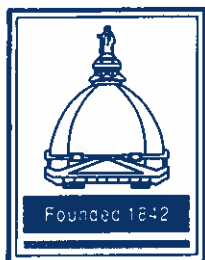


AEROSPACE & MECHANICAL ENGINEERING



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: **Surya R. Kalidindi**
Department of Mechanical Engineering and Mechanics
Drexel University
Philadelphia, Pennsylvania

TOPIC: **NEW RESEARCH TOOLS FOR DESIGN AND PROCESSING
OF HIGH PERFORMANCE MATERIALS**

DATE: Tuesday, March 29, 2011

TIME: 3:30 p.m.

PLACE: 138 DeBartolo Hall

ABSTRACT

This presentation summarizes our recent progress towards the development of a rigorous framework to enable custom design and processing of materials with optimized performance characteristics. Towards these goals, we have developed and validated a number of new experimental, modeling, and computational protocols. These include: (i) data analyses protocols for spherical nanoindentation for establishing mechanical properties of micro-scale constituents and interfaces, (ii) computational protocols for statistically rigorous quantification of microstructure, (iii) algorithms for automated feature for identification in large microstructure datasets and extraction of microstructure metrics, (iv) construction of representative volume elements from ensemble of microstructure datasets, (v) construction of RVEs from partial datasets, (vi) real-time searchable microstructure databases, (vii) new computationally efficient strategies for multi-scale modeling using a database approach, and (viii) inverse solution methodologies for materials design. Some of these recent results will be discussed through selected case studies.

NOTE: *If you are interested in meeting individually with
Surya Kalidindi, please contact Nancy at 631-9024*