



**The Chinese University of Hong Kong
Joint Biomedical Engineering & Mechanical and Automation Engineering
Seminar**

Time: 2:30pm-3:30pm, 13 Feb 2017 (Mon)

Venue: Rm. 222, Ho Sin Hang Engineering Building, CUHK



**Microvascular networks in microfluidic systems and
their role in modeling metastatic cancer**

Prof. Roger D. Kamm

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Mechanical Engineering,
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Abstract

Over the past 10 years, our ability to realistically model the critical biological steps in disease have dramatically improved, due in part to the advances in microfluidic technologies. In particular, the capabilities to create realistic 3D microenvironments, including microvascular perfusion, have led to in vitro models for disease that offer considerable advantages over in vivo experiments in terms of control and the ability to image critical phenomena. In this talk, I will present some recent advances in modeling the successive stages of metastatic cancer, especially in the context of immunotherapies and organ-specific models of metastasis. I will focus on our recent work using microfluidic assays to investigate the adhesion of circulating tumor cells to the walls of a blood vessel, transmigration across the endothelium, and proliferation in the host extracellular matrix.

Biography

A primary objective of Kamm's research has been the application of fundamentals in fluid and solid mechanics to better understand essential biological and physiological phenomena. Past studies have addressed issues in the respiratory, ocular and cardiovascular systems. More recently, his attention has focused on the molecular mechanisms of cellular force sensation, cell population dynamics, and the development of new microfluidic platforms for the study of cell-cell and cell-matrix interactions, especially in the context of metastatic cancer. Recognition for his contributions is reflected in Kamm's election as Fellow to AIMBE, ASME, BMES, AAAS and the IFMBE. He is also the 2010 recipient of the ASME Lissner Medal and the 2015 recipient of the Huiskes Medal, both for lifetime achievements, and is a member of the National Academy of Medicine.

**** ALL ARE WELCOME ****