

## Editorial

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# Editorial Special Issue: Selected Extended Papers from the 12th International Conference on Membrane Science and Technology (MST2015) Symposium on Modeling and Simulation

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The 12th International Conference on Membrane Science and Technology (MST2015) was held in Tehran, Iran, from 1 to 3 November 2015. The event was the final stage of collective efforts began in 2003, in ASEAN Membrane Science and Technology Society. In recent years, we have witnessed a significant increase in membrane research and development among the scientists and engineers all around the globe. However, the liaison between academia and industry provides new insight and understanding in various areas of concern including membrane materials, fabrication methods, processes and applications leading to various international conferences and workshops. The theme of this International Conference was “Membrane for Sustainable Energy and Environment”. The event was aimed to highlight advances and new findings in membrane science and technology and their impacts on technology development.

The event was aimed to highlight advances and new findings in membrane science and technology and their impacts on sustainable developments and was very well received by scientific community. It was also intended to facilitate exchange of ideas and collaborations among experts and engineers in this gathering.

The Conference objectives were:

- To develop a great mutual appreciation of related disciplines apart from the stage-of the art exposure in the areas of direct interest to different participants.
- To foster international collaborations and joint ventures.

- To promote and facilitate the growth of scientific and technical development in the field of membrane technology development in Iran and the ASEAN region.

The Conference was accomplished according to the following symposia:

- Membrane for Fuel Cell & Energy Applications.
- Membrane for Gas and Vapor Separation.
- Membrane in Petroleum Industries.
- Membrane for Water and Wastewater Treatment.
- Membrane for Bio-Refinery Applications.
- Bio-Membranes.
- Nano-Membrane.
- Membrane Bioreactors.
- Advanced Materials for Membrane Fabrications.
- Membrane Contactors and Multifunctional Reactors.
- Membranes Characterization and Modification.
- Membranes for Food and Bio-Product Applications.
- Membrane for Pharmaceutical and Medicine Applications.
- Modeling and Simulation.

The Organizing Committee received a large number of contributions for oral and poster presentations, and the selection process involved very careful review of papers before making the final decisions. The reviewing process involved the participation of prominent international scientists, as well as members of MST2015's Scientific Committee.

This special issue of the journal of Chemical Product and Process Modeling includes some of the selected papers presented in the Modeling and Simulation Symposium during the MST2015 Conference. Authors of selected papers accepted for presentation in the Modeling and Simulation symposium were invited to submit the extended papers to be considered for publication in the journal of Chemical Product and Process Modeling. The papers that successfully passed the reviewing process of the journal are now published in the MST2015 special issue of the journal.

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The conference was jointly organized by the University of Tehran (Iran), the Universiti Teknologi Malaysia (Malaysia), the Universiti Sains Malaysia (Malaysia), the Universiti Kebangsaan Malaysia (Malaysia), the National University of Singapore (Singapore), the Nanyang Technological University (Singapore), the Institut Teknologi Bandung (Indonesia), the University of Diponegoro (Indonesia), the Prince of Songkla University (Thailand), the Universitas Bina Darma (Indonesia).

As guest editors of this special issue, we are very happy of the final results of the Conference and hope that the present modelling papers will be useful to researchers, working on the demanding objective of the membrane science and technology. Many people have kindly helped us to prepare and organize this conference. In particular, we would like to thank all the authors for their contributions, the Advisory Committee for their strong encouragement and guidance, the Keynote and Invited Speakers for their state-of-the-art plenary presentations, the Scientific Committee and Reviewers for their comprehensive and timely reviewing of the papers, and our sponsors who have helped us to keep down the costs of MST2015. Special thanks should also extend to the Organizing Committee members who have all worked extremely hard to realize this conference.

## Papers

Masoud Arabieh, S. Mahmood Fatemi and Hamid Sepehrian, **“Molecular Perspective of Radionuclides Separation by Nanoporous Graphene Oxide Membrane”**.

Seyed Saeid Hosseini, Javad Aminian Dehkordi, and Prodip K. Kundu, **“Mathematical Modeling and Investigation on the Temperature and Pressure Dependency of Permeation and Membrane Separation Performance for Natural gas Treatment”**.

Javad Aminian Dehkordi, Seyed Saeid Hosseini, Prodip K. Kundu, and Nicolas R. Tan, **“Mathematical Modeling of Natural Gas Separation Using Hollow Fiber Membrane Modules by Application of Finite Element Method through Statistical Analysis”**.

Kamran Ghasemzadeh, Ehsan Andalib, and Angelo Basile, **“Modelling Study of Palladium Membrane**

**Reactor Performance during Methane Steam Reforming using CFD Method”**.

Kamran Ghasemzadeh, Mostafa Jafari, Amir Sari, and Ali A. Babalou, **“Performance Investigation of Membrane Process in NG sweetening by Membrane Process: Modeling Study”**.

Mohammad Reza Gharib-Zahedi and Javad Karimi-Sabet, **“Gas Separation in Nanoporous Graphene from Molecular Dynamics Simulation”**.

H. Ahadi, J. Karimi-Sabet, and M. Shariaty-Niassar, **“The Effect of Module Geometry on Heat and Mass Transfer in Membrane Distillation”**.

Ehsan Karbasi, Javad Karimi-Sabet, J. Mohammadi Roshandeh, M. A. Mousavian, and H. Ahadi, **“Experimental Study and Numerical Simulation of the Air Gap Membrane Distillation (AGMD) Process”**.

Seyed Reza Nabavi, **“Multi-objective Optimization of Preparation Conditions of Asymmetric Polyetherimide Membrane for Pre evaporation of Isopropanol”**.

K. Ghasemzadeh, R. Zeynali, F. Ahmadnejad, A. A. Babalou, and A. Basile, **“Investigation of Palladium Membrane Reactor Performance during Ethanol Steam Reforming using CFD Method”**.

Bahram Haddadi, Christian Jordan, Philipp Schretter, Tino Lassmann, and Michael Harasek, **“Designing Better Membrane Modules using CFD”**.

Seyedmehdi Sharifian, Michael Harasek, and Bahram Haddadi, **“Simulation of Membrane Gas Separation Process using Aspen Plus® V8.6”**.

A. Chogani, A. Moosavi, and M. Rahiminejad, **“Numerical Simulation of Salt Water Passing Mechanism through Nanoporous Single-layer Graphene Membrane”**.

Raúl Zarca, Alfredo Ortiz, Daniel Gorri, and Inmaculada Ortiz, **“Facilitated Transport of Propylene through Composite Polymer-ionic Liquid Membranes: Mass Transfer Analysis”**.

Zahra Mansourpour, Hooman Ziaei-Halimejani, Seyed Morteza Sadeghnejad, and Mohammadreza Boskabadi, **“CFD Simulation of Hydrogen Separation in Pd Hollow Fiber Membrane”**.

Zahra Mansourpour, Abdolmajid Sharafpoor, and Azadeh ghaee, **“Numerical Study on Concentration Polarization for H<sub>2</sub>-N<sub>2</sub> Separation through a Thin Pd Membrane by Using Computational Fluid Dynamics”**.