



Sustainable Approaches in Membrane Technology for Micropollutant Remediation

Ahmad Fauzi Ismail, Zahra Samavati, Pei Sean Goh

Advanced Membrane Technology Research Centre, Universiti Teknologi Malaysia, 81310 Johor Bahru, Malaysia.

Organic micropollutants (MPs) are becoming more common in water and wastewater due to the increasing use of personal care products and pharmaceutical products for healthcare and improving living conditions. This presents a grave threat to the global ecological system's equilibrium. Some of these MPs are also known as endocrine-disrupting compounds (EDC) that disrupt the functions of hormones in the body. Traditional water purification methods, including adsorption and biological treatment, could be more effective at removing MPs and have shown better selectivity for a broad variety of MPs. Pressure-driven membrane filtration is a potentially useful approach to addressing this growing problem. Gaining a deeper insight into MPs' behaviour and the mechanisms underlying their removal utilizing cutting-edge membrane technologies is essential for guaranteeing the viability of membrane-based treatment methods in large-scale applications. Innovations have been made in membrane development and membrane system to heighten the performance of membrane processes for MP removal from aqueous media. One of the most recent advancements is using organic and inorganic nanofillers to stabilize and enhance the efficiency of membranes in removing MPs. This presentation presents a summary of several sustainable approaches for MPs treatment. Its improved characteristics, limitations, and potential future research directions are further discussed.
