LEARNING FROM NATURE: STRUCTURAL BIOLOGICAL MATERIALS AND BIOINSPIRED DESIGN STRATEGIES

THURSDAY, NOVEMBER 15 | 4 P.M. | HILL HALL 202

Structural biological materials such as mollusk shells, bone, antler, and animal horns are lightweight yet strong and fracture resistant. These natural materials offer a plethora of ideas that can be used to fabricate bioinspired synthetic materials. The challenge is to identify methods to duplicate the arrangement of the internal structures and use engineering materials, not available in the natural world, to create new materials with enhanced mechanical properties. This presentation will discuss how natural materials achieve extraordinary mechanical properties and the new methods developed to form bioinspired materials.

JOANNA McKITTRICK
UNIVERSITY OF CALIFORNIA-SAN DIEGO

Joanna McKittrick is a Professor of Mechanical and Aerospace Engineering and the Materials Science and Engineering Program at the University of California, San Diego since 1988. She is co-director of the Center for Biological, Bioinspired and Biomaterials. She received her B.S. in Mechanical Engineering from the University of Colorado, a M.S. in Materials Science and Engineering from Northwestern University and a Ph.D. from the MIT.

Her research is in two main areas – luminescent materials and biological materials science. For the luminescence research, she investigates phosphors for solid-state LED lighting, focusing on the discovery of new compositions, increasing the quantum efficiency and improving the thermal and chemical stability. For the biological materials research, she investigates the structure/property relationships in natural materials and translates this knowledge into functional bioinspired designs.