

Special Issue

Innovative Frontiers in Osmotic Membrane Technologies: Advances in Forward and Reverse Osmosis

Message from the Guest Editor

This Special Issue aims to highlight the latest innovations, fundamental research, and technological advancements in forward osmosis (FO) and reverse osmosis (RO) membrane processes. Osmotic-driven membrane technologies have emerged as key players in water and wastewater treatment, desalination, resource recovery, and emerging applications such as pressure-inhibited osmosis and hybrid systems. The scope of this Special Issue includes, but is not limited to, novel membrane materials, surface modifications, fouling mitigation strategies, emerging contaminants (i.e., microplastics and PFAS), energy and cost analyses, integration with renewable energy sources, and pilot-scale or real-world applications. It also welcomes contributions addressing modelling and simulation, smart membranes with stimuli-responsive behaviour, and the role of AI and machine learning in optimizing osmosis-based systems. We aim to provide a platform for researchers and industry experts to share insights that could accelerate the development of next-generation membrane technologies and contribute to sustainable solutions in the water–energy nexus.

Guest Editor

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Deadline for manuscript submissions

30 September 2025



Membranes

an Open Access Journal
by MDPI

Impact Factor 3.6
CiteScore 7.9
Indexed in PubMed



mdpi.com/si/239068

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About the Journal

Message from the Editor-in-Chief

You are cordially invited to contribute a research article or a comprehensive review for consideration and publication in *Membranes* (ISSN 2077-0375). *Membranes* is an international, peer-reviewed open access journal of membrane technology published monthly online by MDPI. The journal covers the broad aspects of the science and technology of both biological and non-biological membranes, including membrane dynamics and the preparation and characterization of membranes and their applications in water, environment, energy, and food industries. Articles contributing to better understanding of transport processes in all types of membranes are also welcome. The scientific community and the general public have unlimited and free access to the content as soon as it is published. We would be pleased to welcome you as one of our authors.

Editor-in-Chief

Prof. Dr. Spas D. Kolev
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