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THE DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE, ECE DIVISION

Presents the Spring 2013 EECS Seminar Series

Dr. Kidong Park

University of Illinois at Urbana-Champaign

"MEMS Technologies for Mechanical Characterization of Adherent Cells"

Monday, April 22, 2013 • 2:00 p.m. • HEC 450

Abstract

MEMS (micro electromechanical system) is a highly miniaturized electromechanical device with a typical dimension varying from a few to a few hundred μm. Due to its high level of precision and parallelism, MEMS has been actively studied as a breakthrough solution in life science and medicine. Recent studies in the field of mechanobiology have revealed dynamic and complicated interactions between cell mechanics and a wide variety of cellular processes. To investigate the cellular biomechanics, MEMS technologies have been widely used to characterize fundamental mechanical properties of cells on a single cell level.

This talk will focus on MEMS-based approaches for the mechanical characterization of adherent cells. A unique MEMS mass sensor with a spatially uniform mass sensitivity was developed and used to measure the mass, the growth rate, and the stiffness of the target cells on a single cell level. Besides, current research efforts to develop an interferometric technique for high-throughput single cell stiffness characterization will be presented.

Biography

Kidong Park received the B.S. degree in electrical engineering from Seoul National University, Seoul, South Korea, in 1999, and the Ph.D. degree in electrical and computer engineering from Purdue University, West Lafayette, IN, in 2009. From 2009 to 2010, he was a Postdoctoral Research Associate with the Micro and Nanotechnology Laboratory, University of Illinois at Urbana–Champaign (UIUC), Urbana. From January 2011 to October 2011, he was a Senior Engineer with Samsung Electronics. He is currently a Postdoctoral Research Associate at the Micro and Nanotechnology Laboratory, UIUC. His current research interests include development and application of MEMS and microfluidic devices for life science and medicine with emphasis on cellular biomechanics and single cell analysis.