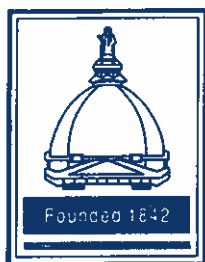


AEROSPACE & MECHANICAL ENGINEERING



2010 COLLOQUIUM 2011 SEMINARS ARE OPEN TO THE PUBLIC

INFORMAL COFFEE PERIOD BEFORE THE SEMINAR IN ROOM 365 FITZPATRICK HALL
UNIVERSITY OF NOTRE DAME, NOTRE DAME, INDIANA 46556

SPEAKER: **Dr. D. Scott Stewart**
Shao Lee Soo Professor
Mechanical Science and Engineering
University of Illinois
Urbana, Illinois

TOPIC: **CONSIDERATION OF THE MESO-SCALE FOR THE DESIGN OF
ADVANCED ENERGETIC AND REACTIVE MATERIALS**

DATE: Tuesday, May 3, 2011

TIME: 3:30 p.m.

PLACE: 138 DeBartolo Hall

ABSTRACT

New types of advanced energetic and reactive materials are being considered whose design will require a more detailed understanding of the meso-scale of the constituents, i.e. on the particle-scale of individual components that make up the new materials. Materials will not simply be manufactured by simple gross mixing techniques, but rather by very specific layering and placing of constituents that control their juxtaposition according to the prescribed fabrication or process rules. How the energetic material particles interact and decompose in synchronicity with their adjacent neighbors, and understanding the subsequent localized behaviors, is key to the development of new design paradigms. The problem is one of complexity and multiple scales and its solution requires detailed material interaction models of first quality, and the means to analyze complex meso-scale interactions in a statistical and meaningful way that can result in manufacturing specifications that will lead to the required functional outputs. The talk will present an overview of modeling and simulation issues and highlight some of the recent work, carried out at the University of Illinois, to model and understand meso-scale dynamics and coherent behaviors in energetic materials.

NOTE: *If you are interested in meeting individually with
Dr. Stewart, please contact Nancy at 631-9024*