



UNIWERSYTET
MIKOŁAJA KOPERNIKA
W TORUNIU
Wydział Chemii

Wydział Chemii Uniwersytetu Mikołaja Kopernika w Toruniu

Zaprasza na

Seminarium wydziałowe

pod tytułem:

SUSTAINABLE PRODUCTION OF NANOSTRUCTURED MEMBRANES

które wygłosi

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17.10.24 (czwartek) o godzinie 12:00

w Bibliotece Wydziału Chemii

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Abstract

Phase inversion by means of immersing precipitation has led to the industrial production of reverse osmosis and ultrafiltration membranes in quantity, which significantly changed the water reclamation technologies by using membranes as an energy-saving separator. Over the past 60 years of development, porous membranes prepared by phase inversion have been applied in broader separation contexts for drinking water production, wastewater treatment, dialysis, beverage clarification, etc. However, a technological limit has been reached, and there has been no significant breakthrough over the last decade in terms of new manufacturing procedures which produce membranes with high performances in an environmentally benign and sustainable way. Water permeability determines the membrane's filtration efficiency, but the phase inversion technique creates membranes with low permeance and wide variation of pore sizes. Pore uniformity and controllability are essential for the separation capability of the membrane, yet phase inversion lacks control over the membrane structure. This presentation will introduce a new approach, termed Combined Crystallization and Diffusion, that simultaneously manifests both ultrahigh water permeation and pore size tunability on both surfaces of the membrane product. Our work will greatly advance the manufacturing of porous polymeric membranes by significantly increase the filtration efficiency and production sustainability of phase inversion membranes to meet the global challenge of water supply.