

# Biomedical Discussion Group

## Multiphoton-based platform technology for reconstitution of cell niche



**Monday May 6, 2019**  
**1-2 pm, Engineering 7 Room 4022 (E7-4022)**

### Dr. Barbara P Chan

Professor, Biomedical Engineering Programme  
Department of Mechanical Engineering  
Tissue Engineering Lab  
University of Hong Kong

#### Abstract:

Cells reside in a complex microenvironment or niche in tissues, sustaining their lifelong maintenance and determining their pattern of differentiation. Major cell niche factors include neighbor cells, soluble factors, extracellular matrix, topological features and mechanical information. These niche factors interact among one another to present important signals to living cells. In vitro reconstitution of a biomimetic cell niche with individually controlled niche factors is critical for investigating the interactions between cells and their microenvironment. Our team has established a multiphoton-based 3D microprinting technology, based on photochemical crosslinking of biomolecules, as a free-form microfabrication platform. In this talk, the technical capability of the multiphoton microfabrication platform in fabricating complex protein microstructures and micropatterns with precisely and spatially controlled topological features, mechanical properties, extracellular matrix niche and soluble factor niche, decoupling various niche factors and the potential applications will be discussed.

#### Bio:

Dr. Barbara Chan obtained her B.Sc. in Biochemistry and Ph.D. in Surgical Science Division of the Faculty of Medicine at the Chinese University of Hong Kong. She received her postdoctoral fellowship training from the Wellman Laboratories for Photomedicine, at the Massachusetts General Hospital, Harvard Medical School. Dr. Chan was recruited to the University of Hong Kong in 2003 and served as one of the core members in the Biomedical Engineering program. Her research interests include tissue engineering and regenerative medicine, natural biomaterials, stem cells, mechanoregulation, multiphoton microfabrication and laser medicine.

*Keywords: Tissue engineering and regeneration, Biosurgery, laser medicine, Mechanoregulation, Stem cells and biomaterial interactions*

This event is supported by the Chemical Engineering Department and CBB



**Refreshments available**

**RSVP via Eventbrite is required**

**[cbb.uwaterloo.ca/events](http://cbb.uwaterloo.ca/events)**

