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## Scope of the Journal

[Industrial & Engineering Chemistry Research](#), with variations in title and format, has been published since 1909 by the American Chemical Society. *Industrial & Engineering Chemistry Research* is a weekly publication that reports industrial and academic research in the broad fields of applied chemistry and chemical and biomolecular engineering. Read more at “[About the Journal](#).”

**Papers may be based on work that is experimental or theoretical, mathematical or descriptive, chemical, physical or biological.** In addition to **fundamental research** (in such areas as thermodynamics, transport phenomena, chemical reaction kinetics and engineering, catalysis, separations, interfacial phenomena, and materials), papers may deal with **process design and development** (for example, synthesis and design methods, systems analysis, process control, schemes for data correlation, modeling and scale-up procedures, etc.) and **product research and development involving chemical and engineering aspects** (for example, catalysts, plastics, elastomers, fibers, adhesives, coatings, paper, membranes, lubricants, ceramics, aerosols, etc.). **In addition to traditional subjects, papers dealing with new areas of science and technology that fit the broad scope and objectives of the journal are encouraged.**

**Potential authors are encouraged to read the Editorial, “[Why Wasn’t My Manuscript Sent Out for Review?](#)”.** Papers are accepted on the basis of our Editors’ judgment of their quality and probable lasting value and must contain a significant original contribution that is of interest to a general chemical engineering and/or applied chemistry readership. Papers that simply report data or calculations will be declined for publication. Clarity and conciseness of presentation are key considerations in the selection of papers. Figures and tables should be designed to facilitate rapid communication of information to the reader. Uninterrupted flow of the main ideas in the text can be facilitated by judicious use of appendixes and supporting information.

The Editors generally seek the advice of fellow experts about manuscripts. The recommendations of reviewers are advisory to the Editors, who accept full responsibility for decisions about manuscripts. Final responsibility for acceptance or declination rests with the Editor. Manuscripts considered by the Editors to be inappropriate for *I&EC Research* will be declined after an internal Editorial review. Manuscripts most likely to be declined after Editorial review are those with English deficiencies, those lacking conclusions that are clearly significant and novel, and those with contributions that are judged unlikely to attract the interest of a general applied chemistry or chemical engineering readership.

## Manuscript Types

### Topical Categories

Regular **Articles** are grouped by the Editors in each journal issue according to topical categories (Applied Chemistry; Bioengineering (e.g., biomolecular, biochemical, bioprocess, biological engineering); Kinetics, Catalysis, and Reaction Engineering; Materials and Interfaces; Process

Systems Engineering; Separations; Thermodynamics, Transport, and Fluid Mechanics; or General Research). **At submission, authors should suggest the category that best fits their paper.** The category “General Research” should only be selected when none of the other categories are appropriate.

In addition to full-length **Articles**, other types of manuscripts are also published:

**Reviews** are welcomed in areas appropriate to the journal. Reviews should be timely and in-depth treatments that go considerably beyond a summary compilation of recent literature. They should set the chosen field in perspective and give the reader some critical guidance in the evaluation of the present state of the art or science, the planning of experiments, the interpretation of data, the design of chemical process systems, or the development of products. Acceptance is based on the same peer review system as that used for regular papers.

**Research Note/Communication** is a short report (typically no longer than four, 4, composed journal pages) that call attention to new ideas or data that are especially timely even though at an early stage of development. New laboratory apparatuses or procedures are especially appropriate. Research Notes are reviewed in the same way as regular articles.

**Correspondence** refers to comments concerning articles previously published in the journal. These may include corrections or addendums by the original authors or comments, reinterpretations, etc., by others. In the case of the latter, the original authors are given the opportunity to provide an appropriate rebuttal or addendum.

**Commentaries** may be submitted by invitation or unsolicited. They are intended to be a forum for experts to inform readers about their views on key issues, significant progress, or crucial problems that need to be solved in their field. (See the Editorial in the November 1999 issue (<http://dx.doi.org/10.1021/ie9904908>) for further details about Commentaries.)

Special sections of a journal issue or entire issues may be devoted to blocks of invited papers on selected topics. Special issues may contain papers that generally would not be suitable for regular issues.

## ACS Publishing Center

While this document will provide basic information on how to prepare and submit the manuscript as well as other critical information about publishing, we also encourage authors to visit the [ACS Publishing Center](#) for additional information on everything that is needed to prepare (and review) manuscripts for ACS journals and partner journals, such as

- [Mastering the Art of Scientific Publication](#), which shares editor tips about a variety of topics including making your paper scientifically effective, preparing excellent graphics, and writing cover letters.
- Resources on [how to prepare and submit a manuscript](#) to ACS Paragon Plus, ACS Publications' manuscript submission and peer review environment, including details on selecting the applicable [Journal Publishing Agreement](#).
- [Sharing your research](#) with the public through the ACS Publications open access program.
- [ACS Reviewer Lab](#), a free online course covering best practices for peer review and related ethical considerations.
- [ACS Author Lab](#), a free online course that empowers authors to prepare and submit strong

manuscripts, avoiding errors that could lead to delays in the publication process.

