Department of Biomedical Sciences

presents a Seminar

Bioinspired Multi-Scale Pore/Channel Systems

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Date : 3 August 2023 (Thursday)

Time : 14:30 - 16:00

Venue : Y5305 (Mr & Mrs Danny Yung Classroom), 5/F Yeung Kin Man Academic Building, CityU

Abstract

Both “Pore” and “Channel” have a wide range of significant applications on different scales. For example, pipelines which are commonly used in the chemical industry, food industry, agriculture, and energy-petroleum transportation, can be treated as macro-scale channels. Another example of micro-scale pores is “liquid gating technology”, which has a great impact in the areas of chemical synthesis, biological analysis, optics and information technology, etc. It utilizes the capillary-stabilized functional liquid as a pressure-driven, reversible, and reconfigurable gate to fill and seal the pores in the closed state and create completely liquid-lined pores in the open state under pressure changes. Recently, it has already become a reality by design of various smart materials by responsive design of the porous solid phase and dynamic liquid phase, which expand the basic scientific issues of the traditional membrane materials from the solid-liquid/gas interface to the solid-liquid-liquid/gas interface and have found applications in chemistry, energy, environmental, and biomedical related interdisciplinary fields. For nano-scale systems, we design and prepare smart symmetric/asymmetric nanochannels by physicochemical design of responsive porous materials and realize the regulation of mass transport in the nanoconfined spaces and focus the new research directions on bioinspired nanofluidic iontronics.

Biography

Xu Hou completed his Ph.D. (2011) at National Center for Nanoscience and Technology, China and did postdoctoral research at Harvard University (2012-2015). He joined Xiamen University in 2016. He became a Chief Scientist of National Key R&D Program (Nanoscience) of China in 2018, and an awardee of the National Science Fund for Distinguished Young Scholars in 2020. Until now, Xu has published 2 Books as the editor-in-chief and more than 100 research papers such as Nature, Science, Nat. Rev. Mater., Nat. Comm., Sci. Adv., Chem. Soc. Rev., Angew. Chem. Int. Ed., Adv. Mater., etc. as the first or corresponding author. Due to his outstanding academic research achievements, he was awarded the 9th Chinese Chemical Society & UK Royal Society of Chemistry Young Chemist Award (2023), the XPLORER Prize (2022), the Membranes 2021 Young Investigator Award (2021), the National Scientific Innovation and Advancement Award (2020), Young Investigator Award of Colloid and Interface Chemistry (2019), Chinese Chemical Society Award for Outstanding Young Chemist (2018), etc. and selected into the China Top Ten Emerging Technological Figures (2022). In 2020, his leading research field "liquid gating technology" was selected as the 2020 Top Ten Emerging Technologies in Chemistry by International Union of Pure and Applied Chemistry (IUPAC).

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All are welcome!