The Journal of Membrane Science provides a focal point for academic and industrial chemists, chemical engineers, materials scientists, and membranologists working on membrane systems.

The journal publishes original research and reviews on membrane transport, membrane formation / structure, fouling, module / process design, and processes / applications.

Primary emphasis is on structure, function, and performance of non-biological membranes; papers bridging the gap with biological membranes are also appropriate.


Reviews: should not only summarize the key research contributions in a field, they should also provide critical evaluation of the scientific literature. Review papers are intended to provide archival guidance and direction for the broad membrane community and are thus held to the highest standard for publication.

Perspective articles: should provide a focused discussion of an important area of membrane science and technology, emphasizing recent developments, future challenges, and/or new opportunities. Perspective articles will be by invitation only, and they will be reviewed by at least one Editor of the Journal and one member of our Advisory or Editorial Board.

Authors interested in submitting a Review Article or Perspective paper should contact one of the Editors prior to submission to discuss the scope and appropriateness of the proposed contribution.

Endorsed by the Aseianian, European and North American Membrane Societies.

Audience

Physical Chemists, Polymer Chemists, Chemical Engineers, Biological Scientists (with an interest in synthetic membrane science and technology), Manufacturers of membranes and equipment employing membranes.
IMPACT FACTOR

2018: 7.015 © Clarivate Analytics Journal Citation Reports 2019

ABSTRACTING AND INDEXING

Engineering Village - GEOBASE
Pascal Francis
Chemical Abstracts
Current Contents - Engineering, Technology & Applied Sciences
Engineering Index
Embase
ISMEC Bulletin
Membrane Quarterly
Physics Abstracts
Polymer Contents
Science Citation Index
Science Research Abstracts Journal
Solid State Abstracts
Applied Mechanics Reviews
BIOSIS Citation Index
Scopus

EDITORIAL BOARD

Editor-in-Chief
Andrew Zydney, Pennsylvania State University, University Park, Pennsylvania, United States

Editors
Pierre Aimar, University of Toulouse, Chemical Engineering Department, Toulouse, France
Michael D. Guiver, Tianjin University State Key Laboratory of Engines, Tianjin, China
Wanqin Jin, Nanjing Tech University, Nanjing, China
Young Moo Lee, Hanyang University, Seongdong-gu, Korea, Republic of
Jerry Y. S. Lin, Arizona State University, Tempe, Arizona, United States
Andrew Livingston, Imperial College London, London, United Kingdom
Hideto Matsuyama, Kobe University, Kobe, Japan
Rong Wang, Nanyang Technological University, Singapore, Singapore
Matthias Wessling, RWTH Aachen University, Aachen, Germany

Founding Editor
Harry Lonsdale †

Emeritus Editor
William Koros, Georgia Institute of Technology School of Chemical and Biomolecular Engineering, Atlanta, Georgia, United States

Advisory Board
Richard Baker, Membrane Technology and Research Inc, 39630 Eureka Dr, Newark, California, CA 94560, United States
G. Belfort, Rensselaer Polytechnic Institute Department of Chemical Engineering, 110. 8th Street, Ricketts Building, Troy, New York, NY 12180 - 3590, United States
Tai-Shung (Neal) Chung, National University of Singapore Department of Chemical and Biomolecular Engineering, E5-02-31, 4 Engineering Drive 4, 117585, Singapore, Singapore
Enrico Drioli, IRMERC-CHR,Inst. on Membrane & Modelling of Chem. Reactors,Università della Calabria, Via P. Bucci 17/C, c/o UNICAL, I - 87030, Arcavacata di Rende, Italy
Anthony Gordon Fane, Nanyang Technological University, 639798, Singapore, Singapore
Congjie Gao, Hangzhou Water Treatment Technology Development Center Co Ltd, 50 Wenhua Road, 310012, Hangzhou, China
William Koros, Georgia Institute of Technology School of Chemical and Biomolecular Engineering, Atlanta, Georgia, 30318, United States
Juin-Yih Lai, Chung Yuan Christian University, Department of Chemical Engineering, R&D Center for Membrane Technology, 3203, Chung Li, Taoyuan, Taiwan
Takeshi Matsuura, University of Ottawa, Ottawa, K1N 6N5, Ontario, Canada
Donald Paul, University of Texas at Austin McKetta Department of Chemical Engineering, 200 E. Dean Keeton, Stop CO400, Austin, Texas, TX 78712, United States