- [ACS Inclusivity Style Guide](#), a guide that helps researchers communicate in ways that recognize and respect diversity in all its forms.

## Manuscript Preparation

### Submit with Fast Format

All ACS journals and partner journals have simplified their formatting requirements in favor of a streamlined and standardized format for an initial manuscript submission. Read more about the requirements and the benefits these serves authors and reviewers [here](#).

Manuscripts submitted for initial consideration must adhere to these standards:

- Submissions must be complete with clearly identified standard sections used to report original research, free of annotations or highlights, and include all numbered and labeled components.
- Figures, charts, tables, schemes, and equations should be embedded in the text at the point of relevance. Separate graphics can be supplied later at revision, if necessary.
- When required by a journal's structure or length limitations, manuscript templates should be used.
- References can be provided in any style, but they must be complete, including titles. For information about the required components of different reference types, please refer to the [ACS Style Quick Guide](#).
- Supporting Information must be submitted as a separate file(s).

### Document Templates and Format

The templates facilitate the peer review process by allowing authors to place artwork and tables close to the point where they are discussed within the text. Learn more about document templates [here](#).

General information on the preparation of manuscripts may also be found in the [ACS Guide to Scholarly Communication](#).

### Acceptable Software, File Designations, and TeX/LaTeX

See the list of [Acceptable Software](#) and appropriate [File Designations](#) to be sure your file types are compatible with ACS Paragon Plus. Information for manuscripts generated from [TeX/LaTeX](#) is also available.

### Cover Letter

A cover letter must accompany every manuscript submission. During the submission process, you may type it or paste it into the submission system, or you may attach it as a file.

The cover letter should provide the corresponding author's name, postal and e-mail addresses, and telephone numbers. Unless different instructions are furnished in the cover letter, all Editorial correspondence concerning receipt, status, review, revision, and publication of manuscripts will be

sent **only** to one person who has been assigned as the “corresponding author” during the evaluation period. The corresponding author is responsible for communicating the manuscript status to all coauthors of the paper.

In the cover letter, authors must suggest a minimum of 6-8 persons (including their affiliation and e-mail address) that are competent to review the manuscript. Authors are asked to refrain from suggesting colleagues from their own institution(s) and are asked to refrain from suggesting colleagues solely from one geographic region.

Authors may also request that a certain person not be used as a reviewer. Such a request will generally be honored by the Editor handling the manuscript, unless the Editor feels that this individual’s opinion (in conjunction with the opinions of other reviewers) is vital in the evaluation of the manuscript. The selection of appropriate reviewers is the prerogative of the Associate Editor handling the manuscript.

If the manuscript has been previously posted in an online repository or is part of a thesis/dissertation, this should also be disclosed in the cover letter. See below for *I&EC Research’s* full prior publication policy.

A mechanism is provided for submitting an electronic cover letter, which should include the above elements. An acknowledgment letter will be sent to the corresponding author, and it will indicate the Associate Editor that has been selected by the Editor to handle the manuscript..

## **Manuscript Text Components**

### **Title Page**

Each manuscript must have a title page including the manuscript title, all author names on one line, and each author’s affiliation at the time the work was completed. Current affiliations, if different, can be given in a footnote on the title page. Full addresses, including zip code, should be included for each affiliation. The corresponding author should be indicated with an asterisk and the corresponding author’s email address provided on the title page. Keywords are not required.

### **Table of Contents and Abstract Graphics**

A Table of Contents (TOC)/Abstract graphic must be included with each manuscript submission (with the exception of Correspondence-type papers). Provide the TOC graphic upon submission of the paper as the last page of the manuscript. This graphic should capture the reader’s attention and, in conjunction with the manuscript title, should give the reader a quick visual impression of the essence of the paper without providing specific results. The graphic should be in the form of a structure, graph, drawing, SEM/TEM photograph, or reaction scheme. The author must submit a graphic in the actual size to be used for the TOC that will fit in an area 1.87 in. high and 3.33 in. wide (4.76 cm × 8.46 cm). Larger images generally will be reduced to fit within those dimensions. The font size of labels, formulas, or numbers within the graphic must be legible. Tables or spectra are not acceptable.

