Special Issue

Multiscale Modeling and Data-Driven Approaches for Advancing Membrane Separation Processes

Message from the Guest Editors

Membrane separation processes are vital for water treatment, desalination, gas separation, and various environmental and energy applications. However, their large-scale implementation faces challenges such as transport complexity, fouling, degradation, and energy consumption, which arise from multiscale phenomena. This Special Issue focuses on multiscale modeling and data-driven approaches to advance membrane processes. It welcomes original research, critical reviews, comparative analyses, and perspective papers that evaluate the assumptions, limitations, and applicability of existing models. The goal is to bridge theory with practice, address knowledge gaps, and support the development of more efficient and sustainable membrane systems.

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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 accessjournal 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

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