Editorial Board

Mihail Barboiu, European Membrane Institute UMR5635 Adaptive Supramolecular Nanosystems Group, Montpellier, France
Vicki Chen, UNSW Australia, New South Wales, Australia
Joao Crespo, New University of Lisbon Faculty of Science and Technology, Caparica, Portugal
Menachem Elimelech, Yale University, New Haven, Connecticut, United States
Eric Favre, Reactions and Chemical Engineering Laboratory, Vandoeuvre Les Nancy, France
Xianshe Feng, University of Waterloo, Waterloo, Ontario, Canada
Benny Freeman, University of Texas at Austin, Austin, Texas, United States
Lidietta Giorno, Institute of Membrane Technology, Rende, Italy
Winston Ho, OHIO STATE UNIVERSITY, Columbus, Ohio, United States
Zhongyi Jiang, Tianjin University, Tianjin, China
Simon Judd, Cranfield University Cranfield Water Science Institute, Bedford, United Kingdom
Yong Soo Kang, Hanyang University College of Engineering Department of Chemical Engineering, Seongdong-gu, Korea, Republic of
Sandra Kentish, The University of Melbourne, Melbourne, Victoria, Australia
Kueir-Rarn Lee, Chung Yuan University Department of Chemical Engineering, Taoyuan, Taiwan
Kang Li, Imperial College Department of Chemistry, London, United Kingdom
Glenn Lipscomb, University of Toledo, Toledo, Ohio, United States
Shaomin Liu, Curtin University Chemical Engineering, Perth, Australia
Jeffrey McCutcheon, University of Connecticut, Storrs, Connecticut, United States
Seung Hyeon Moon, Gwangju Institute of Science and Technology, Gwangju, Korea, Republic of
Kitty Nijmeijer, University of Technology Eindhoven, Eindhoven, Netherlands
Richard Noble, University of Colorado Boulder, Boulder, Colorado, United States
Suzana Nunes, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia
Klaus Peinemann, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia
Ingo Pinna, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia
José Sanchez-Marcano, European Membrane Institute, Montpellier, France
Kamalesh Sirkar, New Jersey Institute of Technology, Newark, New Jersey, United States
Chuyang Y. Tang, University of Hong Kong Department of Civil Engineering, Hong Kong, Hong Kong
Toshinori Tsuru, Hiroshima University, Higashihiroshima, Japan
Mathias Ulbricht, University of Duisburg-Essen Department of Technical Chemistry II, Essen, Germany
Bart Van der Bruggen, KU Leuven Science and Technology Group Department of Chemical Engineering, Heverlee, Belgium
Haihui Wang, South China University of Technology, Guangzhou, China
Zhi Wang, Tianjin University, China
Hans Wijmans, Membrane Technology and Research Inc, Newark, California, United States
Tongwen Xu, University of Science and Technology of China, Hefei, China
Zhikang Xu, Zhejiang University, Hangzhou, China
INTRODUCTION
The Journal of Membrane Science provides a focal point for membranologists and a vehicle for publication of significant contributions that advance the science and technology of membrane processes and phenomena. The primary emphasis is on the structure, function and performance of non-biological membranes, but papers bridging the gap between non-biological and biological membranes are also sought. A broad spectrum of papers is encouraged:

- theoretical analyses of membrane transport phenomena
- experimental results on membrane permeation and selectivity
- membrane formation and structure and their relation to transport properties
- membrane fouling and its effect on membrane performance
- membrane modules and their impact on device performance
- membrane processes/applications with a focus on the role of the membrane

Areas of interest include polymeric, inorganic, mixed-matrix, and supported-liquid membranes; liquid, gas and vapor separations; membrane reactors and bioreactors; barrier membranes; and drug delivery systems. The Journal aims to be the premier venue for publication of new developments in the membrane field.

