Furukawa Group Seminar

Date

March 31st, 2025
10:30–12:00

Venue

Kyoto University, KUIAS
(iCeMS Main Building)

2F Seminar Room
(#A207)

Registration

https://forms.gle/NrMFKayD5SPSNH5XA

Contact

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Synthesis of Ordered Porous Membranes for Gas and Liquid Separations

Prof. Zhiping Lai

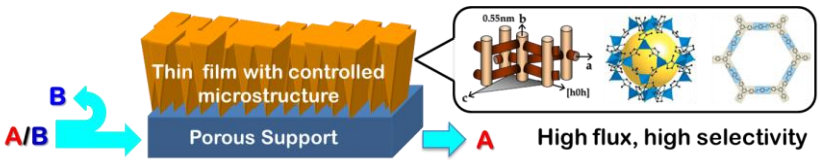
King Abdullah University of Science and Technology (KAUST), Saudi Arabia

Chemistry and Chemical Engineering program

Abstract

Membrane technology offers a transformative approach in separation science, capable of reducing energy consumption by up to 90% compared to traditional separation and purification methods such as distillation. This exceptional efficiency positions membrane technology as a groundbreaking advancement in Chemical Engineering, promising significant improvements to existing infrastructure across diverse sectors, including petrochemicals, water desalination, environmental remediation, and numerous other separation processes.

Membranes possessing an ordered porous structure demonstrate optimal microstructural characteristics, enhancing both permeability and selectivity. However, fabricating such membranes remains technically challenging. In this talk, I will present several innovative methods developed by our research group over the past two decades for the continuous preparation of defect-free membranes derived from metal-organic frameworks (MOFs) and covalent organic frameworks (COFs). I will discuss strategies employed to fine-tune membrane microstructures, thereby achieving superior performance. Additionally, I will highlight some successful applications of these membranes in gas and liquid separation processes.



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