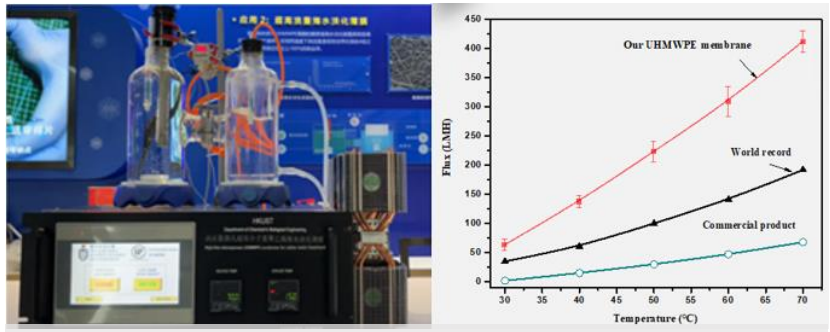
Multifunctional Porous Polymer Nanofilms

Technology

Self-supporting and porous polymer nanofilms at thicknesses ~100 nm are enabler materials for a myriad of cutting edge technologies. The nanofilm is thinner than a human hair and yet over 25 times stronger than that of stainless steel with the same mass. Among all the known ultra-thin films, the nanofilm is the strongest and highly transparent, while being thin and porous at the same time.

Potential Applications

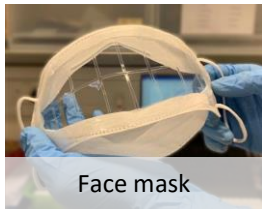
- Filtration: Water purification, air filtration, nanofiltration
- Electronics: Flexible display, wearable device
- Healthcare: Antibacterial film, skin sensor
- Energy: Flexible ultrathin batteries, high-energy-density capacitors



The nanofilm's adjustable porous property has made it the world's most potent polymeric membrane for membrane distillation desalination

Advantages

- Ultra-thin
- High mechanical strength
- High transparency
- High gas permeability
- Tunable porous properties
- Free-standing and self-supporting


Face mask

Motion sensor

Nanovibrational speaker

Wound dressing

Intellectual Properties

US Application No. 2019/0267594, 2020/0360870, 2020/0101427, 63/204179
Chinese Application No. CN109997247A, CN110831768A, CN111491719A, CN110960995A

Talk to Us

Dr. Carol LI, carolli@ust.hk
Head (Materials and Sustainable Technologies)

HKUST Technology Transfer Center 香港科技大學技術轉移中心