Types of Papers:
The Journal of Membrane Science publishes Full length article, Review article, and Discussion. Review article should not only summarize the key research contributions in a field, they should also provide critical evaluation of the scientific literature. Review articles are intended to provide archival guidance and direction for the broad membrane community and are thus held to the highest standard for publication. More detailed guidelines for submitting a Review are provided here.

Discussion article type should provide a focused discussion of an important area of membrane science and technology, emphasizing recent developments, future challenges, and/or new opportunities. Discussion article type will be by invitation only, and they will be reviewed by at least one Editor of the Journal and one member of our Advisory or Editorial Board.

Letter to the Editor can be submitted in Discussion article type. However, authors should mention about Letter to the Editor in the cover letter.

Authors interested in submitting a Review Article or Discussion should contact one of the Editors prior to submission to discuss the scope and appropriate of the proposed contribution.

Submission checklist
You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details:
- E-mail address
- Full postal address

All necessary files have been uploaded:
Manuscript:
- Include keywords
- All figures (include relevant captions)
- All tables (including titles, description, footnotes)
- Ensure all figure and table citations in the text match the files provided
- Indicate clearly if color should be used for any figures in print

Graphical Abstracts / Highlights files (where applicable)
Supplemental files (where applicable)

Further considerations
- Manuscript has been 'spell checked' and 'grammar checked'
- All references mentioned in the Reference List are cited in the text, and vice versa
• Permission has been obtained for use of copyrighted material from other sources (including the Internet)
• A competing interests statement is provided, even if the authors have no competing interests to declare
• Journal policies detailed in this guide have been reviewed
• Referee suggestions and contact details provided, based on journal requirements

For further information, visit our Support Center.

BEFORE YOU BEGIN

Ethics in publishing
Please see our information pages on Ethics in publishing and Ethical guidelines for journal publication.

Declaration of interest
All authors must disclose any financial and personal relationships with other people or organizations that could inappropriately influence (bias) their work. Examples of potential conflicts of interest include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding. Authors should complete the declaration of interest statement using this template and upload to the submission system at the Attach/Upload Files step. If there are no interests to declare, please choose: 'Declarations of interest: none' in the template. This statement will be published within the article if accepted. More information.

Submission declaration and verification
Submission of an article implies that the work described has not been published previously (except in the form of an abstract, a published lecture or academic thesis, see 'Multiple, redundant or concurrent publication' for more information), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. To verify originality, your article may be checked by the originality detection service Crossref Similarity Check.

Preprints
Please note that preprints can be shared anywhere at any time, in line with Elsevier's sharing policy. Sharing your preprints e.g. on a preprint server will not count as prior publication (see 'Multiple, redundant or concurrent publication' for more information).

Use of inclusive language
Inclusive language acknowledges diversity, conveys respect to all people, is sensitive to differences, and promotes equal opportunities. Articles should make no assumptions about the beliefs or commitments of any reader, should contain nothing which might imply that one individual is superior to another on the grounds of race, sex, culture or any other characteristic, and should use inclusive language throughout. Authors should ensure that writing is free from bias, for instance by using 'he or she', 'his/her' instead of 'he' or 'his', and by making use of job titles that are free of stereotyping (e.g. 'chairperson' instead of 'chairman' and 'flight attendant' instead of 'stewardess').

Changes to authorship
Authors are expected to consider carefully the list and order of authors before submitting their manuscript and provide the definitive list of authors at the time of the original submission. Any addition, deletion or rearrangement of author names in the authorship list should be made only before the manuscript has been accepted and only if approved by the journal Editor. To request such a change, the Editor must receive the following from the corresponding author: (a) the reason for the change in author list and (b) written confirmation (e-mail, letter) from all authors that they agree with the addition, removal or rearrangement. In the case of addition or removal of authors, this includes confirmation from the author being added or removed. Only in exceptional circumstances will the Editor consider the addition, deletion or rearrangement of authors after the manuscript has been accepted. While the Editor considers the request, publication of the manuscript will be suspended. If the manuscript has already been published in an online issue, any requests approved by the Editor will result in a corrigendum.
Copyright
Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (see more information on this). An e-mail will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement.

Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations. If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases.

For gold open access articles: Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (more information). Permitted third party reuse of gold open access articles is determined by the author's choice of user license.

