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Book Review
Advanced and Hybrid Membranes for Wastewater Treatment

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ABSTRACT

The interesting part of this recent published book is that it offers better understanding on the mechanism of wastewater treatment for membrane technologies, current information about technologies and limitation of wastewater treatment, recent discovered solutions from experts for wastewater treatment and information on weaknesses and solution to membrane technologies. There are 10 chapters in which wrote by the membrane expertise covering the recent progress and development of the various membrane technologies towards water and wastewater treatment.

In Chapter 1, overview of wastewater treatment including conventional treatment such as ion-exchange, coagulation-flocculation and adsorption has been discussed. At the end of the chapter, membrane technology and its advantages has been introduced. Chapter 2 discussed the conventional technology stated in Chapter 1 in detail. In the chapter, the advantages and disadvantages of the conventional technologies has also been stated. Example of the advantages are including depending on pH and slow process. Chapter 3 provide an insight in the recent advanced separation technology for wastewater treatment such as hybrid adsorption-separation application that can be achieved by membrane technology and membrane distillation application. Meanwhile, Chapter 4 addressed in detail the recent progress of adsorptive ultrafiltration mixed matrix membrane for heavy metals removal such as zinc, nickel and chromium. In Chapter 5, photocatalytic membrane has been introduced in the chapter with the brief mechanism on the photocatalytic activity has also been explained.

Chapter 6 focussed on the membrane distillation for wastewater treatment. In the chapter, various membrane distillation type has been stated with example of recent works such as direct contact membrane distillation (DCMD), air gap membrane distillation (AGMD), vapour membrane distillation (VMD) and sweeping gas membrane distillation (SGMD). In Chapter 7, integrated forward osmosis processes have been described such as FO-MD, FO-RO or both. Chapter 8 introduced ceramic membrane technology to the readers in the book with new alternative material in production of low-cost ceramic membrane. In Chapter 9, recent works on metal organic framework (MOF) including MOF membrane for wastewater separation has been explained. In the last Chapter 10, some potential solution to overcome weaknesses of advanced membranes technologies for wastewater treatment are also discussed. Future recommendation for these technologies is also discussed at the end of the book.

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This book focused on the collection of recent progress related to advanced membrane technologies towards water and wastewater treatment, for example forward osmosis and membrane distillation. This book has been written by membrane experts from Malaysia and India, providing an insight of recent progress on advanced membrane technologies. This book will be the vital references for the researchers, students, membrane technologist, membrane manufacturer and academicians. Some improvement can be made by adding several interesting topics such as incorporation of waste inorganic materials into polymeric membranes and commercial ceramic membrane that made up from alumina and titania. In addition, some integrated technologies combining two advanced membrane technologies such as integrated forward osmosis and membrane distillation can be interesting if discussed.

REFERENCE

[1] Juhana Jaafar and Atikah Mohd Nasir. 2020. *Advanced and Hybrid Membranes for Wastewater Treatment*. Penerbit UTM Press.