先端膜工学研究センター
特別講演会

Engineering polymers of intrinsic microporosity for membrane-based molecular separation

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Separation and purification are essential in the chemical industries, which currently account for 15% of global energy consumption. Membrane separation would be a key enabler for the decarbonization of the chemical industries beyond the energy-intensive thermal processes. However, conventional low-free-volume polymers suffer from limited separation performance due to the inherent trade-off between permeability and selectivity. In this context, polymers of intrinsic microporosity (PIMs) have emerged as promising next-generation membrane materials for molecular separation, offering ultrahigh permeability due to their abundant micropores (<2 nm) and solution processability for scalable manufacturing. This talk will present the rational design and synthesis of PIM-based membranes for the efficient separation of molecular mixtures. Synthetic strategies for both linear and crosslinked PIMs will be discussed in the context of step-growth polymerization and interfacial polymerization, respectively. The potential applications of PIM-based membranes in energy and environmental fields will be highlighted, with a focus on CO_2 capture, crude oil separation, and redox flow batteries.

日時：2026年7月1日（水）15:00-16:00 （日本時間）

形式: ハイブリッド 神戸大学大学院工学研究科会議室（C4 301）
または オンライン（Zoom）
開催言語：英語
参加費：無料
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