UNIVERSITÀ DI TRENTO | Dipartimento di Ingegneria Industriale

MAY 30, JUNE 4 AND JUNE 6, 2025 - H. 10:00 AM
SEMINAR ROOM, POLO FERRARI 2 - VIA SOMMARIVE 9, TRENTO

Membrane technologies are critical for addressing global challenges from sustainability to public health. For example, reverse osmosis (RO) membranes have been widely adopted for the desalination of seawater and brackish water, which is crucial for many regions around the world. In biomedical applications, membrane enabled organ functions, e.g. hemodialysis (kidney function) and blood oxygenation (lung function), are lifesaving. However, membrane technologies still face significant challenges in manufacturing, characterization and improving process efficiency. The three lectures present the research group's efforts in (1) Exploring surface patterning to improve membrane properties and liquid-separation performances, including nanopatterning of ultrafiltration (UF) and thin film composite (TFC) membranes based on nanoimprint lithography (NIL) process, as well as patterning microfiltration (MF)-type membranes bycombining soft lithography with thermally induced phase separation (TIPS) process. (2) Designing acoustically responsive microstructures to generate microstreaming for better fouling mitigation in liquid separation. (3) Understanding capillary and pressure driven polymer infiltration within porous membranes for achieving robust adhesion and device manufacturing.

Speaker: Prof. Yifu Ding, University of Colorado Boulder

Engineering Surfaces and Interfaces for Improving Efficiency of Membrane Manufacturing and Processes

DII PHD COURSE

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