SCHOOL OF CHEMICAL, BIOLOGICAL & MATERIALS ENGINEERING

And

UNIVERSITY OF OKLAHOMA BIOENGINEERING CENTER

100 E. Boyd, Sarkeys Energy Center, T-335 405-325-5811 The University of Oklahoma Norman, Oklahoma 2009 – 2010 Seminar Series

DR. BRIAN WARDLE

ASSOCIATE PROFESSOR
DIRECTOR, NANO-ENGINEERED COMPOSITE AEROSPACE STRUCTURES (NECST) CONSORTIUM
TECHNOLOGY LABORATORY FOR ADVANCED MATERIALS AND STRUCTURES (TELAMS)
DEPARTMENT OF AERONATICS AND ASTRONAUTICS
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CAMBRIDGE, MASSACHUSETTS

Will present a seminar on

"LITERALLY BIG NANO: BULK NANOSTRUCTURED MATERIALS FOR AEROSPACE AND INFRASTRUCTURE APPLICATIONS"

Bulk nanostructured materials pose many challenges both in terms of characterization, design, processing, and scaling. This presentation will focus on recent work developing nano-engineered advanced composites for aerospace applications. These hybrid composites employ aligned carbon nanotubes (CNTs) to enhance laminate-level multifunctional properties of existing aerospace-grade advanced composites. Intrinsic and scale-dependent characteristics of the CNTs are used to engineer laminate-level property improvements: interlaminar shear strength, toughness, and electrical conductivity results will be discussed and the underlying mechanisms elucidated. Fundamental studies on polymer-CNT interactions led to the development of a combined top-down and bottom-up fabrication methodology that addresses several of the key issues (agglomeration, viscosity, CNT wetting, scale, alignment) that have frustrated the use of CNTs in nanocomposites and nano-engineered composites. Current research to answer key outstanding "questions of the day" related to CNT contributions to composite properties are discussed, including a novel experimental platform to investigate nanoscale interactions in a well-controlled manner. New research directions stemming from the ongoing work will be suggested.

THURSDAY, OCTOBER 22, 2009 COOKIES AND COFFEE -- 1:30 P.M.

SEMINAR -- 1:45 P.M. – Different time SARKEYS ENERGY CENTER, ROOM N-202A – Different room

THIS IS A REQUIRED SEMINAR FOR CHE 5971