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# Call for Book Chapters

Tentative Topics (case studies/ original Research/Review chapters)

Book Title- Membrane Filtration and Membrane Bioreactors for Wastewater Treatment

## Important dates

Last date of Abstract submission:	20 Mar'24
Last date of Full Chapter submission:	30 Apr'24
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Final chapter submission:	10 June'24



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## Guidelines to Authors:

- Length of Chapter: upto 35-40 pages
- Figures and Tables: upto 4 strictly
- References not more than 70 in springer format
- No hidden APC or Processing Charges

- Introduction Chapter
- Biological aspect of Wastewater Treatment
- Membranes, Modules, and Cassettes Chapter
- Membrane Characterization Chapter
- Membrane Fouling Chapter
- MBR Operation and different types of setups
- Membrane filtration of liquids Chapter
- Modelling aspect of products transmission.
- Membrane Bioreactors for Wastewater Treatment
- Membrane Filtration for Drinking Water Treatment Chapter
- Membrane Filtration for Seawater Desalination
- Membrane Bioreactors for Resource Recovery
- Circular Economy and Waste Management
- Emerging Membrane Technologies and Materials
- Membrane Filtration for Special Applications
- Technology Transfer and Capacity Building for Sustainable Waste Management Chapter
- Sustainability and Economic Considerations
- Future Trends and Innovations

# Comprehending Membrane Fouling: Causes, Effects, and Mitigation Strategies

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**Abstract:** Membrane technology has emerged as a critical component in water treatment, wastewater reclamation, and food processing due to its efficiency and cost-effectiveness. Membrane fouling is one of the ongoing issues preventing its widespread use, though. Membrane fouling is the term used to describe the buildup of undesirable materials on the membrane's surface or inside its pores, which results in lower performance and higher operating expenses.

The objective of this study is to present a thorough analysis of membrane fouling, emphasizing its causes, effects, and preventative measures. First, it discusses the various mechanisms that contribute to membrane fouling, such as physical deposition, adsorption, and biological growth. Comprehending these mechanisms is essential to formulating efficacious fouling control tactics. Second, the effects of membrane fouling on system efficiency and viability from an economic standpoint are explained. Fouling can have a number of negative effects, including decreased flux rates, higher energy consumption, and frequent membrane replacement or cleaning cycles. These effects highlight the necessity of taking preventative action to minimize fouling. Finally, a variety of mitigation techniques to stop membrane fouling are examined. These tactics cover surface modifications, chemical cleaning, backwashing, and sophisticated monitoring and control methods, among other preventive and corrective measures. Furthermore, new developments are examined, including the application of nanomaterials and bio-inspired coatings for fouling mitigation.

Keywords: Membrane foulants, mitigation strategies, gas bubbling, backwashing.

## 1. Introduction:

The main step regarding the desalination of water consists of the elimination of salts as well as impurities which are contained in brackish or salt water and result in the water being suitable for domestic or industrial use. Membrane technologies including reverse osmosis, microfiltration, ultrafiltration amongst others represent a group of highly accepted water treatment methodology as they occupy little space, are highly energy efficient, can be automated and their design is compact. For example, RO, MF, NF, UF, and MD are some of the most famous filtration methods based on the membrane (Prihasto, N 2009 & Henthorne, L., 2015). The limiting and troublesome thing of the accumulation and storage of the materials which are not needed and cause unpleasantness is called fouling. It is mostly happens in the external or inner part of a host,

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