

Semi-Plenary Lecture



Professor K.M. Liew

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Title: Modeling and Simulations in Nanomechanics

In the past decade, nanomechanics has been emerging as a new researching domain that excited a considerable interest in the condensed-matter and materials research communities. Due to the difficulty in the theoretical and experimental investigations of nanostructures, numerical modeling and simulation play an important role in capturing their fine behavior and revealing their delicate properties. The particularity of nanostructure brings a challenge to the conventional computational method. For example, a simple nanostructure, such as a MWCNT, involves thousands of atoms that lead to too many degrees of freedom, and atom-based modeling method, such as molecular dynamic, consumes a huge amount of computational time. This fact also stimulated the exploration and development of the new computational techniques in the computational nanomechanics, such as continuum modeling and multiscale methods. This talk will address the applications of continuum and molecular dynamics models for modeling of carbon nanotubes. Numerical discretization of these continuum models and the developed multiscale computational scheme will be discussed.

Brief Biography:

K. M. Liew jointed the City University of Hong Kong in 2005 as a Chair Professor of Building and Construction and the Director of Centre for Applied Computing and Interactive Media. He was formerly a tenured professor at Nanyang Technological University, Singapore. His research activities encompass nano-mechanics, materials modeling, multi-scale analysis, and large-scale simulation and visualization. In recent years, he and his research group have been actively involved in the theoretical research of nanomaterials, in particular CNTs, by employing molecular dynamics and continuum approaches, and multiscale method. He has published over 400 journal articles. He is a Fellow of the ASME and IMechE. He is cited by the Institute for Scientific Information (ISI) as one of the highly cited researchers in engineering.