STEVENS INSTITUTE of TECHNOLOGY
THE INNOVATION UNIVERSITY

University Seminar Series

Sponsored by Department of Mechanical Engineering

From Conventional Mechanics to Protein Dynamics and Nanomechanical Sensing

By Prof. Sungsoo Na
Department of Mechanical Engineering
Korea University, Seoul, Korea

ABSTRACT: In this talk, I will present how conventional mechanics, structural dynamics, and vibration can be applied to protein dynamics and nanomechanical sensing methodology. Understanding protein dynamics is prerequisite for investigating the biological functions of proteins. Protein Dynamics has been understood based on atomistic model for protein structure. However, atomistic model has been computationally limited for large protein dynamics. In first part of talk, how to computationally solve the large protein dynamics problem by implementing reduction methods as condensation, component mode synthesis (CMS) method, and synergistic combination of two methods will be addressed. In second part of talk, the label-free detection mechanisms of those toxic materials are presented. The detection mechanism is based on the measurement of the resonance frequency shift arisen from the binding of the target materials on DNA immobilized resonator. Moreover, the DNA immobilized resonator enables the detection in real tap water. This work shows the potential of DNA immobilized resonator as the toxic nano-material screening tool.

BIOGRAPHY: Dr. Na is a Professor in the Department of Mechanical Engineering at Korea University in Seoul, Korea. He received his B.S. and M.S. degrees from Korea University, and Ph.D. degree in Engineering Science and Mechanics from VA Tech in 1997. His research interest is in the areas of protein dynamics and mechanics, nanoscale sensing method. His research program has been funded by National Research Foundation of Korea funded by the Ministry of Science and ICT & Future Planning.

EVENT DETAILS

DATE:
October 29, 2014

TIME:
1:00 PM

LOCATION:
Carnegie 315
Stevens Institute of Technology

ATTENDANCE:
Public