Purdue University

School of Materials Engineering

Presents

Date: Monday, April 22, 2013

Time: 3:30 Refreshments
3:45 Seminar

Place: ARMS 1010

PURDUE MATERIALS ENGINEERING

Infinite Possibilities

Professor Christopher Yip

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Departments of Chemical Engineering,
Applied Chemistry and Biochemistry,
Institute of Biomaterials and Biomedical Engineering,
Donnelly Centre for Cellular and Biomolecular Research

Controlling Molecular Self-Assembly: How New Combinatorial Approaches are Providing Unique Insights into Cellular and Molecular Dynamics in Living Systems

ABSTRACT

High resolution combinatorial microscopies are providing unique insights into the dynamics of molecular self-assembly, including the role of surfaces in controlling nucleation, growth, orientation, and polymorph selectivity. Our recent work has focused on both the development and application of these tools for the study of self-assembly both in the context of small molecules but more recently in the realm of molecular and cellular biophysics. I will describe how our investigation of the templated growth of J-aggregates at model surfaces led to their application as an in situ reporter of organelle maturation and chemical conversion in live cells. I will further present the results of recent work that exploited our super-resolution combinatorial microscopy platform to map local order and dynamics of molecular thin films, including supported lipid bilayers, and the dynamics of molecular self-association in live cells.

SHORT BIO

Professor Christopher Yip is a Full Professor in the Departments of Chemical Engineering and Applied Chemistry, Biochemistry, the Institute of Biomaterials and Biomedical Engineering, and the Donnelly Centre for Cellular and Biomolecular Research at the University of Toronto. He obtained his PhD in Chemical Engineering from the University of Minnesota in 1996, and joined the University of Toronto in 1997 after a one-year PDF at Eli Lilly and Company in Indianapolis. He held a Canada Research Chair from 2000-2010 and was the Interim Director of the Institute of Biomaterials and Biomedical Engineering from 2007-2008. He has published over 70 papers, and his research programs are supported by both NSERC and CIHR. He serves on the Institute Advisory Board for the Institute of Genetics for the Canadian Institutes of Health Research (CIHR), is the current Section Chair for the Chemical and Materials Engineering Discovery Grant panel at NSERC. and is a standing panel member on the Biophysics of Neural Systems Study Section for NIH.