Author rights
As an author you (or your employer or institution) have certain rights to reuse your work. More information.

Elsevier supports responsible sharing
Find out how you can share your research published in Elsevier journals.

Role of the funding source
You are requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement then this should be stated.

Funding body agreements and policies
Elsevier has established a number of agreements with funding bodies which allow authors to comply with their funder's open access policies. Some funding bodies will reimburse the author for the gold open access publication fee. Details of existing agreements are available online.

Open access
This journal offers authors a choice in publishing their research:

Subscription
- Articles are made available to subscribers as well as developing countries and patient groups through our universal access programs.
- No open access publication fee payable by authors.
- The Author is entitled to post the accepted manuscript in their institution's repository and make this public after an embargo period (known as green Open Access). The published journal article cannot be shared publicly, for example on ResearchGate or Academia.edu, to ensure the sustainability of peer-reviewed research in journal publications. The embargo period for this journal can be found below.

Gold open access
- Articles are freely available to both subscribers and the wider public with permitted reuse.
- A gold open access publication fee is payable by authors or on their behalf, e.g. by their research funder or institution.

Regardless of how you choose to publish your article, the journal will apply the same peer review criteria and acceptance standards.

For gold open access articles, permitted third party (re)use is defined by the following Creative Commons user licenses:
Creative Commons Attribution (CC BY)
Lets others distribute and copy the article, create extracts, abstracts, and other revised versions, adaptations or derivative works of or from an article (such as a translation), include in a collective work (such as an anthology), text or data mine the article, even for commercial purposes, as long as they credit the author(s), do not represent the author as endorsing their adaptation of the article, and do not modify the article in such a way as to damage the author's honor or reputation.

Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND)
For non-commercial purposes, lets others distribute and copy the article, and to include in a collective work (such as an anthology), as long as they credit the author(s) and provided they do not alter or modify the article.

The gold open access publication fee for this journal is **USD 3700**, excluding taxes. Learn more about Elsevier's pricing policy: [https://www.elsevier.com/openaccesspricing](https://www.elsevier.com/openaccesspricing).

Green open access
Authors can share their research in a variety of different ways and Elsevier has a number of green open access options available. We recommend authors see our open access page for further information. Authors can also self-archive their manuscripts immediately and enable public access from their institution's repository after an embargo period. This is the version that has been accepted for publication and which typically includes author-incorporated changes suggested during submission, peer review and in editor-author communications. Embargo period: For subscription articles, an appropriate amount of time is needed for journals to deliver value to subscribing customers before an article becomes freely available to the public. This is the embargo period and it begins from the date the article is formally published online in its final and fully citable form. Find out more.

This journal has an embargo period of 24 months.

Elsevier Researcher Academy
Researcher Academy is a free e-learning platform designed to support early and mid-career researchers throughout their research journey. The "Learn" environment at Researcher Academy offers several interactive modules, webinars, downloadable guides and resources to guide you through the process of writing for research and going through peer review. Feel free to use these free resources to improve your submission and navigate the publication process with ease.

Language (usage and editing services)
Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's Author Services.

Submission
Submission to this journal proceeds totally online. Use the following guidelines to prepare your article. Via the homepage of this journal ([https://www.evise.com/profile/api/navigate/MEMSCI](https://www.evise.com/profile/api/navigate/MEMSCI)) you will be guided stepwise through the creation and uploading of the various files. The system automatically converts source files to a single Adobe Acrobat PDF version of the article, which is used in the peer-review process. Please note that even though manuscript source files are converted to PDF at submission for the review process, these source files are needed for further processing after acceptance. All correspondence, including notification of the Editor's decision and requests for revision, takes place by e-mail and via the author's homepage, removing the need for a hard-copy paper trail.

Referees
Authors are required to provide the names and e-mail addresses of at least 3 international reviewers in their cover letter.

PREPARATION

Peer review
This journal operates a single blind review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. More information on types of peer review.
Use of Word Processing

It is important that the file be saved in the native format of the word processor used. The text should be in single-column format. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the word processor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc. Do not embed "graphically designed" equations or tables, but prepare these using the word processor's facility. When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is used, use tabs, not spaces, align columns. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier: https://www.elsevier.com/guidepublication).

