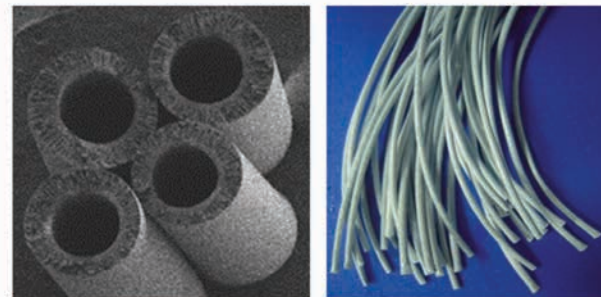


Tailored Hollow Fiber Nanocomposite Membranes for Wastewater Treatment



Nanocomposite Hollow fiber membranes

Problem Statement: The massive industrialisation has resulted in the discharge of toxic water contaminants, mainly oily water, heavy metals, and endocrine-disrupting chemicals, into the environment, causing several adverse health effects to living beings, even at low concentrations. Exposure to these toxic substances leads to organ damage, neurological development issues, and increased cancer risk. Therefore, there is an urgent need to separate contaminants from water bodies using advanced separation technologies, like membrane technology. The IIT Bombay team's invention has addressed the following two significant problems associated with membrane technology: Separation efficiency and Antifouling (flux recovery).

Uniqueness of the Solution: The tailored hollow fibre nanocomposite membranes for wastewater treatment are efficient, and membranes are low fouling. The hollow fibre membrane module is of 0.004 m² active surface area, and the diameter of a

hollow fibre membrane is 700–1000 µm. The membranes products available in the market show a high separation efficiency, but they are prone to fouling, limiting their separation efficiency. The proposed membrane technology addresses the fouling concern without comprising separation efficiency using a close-to-real life system at the lab scale.

Current Status of Technology: The Proof-of-concept using this membrane is demonstrated at lab scale using close-to-real life systems (i.e. contaminant-spiked surface water as feed). The product holds significant potential in the national and international market and shows growth in wastewater technology products.

Societal Impact: The inventions offer a solution to remediate contaminants of emerging concerns from water, which directly affect the health of the society. Therefore this invention has a substantial societal impact.

Patent(s): Filed and Granted

Relevant Industries: Wastewater Treatment, Effluent treatment plants, Environment, Materials.

Faculty: Prof. Jayesh Bellare, Chemical Engineering.