The past few years have brought about an increased interest in increasing our fundamental understanding the performance of heat shields for Earth atmospheric flight, largely due to an invigorated interest in redesigning ballistic and hypersonic weapon systems. Over this time period, Sandia has significantly increased its investments in ablation research, including work in fundamental materials manufacturing and characterization, multi-scale multi-physics modeling for prediction material properties and performance, vehicle-scale coupled aerodynamics and material thermal response modeling, diverse ground testing, and lower-cost flight tests. In this talk, I discuss the development of a multi-scale manufacturing and performance modeling framework that we are applying to a variety of woven composites for thermal protection systems. SNL is managed and operated by NTESS under DOE NNSA contract DE-NA0003525.

Speaker Bio:

Scott Roberts is a Distinguished R&D Chemical Engineer in Sandia’s Engineering Sciences Center, where he’s worked for the past 13 years. He has a B.S. and Ph.D. in Chemical Engineering from the University of Kansas and University of Minnesota, respectively, where he studied electro-hydrodynamic instabilities of thin fluid films. Over his career, Scott has developed coupled multi-physics simulation capabilities that span many length scales for a variety of mission applications, spanning batteries to TPS materials. Scott has won an R&D 100 and NNSA defense programs award for his modeling and code development work. He is an active mentor of Ph.D. students and post-docs, is an associate editor for the Journal of Electrochemical Energy Storage and Conversion, and has published 39 journal articles and numerous technical reports.

Date: Monday, April 24, 2023
Place: Zoom <https://uky.zoom.us/j/82173810884>

Time: 4:00 PM EST
Contact: Dr. Jesse Hoagg

Attendance open to all interested persons