Embed Tables and Figures (with Figure captions)

All submitted manuscripts must have the Tables and Figures (with figure captions) embedded directly in the body of the manuscript to facilitate the review of the paper. However, authors will still need to upload the figure file(s) separately from the main manuscript (either individually or all in one file) - this is required for the preparation of the page proofs. If you do not follow these instructions, your manuscript will be returned to you for revision without being sent out for peer review.

Article structure

Subdivision - numbered sections
Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

Introduction
State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Experimental
Provide sufficient details to allow the work to be reproduced by an independent researcher. Methods that are already published should be summarized, and indicated by a reference. If quoting directly from a previously published method, use quotation marks and also cite the source. Any modifications to existing methods should also be described.

Results
Results should be clear and concise.

Discussion
This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

Conclusions
The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

Appendices
If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information
• **Title.** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
• **Author names and affiliations.** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.
• **Corresponding author.** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility includes answering any future queries about Methodology and Materials. **Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.**

• **Present/permanent address.** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

**Highlights**

Highlights are mandatory for this journal as they help increase the discoverability of your article via search engines. They consist of a short collection of bullet points that capture the novel results of your research as well as new methods that were used during the study (if any). Please have a look at the examples here: example Highlights.

Highlights should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point).

**Abstract**

A concise and factual abstract (100-200 words) is required. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, they must be cited in full, without reference to the reference list. Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

**Graphical abstract**

Although a graphical abstract is optional, its use is encouraged as it draws more attention to the online article. The graphical abstract should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. You can view Example Graphical Abstracts on our information site.

Authors can make use of Elsevier's Illustration Services to ensure the best presentation of their images and in accordance with all technical requirements.

**Keywords**

Immediately after the abstract, provide a maximum of 5 relevant keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, "and", "of"). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

**Abbreviations**

Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

**Acknowledgements**

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

**Formatting of funding sources**

List funding sources in this standard way to facilitate compliance to funder's requirements:

Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].

Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].
It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

If no funding has been provided for the research, please include the following sentence:

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

**Nomenclature and Units**

In general, the recommendations of the International Union of Pure and Applied Chemistry (IUPAC) should be followed. SI units and units directly related to the SI system (°C, bar, h, min, etc.) can be used, but other units should be avoided (e.g. atm, cal, Ci, °F, psi, tonne, Torr). Only widely accepted symbols and forms of abbreviation should be used, but always give the full expression followed by the abbreviation the first time it appears in the text. Abbreviations and symbols used in tables and figures should be explained in the legends. The use of chemical symbols in the text should be avoided as much as possible, as they disrupt the flow of the sentence as well as the appearance of the typeset page. Complicated chemical compounds can, for the sake of simplicity, be indicated by their chemical formulae, but at least elements and ‘every-day’ compounds such as water, carbon monoxide, carbon dioxide, methane, ethane, ethene, ammonia, formaldehyde, acids, alcohols, etc. should be indicated by their full name (except in long lists). In no case should a combination of symbols and words (e.g. Li-oxide) be used. Hydrogen isotopes should preferably be indicated as $^2$H or $^3$H, rather than as D and T. Use of the trivial names 'paraffins' and 'olefins' should be avoided, 'alkanes' and 'alkenes' should be used instead.

**Artwork**

**General points**

- Make sure you use uniform lettering and sizing of your original artwork.
- Save text in illustrations as "graphics" or enclose the font.
- Only use the following fonts in your illustrations: Arial, Courier, Times, Symbol.
- Number the illustrations according to their sequence in the text.
- Use a logical naming convention for your artwork files.
- Provide captions to illustrations separately.
- Produce images near to the desired size of the printed version.
- Submit each figure as a separate file.

A detailed guide on electronic artwork is available on our website: [https://www.elsevier.com/artworkinstructions](https://www.elsevier.com/artworkinstructions)

**You are urged to visit this site; some excerpts from the detailed information are given here.**

**Formats**

Regardless of the application used, when your electronic artwork is finalised, please "save as" or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

- EPS: Vector drawings. Embed the font or save the text as "graphics".
- TIFF: color or grayscale photographs (halftones): always use a minimum of 300 dpi.
- TIFF: Bitmapped line drawings: use a minimum of 1000 dpi.
- TIFF: Combinations bitmapped line/halftone (color or grayscale): a minimum of 500 dpi is required.
- DOC, XLS or PPT: If your electronic artwork is created in any of these Microsoft Office applications please supply "as is".

