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

SPEAKER: **Professor Albert To**
Mechanical Engineering and Materials Science
University of Pittsburgh
Pittsburgh, Pennsylvania

TOPIC: **MODELING RANDOM COMPLEX-SHAPED CARBON NANOSTRUCTURES**

DATE: Tuesday, February 21, 2012

TIME: 3:30 p.m.

PLACE: 138 DeBartolo Hall

ABSTRACT

Carbon nanotube (CNT) has extraordinary thermal, mechanical, and electrical properties in one dimension. Translating these 1D properties to 3 dimensions require joining CNTs together via covalently-bonded junctions into a 3D network. In this talk, we present our modeling work in using heat welding together with mechanical vibration to enable junction to form between pristine single-walled CNTs. It is shown that the temperature required to form junctions is much lower with the addition of mechanical vibration. We will also present a random algorithm devised to generate the random network of CNTs and also a robust method for generating atomistic models of complex-shaped carbon graphitic structures from their computer-aided designed (CAD) models. The proposed method builds on fast, well-developed mesh generation technology for finite element (FE) analysis, and thus the method inherits two advantages from FE mesh generation methods: 1) high efficiency and 2) adaptivity to highly complex geometry.

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