



Journal of Membrane Science and Research

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Editorial Note

Welcome to Journal of Membrane Science and Research

Ali Kargari

Founding Editor-in-Chief

Membrane Processes Research Laboratory (MPRL), Department of Chemical Engineering, Amirkabir University of Technology, Tehran, Iran

Email: kargari@aut.ac.ir

Current trend in rapid growth of membranes, membrane engineering and membrane separation technologies (MSTs) highlights the importance of the research in this field of *Science* and *Engineering*. This is because of the unique features of the membranes for separation and reaction applications which include: lower energy demands, cleaner and more user friendly processes, smaller footprints, lower labor cost, lower operating cost, higher levels of automation, etc.

There are several issues that membranes have a reasonable response for them, including:

WATER scarcity has been becoming a global problem for mankind that is the result of global climate changes, changes in life style, growth of world population and economic expansion. Although about 71% of the earth surface is water-covered, but ~97% of the world water (by volume) is too salty for drinking, irrigation or industrial use. Forecasts to 2030 indicate an increase in global water uptake at about 40% of the current accessible and reliable supplying sources, meaning an intensification of water consumption. MSTs has a clear response to this problem. Different mature MSTs are currently applied for water and wastewater treatments such as MF, UF, NF, RO, and ED. These processes are inherently safe and efficient for treatment of water and wastewaters to produce clean water for drinking, irrigation and industrial applications from unconventional sources. The needs for more efficient and novel systems have resulted in introducing other MSTs for water and wastewater treatment, especially for salty water desalination, such as Forward Osmosis (FO) and Membrane Distillation (MD).

ENVIRONMENT is the most important issue for living things. Environmental pollutions are mostly a direct result of human activities on the earth. Air, water and soil pollutions are big problems which threatens the life on the earth. These pollutions could be managed by using MSTs especially for waste and flue gases streams through gas separation (GS) and vapor permeation (VP), membrane contactors (MCs) and, wastewater treatment through MBR systems.

ENERGY consumption is a critical criterion for final selecting a separation process/technique. Energy is very expensive in some countries and the energy efficiencies are becoming more important in application of separation systems. Fortunately, MSTs have the benefit of low energy consumption because no phase change takes place during many membrane separations. GS, VP, MC and RO are the most common technologies have been replaced by the energy intensive thermal separation processes. Olefin/paraffin separation, carbon dioxide and hydrogen separation from gases mixture, flue gases processing, natural gas sweetening and dehumidification, VOCs separation from gas streams, membrane reactors and water desalination are currently

highlighted in industrial plants. Recently, many researches are focused on the new membrane-based desalination processes such as Pressure Retarded Osmosis (PRO) and Capacitive Deionization (CDI) as energy efficient systems.

HEALTH is the most important issue for humankind life. Clean environment (water, air, and soil), high quality and hygienic foodstuffs and agro products, medicine and drugs are attainable by membrane processes. Cold sterilizations of liquids such as milk by MF, cold depyrogenation of medical products such as injectable vaccines and serums by UF, concentration of dairy products such as milk in production of UF-cheese and skimmed milk, and whey processing are some examples. More recently researches on the membrane-based control-release systems have resulted in introduction of control-release products such as aromas, medicines, pesticides, fertilizers, and even water has opened a new window in controlling the quality of the products that affect the human life and health.

We are very pleased to announce the first issue of the *Journal of Membrane Science and Research* (JMSR); currently the open access and completely free-of-charge journal with online publication policy, which dedicated to recent achievements related to fundamentals, applications, processing, and progress of membranes and membrane processes.

The Journal will carry the papers dealing with the following subject matters such as (except for biological membranes):

- Membrane formation, structure, function, performance, and transport
- Novel, advanced, and integrated/hybrid systems
- New materials/modules/membranes
- Nanomaterial/nano-engineered membranes synthesis and applications
- Economical and scale-up aspects studies of membrane processes.
- Experiences on the application of the membrane separation systems.

The journal publishes original high scientific quality and merit research and reviews on membranes, membrane processes, membrane formation/structure/performance, fouling, module/process design, and processes/applications in various areas that will engage worldwide discourse and ignite the interest of academics and industrials across all fields to explore new ways of keeping our planet clean and healthy for future generations.

The Editorial board would like to extend their sincere appreciation to the scientific community, both the authors and the reviewers, for their kind support and seek the continuous support of the scientific community to make JMSR one of the most successful and pioneer journals in the field of membranes and membrane processes.