**Please do not:**

- Supply files that are optimised for screen use (like GIF, BMP, PICT, WPG); the resolution is too low;
- Supply files that are too low in resolution;
- Submit graphics that are disproportionately large for the content.

**Color artwork**

Please make sure that artwork files are in an acceptable format (TIFF (or JPEG), EPS (or PDF), or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color online (e.g., ScienceDirect and other sites) regardless of whether or not these illustrations are reproduced in color in the printed version. **For color reproduction in print, you will receive**
information regarding the costs from Elsevier after receipt of your accepted article. Please indicate your preference for color: in print or online only. Further information on the preparation of electronic artwork.

**Figure captions**

Ensure that each illustration has a caption. Supply captions separately, not attached to the figure. A caption should comprise a brief title (not on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

**Tables**

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

**References**

**Citation in text**

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

**Data references**

This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

**Reference management software**

Most Elsevier journals have their reference template available in many of the most popular reference management software products. These include all products that support Citation Style Language styles, such as Mendeley. Using citation plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal’s style. If no template is yet available for this journal, please follow the format of the sample references and citations as shown in this Guide. If you use reference management software, please ensure that you remove all field codes before submitting the electronic manuscript. More information on how to remove field codes from different reference management software.

Users of Mendeley Desktop can easily install the reference style for this journal by clicking the following link:

http://open.mendeley.com/use-citation-style/journal-of-membrane-science

When preparing your manuscript, you will then be able to select this style using the Mendeley plug-ins for Microsoft Word or LibreOffice.

**Reference style**

**Text:** Indicate references by number(s) in square brackets in line with the text. The actual authors can be referred to, but the reference number(s) must always be given.

Example: '..... as demonstrated [3,6]. Barnaby and Jones [8] obtained a different result ....'

**List:** Number the references (numbers in square brackets) in the list in the order in which they appear in the text.

**Examples:**

Reference to a journal publication:


Reference to a journal publication with an article number:


Reference to a book:


Note: titles of all referenced articles should be included. Avoid the use of non-retrievable reports. We strongly recommend references to archival literature (and not personal communications or Web sites) only.

Journal abbreviations source
Journal names should be abbreviated according to the List of Title Word Abbreviations.

Video
Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly relate to the video file's content. In order to ensure that your video or animation material is directly usable, please provide the file in one of our recommended file formats with a preferred maximum size of 150 MB per file, 1 GB in total. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect. Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our video instruction pages. Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content.

Data visualization
Include interactive data visualizations in your publication and let your readers interact and engage more closely with your research. Follow the instructions here to find out about available data visualization options and how to include them with your article.

Supplementary material
Supplementary material such as applications, images and sound clips, can be published with your article to enhance it. Submitted supplementary items are published exactly as they are received (Excel or PowerPoint files will appear as such online). Please submit your material together with the article and supply a concise, descriptive caption for each supplementary file. If you wish to make changes to supplementary material during any stage of the process, please make sure to provide an updated file. Do not annotate any corrections on a previous version. Please switch off the 'Track Changes' option in Microsoft Office files as these will appear in the published version.

Research data
This journal encourages and enables you to share data that supports your research publication where appropriate, and enables you to interlink the data with your published articles. Research data refers to the results of observations or experimentation that validate research findings. To facilitate reproducibility and data reuse, this journal also encourages you to share your software, code, models, algorithms, protocols, methods and other useful materials related to the project.

Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. If you are sharing data in one of these ways, you are encouraged to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation. For more information on depositing, sharing and using research data and other relevant research materials, visit the research data page.
**Data linking**

If you have made your research data available in a data repository, you can link your article directly to the dataset. Elsevier collaborates with a number of repositories to link articles on ScienceDirect with relevant repositories, giving readers access to underlying data that gives them a better understanding of the research described.

There are different ways to link your datasets to your article. When available, you can directly link your dataset to your article by providing the relevant information in the submission system. For more information, visit the database linking page.

