

AEROSPACE & MECHANICAL ENGINEERING



**2011 COLLOQUIUM 2012
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**INFORMAL COFFEE PERIOD BEFORE THE SEMINAR IN ROOM 365 FITZPATRICK HALL
UNIVERSITY OF NOTRE DAME, NOTRE DAME, INDIANA 46556**

MIDWEST MECHANICS SEMINAR

- SPEAKER:** **Marc Andre Meyers**
Distinguished Professor of Materials Science
Departments of Mechanical and Aerospace Engineering
And Nanoengineering
University of California, San Diego
La Jolla, California
- TOPIC:** **BIOLOGICAL MATERIALS AND MECHANICS:
AN OVERVIEW**
- DATE:** Tuesday, October 25, 2011
- TIME:** 3:30 p.m.
- PLACE:** 138 DeBartolo Hall

ABSTRACT

The approach used by Materials Science and Engineering is revealing new aspects in the structure and properties of biological materials. The integration of advanced characterization, mechanical testing, and modeling methods can rationalize heretofore unexplained aspects of these structures. The nascent areas of Biological Materials Science and Mechanobiology encompass three thrusts:

- Biological (or natural) materials: materials that comprise cells, extracellular material, organs, and organisms.
- Biomaterials: synthetic materials used to correct, repair, or supplement natural functions in organisms.
- Bioinspired design: this area encompasses the materials and structures inspired in biological systems and/or functions.

We demonstrate the power of this methodology with examples from our research: biomineralization and toughness of shells, avian beaks and feathers, fish scales, and osteoderms. We illustrate bioinspired applications with a few selected applications: Velcro, an Al_2O_3 -PMMA composite inspired on the abalone shell, and synthetic attachment devices inspired on the gecko.

NOTE: *If you are interested in meeting individually with
Prof. Meyers please contact Evelyn at 631-5431.*