CHEMICAL & BIOMEDICAL ENGINEERING GRAD STUDENT SEMINAR

Mass Transport in Polymers for Gas Separation Membranes and Transport Applications

Friday, September 4
11:00 AM
COE B221

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ABSTRACT: The transition toward a low-carbon economy requires the development of sustainable technologies for gas separation, carbon management, and hydrogen infrastructures. In this context, polymeric materials offer versatile and energy-efficient solutions for applications ranging from membrane-based gas separations to barrier systems for fluid transport and storage. In all these technologies, the performance of the material is governed by the transport of small molecules through the polymer matrix. Therefore, a quantitative understanding of gas sorption, diffusion, and permeation is essential for the rational design of materials with enhanced efficiency, selectivity and long-term reliability.
Current research is devoted to overcoming the intrinsic permeability-selectivity trade-off of polymeric materials through the development of advanced membrane architectures, including mixed-matrix membranes and graphene-based layer-by-layer systems.

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