For **supported data repositories** a repository banner will automatically appear next to your published article on ScienceDirect.

In addition, you can link to relevant data or entities through identifiers within the text of your manuscript, using the following format: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN).

**Mendeley Data**

This journal supports Mendeley Data, enabling you to deposit any research data (including raw and processed data, video, code, software, algorithms, protocols, and methods) associated with your manuscript in a free-to-use, open access repository. During the submission process, after uploading your manuscript, you will have the opportunity to upload your relevant datasets directly to Mendeley Data. The datasets will be listed and directly accessible to readers next to your published article online.

For more information, visit the [Mendeley Data for journals page](#).

**Data in Brief**

You have the option of converting any or all parts of your supplementary or additional raw data into one or multiple data articles, a new kind of article that houses and describes your data. Data articles ensure that your data is actively reviewed, curated, formatted, indexed, given a DOI and publicly available to all upon publication. You are encouraged to submit your article for Data in Brief as an additional item directly alongside the revised version of your manuscript. If your research article is accepted, your data article will automatically be transferred over to Data in Brief where it will be editorially reviewed and published in the open access data journal, Data in Brief. Please note an open access fee of 600 USD is payable for publication in Data in Brief. Full details can be found on the [Data in Brief website](#). Please use this template to write your Data in Brief.

**MethodsX**

You have the option of converting relevant protocols and methods into one or multiple MethodsX articles, a new kind of article that describes the details of customized research methods. Many researchers spend a significant amount of time on developing methods to fit their specific needs or setting, but often without getting credit for this part of their work. MethodsX, an open access journal, now publishes this information in order to make it searchable, peer reviewed, citable and reproducible. Authors are encouraged to submit their MethodsX article as an additional item directly alongside the revised version of their manuscript. If your research article is accepted, your methods article will automatically be transferred over to MethodsX where it will be editorially reviewed. Please note an open access fee is payable for publication in MethodsX. Full details can be found on the [MethodsX website](#). Please use this template to prepare your MethodsX article.

**Data statement**

To foster transparency, we encourage you to state the availability of your data in your submission. This may be a requirement of your funding body or institution. If your data is unavailable to access or unsuitable to post, you will have the opportunity to indicate why during the submission process, for example by stating that the research data is confidential. The statement will appear with your published article on ScienceDirect. For more information, visit the Data Statement page.

**AFTER ACCEPTANCE**
**Online proof correction**
Corresponding authors will receive an e-mail with a link to our online proofing system, allowing annotation and correction of proofs online. The environment is similar to MS Word: in addition to editing text, you can also comment on figures/tables and answer questions from the Copy Editor. Web-based proofing provides a faster and less error-prone process by allowing you to directly type your corrections, eliminating the potential introduction of errors. If preferred, you can still choose to annotate and upload your edits on the PDF version. All instructions for proofing will be given in the e-mail we send to authors, including alternative methods to the online version and PDF.

We will do everything possible to get your article published quickly and accurately. Please use this proof only for checking the typesetting, editing, completeness and correctness of the text, tables and figures. Significant changes to the article as accepted for publication will only be considered at this stage with permission from the Editor. It is important to ensure that all corrections are sent back to us in one communication. Please check carefully before replying, as inclusion of any subsequent corrections cannot be guaranteed. Proofreading is solely your responsibility.

**Offprints**
The corresponding author will, at no cost, receive a customized Share Link providing 50 days free access to the final published version of the article on ScienceDirect. The Share Link can be used for sharing the article via any communication channel, including email and social media. For an extra charge, paper offprints can be ordered via the offprint order form which is sent once the article is accepted for publication. Both corresponding and co-authors may order offprints at any time via Elsevier’s Author Services. Corresponding authors who have published their article gold open access do not receive a Share Link as their final published version of the article is available open access on ScienceDirect and can be shared through the article DOI link.

**AUTHOR INQUIRIES**
Visit the Elsevier Support Center to find the answers you need. Here you will find everything from Frequently Asked Questions to ways to get in touch. You can also check the status of your submitted article or find out when your accepted article will be published.

© Copyright 2018 Elsevier | https://www.elsevier.com