Department of Biomedical Sciences and Department of Biomedical Engineering, CityU

presents

Title: Probing Reversible Noncovalent Molecular Interactions toward Developing Multifunctional Soft Materials for Bioengineering Applications

Speaker: Professor Hongbo Zeng,
Department of Chemical and Materials Engineering, University of Alberta, Canada

Date: 9 August 2023 (Wednesday)

Time: 2:30pm – 4:00pm

Venue: LT-12, Mr & Mrs Ho Chun Hung Lecture Theatre, Level 4, YEUNG Building, CityU

Brief biography:

Hongbo Zeng is a Professor in the Department of Chemical and Materials Engineering at the University of Alberta, a Fellow of the Canadian Academy of Engineering, a Member of the Royal Society of Canada, a Tier 1 Canada Research Chair, and a fellow of the Royal Society of Chemistry. He received his BSc and MSc at Tsinghua University and PhD at the University of California, Santa Barbara. Zeng's research interests are in colloid and interface science, functional materials & nanotechnology, with a special focus on the intermolecular and surface interactions in soft materials and engineering processes. He has published one book and over 470 peer-reviewed journal articles. His work has been recognized by many awards, such as the CSChE Innovation Award of the Chemical Institute of Canada, Killam Professorship, the NSERC Steacie Fellowship (presented by The Governor General of Canada) and the van der Waals Prize. He serves as an Editor of the journal *Advances in Colloid and Interface Science*.

Abstract:

The intermolecular interactions and surface characteristics of materials significantly determine their physicochemical properties and functionalities. Much effort has been devoted to characterizing the intermolecular and surface interactions (e.g., adhesion), especially noncovalent interactions, in soft materials (e.g., surfactants, polymers, biopolymers) and biological systems. In this talk, the basics of intermolecular and surface forces and some commonly used nanomechanical techniques will be briefly introduced. The recent progress on how we applied nanomechanical tools for quantifying the intermolecular and surface interactions of polymer/biopolymer materials and biological systems (e.g., wet adhesion of marine mussels) will be presented. Our recent studies have systematically characterized the intermolecular and surface interaction mechanisms of mussel adhesives. The fundamental interaction mechanisms elucidated (e.g., biopolymer-metal ion coordination, cation-π, anion-π, hydrophobic and hydrogen bonding interactions in aqueous media) have been further applied for developing multifunctional soft materials (e.g., self-healing polymers/hydrogels, wet adhesives) with various bioengineering applications. These findings provide useful insights into biological self-assembly processes and new approaches to develop multifunctional soft materials or surfaces via tunable noncovalent interactions.

ALL ARE WELCOME!

Enquiries:
Prof Xi Yao, tel: 3442 4829; Ms Irene Wong, tel: 3442 4707