

SCHOOL OF MECHANICAL & MATERIALS ENGINEERING

GRADUATE SEMINAR SERIES

Bio-inspired manufacturing for advanced applications and social entrepreneurship

Presented by Ajay P. Malshe, Mechanical Engineering, University of Arkansas

Abstract

Over millions of years, biological subjects have been in continuous combat with extreme environmental conditions. The fittest have survived through continuous evolution, an ongoing process. In particular, biological systems, which are the active interfaces between subjects and the environment, are being evolved to a higher state of intelligent functionality. These systems became more efficient by using combinations of available materials along with unique set of physical and chemical strategies. Noteworthy physical strategies include features such as texturing and structure, and chemical strategies such as sensing and actuation. These strategies collectively enable functional systems to deliver extraordinary adhesion, hydrophobicity, multispectral response, energy scavenging, thermal regulation, antibiofouling, and other advanced functions. Manufacturing industries have been intrigued with such biological strategies in the Nature in order to learn clever design architectures and implement those architectures to impart advanced functionalities into manufactured products. This talk delivers a critical review of such inspiring biological strategies and their nonbiological product analogs, where manufacturing science and engineering have adopted such advanced functional architectures. Seminar will also introduce opportunities for social innovations and entrepreneurship for students and faculty.

Biography

Distinguished Professor of Mechanical Engineering and the 21st Century Endowed Chair Professor of Materials, Manufacturing and System Integration, Department of Mechanical Engineering, University of Arkansas, Fayetteville, AR. Professor Malshe's twenty-two years of collective leadership experience spans across various facets of engineering, science, and management. As a scientist, engineer, educator, entrepreneur, executive and artist his interdisciplinary research has focused on the manufacturing, materials, data science and system integration. He has more than 220 peer reviewed publications, more than 20 patents where related products are used across broad industrial sectors, he has trained more than 60 post-doctoral/doctoral/master students and more than 1250 undergraduate students. Among his awards and honors, he is an elected member of the U.S. National Academy of Engineering (NAE).

Thursday, October 11, 2018

11:00am to Noon

ETRL room 101

Meet the speaker before the seminar in
ETRL room 119, 10:30am to 10:50am.
Light refreshments will be served.



The complete schedule of the MME Seminar Series can be found at <https://mme.wsu.edu/events/>.

