CityU
Department of Biomedical Engineering
香港城市大學
City University of Hong Kong

Self-Assembled Biomaterials

Dr. Bing Xu

Department of Chemistry, Brandeis University
Email: bxu@brandeis.edu
URL: http://people.brandeis.edu/~bxu/

Date: 5 June 2024
Time: 10:00 am
Venue: Peter Ho Lecture Theature (LT-10)
Yeung Kin Man Academic Building

Abstract

In this talk, we will discuss the use of self-assembly to generate biomaterials for various applications. Particularly, we will show three examples. The first case focuses on cell spheroid creation by transcytotic intercellular gelation, a study that couples transcytosis and morphological transformation of peptide assemblies for regenerative medicine and tissue engineering. The second example highlights the cryo-EM structures of nanofibers formed through self-assembly of intrinsically disordered peptides (IDPs), particularly aromatic motif-capped phosphorylated short IDPs. The last case centers on the self-assembly of unnatural peptides, which deplete endogenous cholesterol from cell membranes. We intend to demonstrate the power of molecular design in self-assembled biomaterials.

Biography

After receiving his BS and MS degrees from Nanjing University in 1987 and 1990, respectively, Bing Xu obtained his PhD in 1996 from the University of Pennsylvania. Before starting his independent research at the Hong Kong University of Science and Technology (HKUST) in August 2000, he was an NIH postdoctoral fellow at Harvard University. Dr. Xu was a tenured professor at HKUST until July 2008 before he returned to Boston. Currently, he is a professor in the Department of Chemistry at Brandeis University. He has made pioneering contributions to metallogels, multifunctional magnetic nanoparticles, self-delivery drugs, supramolecular hydrogels, and enzyme-instructed self-assembly for in-situ anticancer nanomedicine. His current research focuses on the applications of enzymatic noncovalent synthesis in materials, biology, and medicine.