The Chinese University of Hong Kong
Department of Chemistry
Research Seminar Series

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

Title: *Developing Multifunctional Soft Materials and Surfaces Through Tunable Intermolecular Interactions*

Date: 21 May 2021 (Friday)

Time: 10:30 a.m.

Join Zoom Meeting:

Meeting ID: 979 6317 8161
Passcode: 283025

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Contact Person:
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Developing Multifunctional Soft Materials and Surfaces Through Tunable Intermolecular Interactions

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The intermolecular interactions and surface characteristics of materials significantly determine their physicochemical properties and functionalities. Characterizing the intermolecular and surface interaction mechanisms (e.g., adhesion) in soft materials (e.g., surfactants, polymers, biopolymers) and biological systems (e.g., adsorption of proteins) has attracted much research interest. In this talk, the basics of intermolecular and surface forces and some commonly used nanomechanical techniques, such as surface forces apparatus and atomic force microscope coupled with drop/bubble probe, will be briefly introduced. The recent progress on how we applied these advanced nanomechanical techniques for quantifying the intermolecular and surface interactions of polymer/biopolymer materials and biological systems (e.g., wet adhesion of marine mussel) will be presented. The fundamental interaction mechanisms elucidated (e.g., biopolymer-metal ion coordination, cation-π, anion-π, and hydrogen bonding interactions) have been further applied for developing advanced multifunctional soft materials (e.g., self-healing polymers/hydrogels/coacervates, wet adhesives) with various engineering and bioengineering applications.

Short Bio

Hongbo Zeng is a Professor in the Department of Chemical and Materials Engineering at the University of Alberta, a Tier 1 Canada Research Chair in intermolecular forces and interfacial science, a Fellow of Canadian Academy of Engineering, and a Member of the Royal Society of Canada's College of New Scholars. 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 matter (e.g., polymers, biopolymers, biological systems) and engineering processes. He has published over 350 peer-reviewed journal articles on related research topics. He has received many awards for his work, such as the Petro-Canada Young Innovator Award, Martha Cook Piper Research Prize, Engineering Research Award, Engineering Undergraduate Teaching Award and Great Supervisor Award of the University of Alberta, The Canadian Journal of Chemical Engineering Lectureship Award, International Award for Outstanding Young Chemical Engineer, CSCHE Innovation Award of The Chemical Institute of Canada, and the NSERC Steacie Memorial Fellowship.