TOC/Abstract Graphic Sizes:

- Width: 240 points / ~3.33 inches / ~8.47 cm
- Depth: 134 points / ~1.87 inches / ~4.76 cm

## Abstract

Authors' abstracts are used directly for *Chemical Abstracts*. They should be a clear, concise (100-150 words) summary/informative rather than descriptive/giving the scope and purpose, methods or procedures, significant new results, and conclusions. **Do not include footnotes or numbered references in the Abstract; use the full citation, enclosed in square brackets.**

## Graphics

The preferred submission procedure is to embed graphic files in a Word document, but they may also be uploaded separately. Each figure, table, and scheme should be clearly labeled with a brief description/caption. Graphics should be sequentially numbered and cited in the text. Graphic quality is the responsibility of the author. It may help to print the manuscript on a laser printer to ensure all artwork is clear and legible. Most graphic programs provide an option for changing the resolution when you are saving the image. Best practice is to save the graphic file at the final resolution and size using the program used to create the graphic. See Appendix 2 for additional guidelines on preparing graphics.

Each weekly issue of *Industrial & Engineering Chemistry Research* features unique Front Cover Art with selected TOC graphics or author-submitted images. Authors are encouraged to take advantage of the opportunity to create visually appealing TOC graphics and submit potential cover images (Front Cover or Supplementary Cover art). The cover graphic size requirement is described with the Supplementary Covers program below.

## Text

Assume the reader is not a novice in the field. Include only as much history as is needed to provide background for the particular material covered in your paper. Sectionalize the article and insert appropriate headings. Do not use footnotes in the text. Each page should be numbered.

## Supporting Information Paragraph

If Supporting Information intended for publication accompanies the manuscript, a brief statement in non-sentence format, which lists the contents of material placed in Supporting Information, should be included at the end of the manuscript (after the Acknowledgment and before the References and Footnotes). For instructions on what material should be provided as Supporting Information and on preparing it for publication, see the "Supporting Information" section below.

## References

References should comply with the Review Ready Submission format (described above). References and notes should be grouped at the end of the manuscript file and sequentially numbered in the order in which they are first mentioned in the text (not alphabetical). Article titles should be included. All author names should be listed rather than "et al."

## Supporting Information

This information is provided to the reviewers during the peer-review process (for Review Only) and is available to readers of the published work (for Publication). Supporting Information must be submitted at the same time as the manuscript. See the list of [Acceptable Software by File](#)

[Designation](#) and confirm that your Supporting Information is [viewable](#).

If the manuscript is accompanied by any supporting information files for publication, these files will be made available free of charge to readers. A brief, nonsentence description of the actual contents of each file, including the file type extension, is required. This description should be labeled Supporting Information and should appear before the Acknowledgement and Reference sections. Examples of sufficient and insufficient descriptions are as follows:

Examples of sufficient descriptions: “Supporting Information:  $^1\text{H}$  NMR spectra for all compounds (PDF)” or “Additional experimental details, materials, and methods, including photographs of experimental setup (DOC)”.

Examples of insufficient descriptions: “Supporting Information: Figures S1-S3” or “Additional figures as mentioned in the text”.

When including supporting information for review only, include copies of references that are unpublished or in-press. These files are available only to editors and reviewers.

## Research Data Policy

All ACS journals strongly encourage authors to make the research data underlying their articles publicly available at the time of publication.

*Research data* is defined as materials and information used in the experiments that enable the validation of the conclusions drawn in the article, including primary data produced by the authors for the study being reported, secondary data reused or analyzed by the authors for the study, and any other materials necessary to reproduce or replicate the results.

The [ACS Research Data Policy](#) provides additional information on Data Availability Statements, Data Citation, and Data Repositories.

## Data Requirements

*Industrial & Engineering Chemistry* Research does not have specific data requirements. Some resources are available in the [ACS Publishing Center](#), such as the [ACS Math Style Sheet](#) and [NMR Guidelines](#).

## Language and Editing Services

A well-written paper helps share your results most clearly. ACS Publications' [English Editing Service](#) is designed to help scientists communicate their research effectively. Our subject-matter expert editors will edit your manuscript for grammar, spelling, and other language errors so your ideas are presented at their best.

## Preparing Graphics

The quality of illustrations in ACS journals and partner journals depends on the quality of the original files provided by the authors. Figures are not modified or enhanced by journal production staff. All graphics must be prepared and submitted in digital format.

Graphics should be inserted into the main body whenever possible. Please see Appendix 2 for

additional information.

Any graphic (figure chart, scheme, or equation) that has appeared in an earlier publication should include a [credit line](#) citing the original source. Authors are responsible for [obtaining written permission](#) to re-use this material.

## Figure and Illustration Services

The impact of your research is not limited to what you can express with words. Tables and figures such as graphs, photographs, illustrations, diagrams, and other visuals can play a significant role in effectively communicating your findings. Our [Artwork Editing](#) and [Graphical Abstract](#) services generate publication-ready figures and Table of Contents (TOC) graphics that conform to your chosen journal's specifications. For figures, this includes changes to file type, resolution, color space, font, scale, line weights, and layout (to improve readability and professional appearance). For TOC graphics, our illustrators can work with a rough sketch or concept or help extract the key findings of your manuscript directly for use as a visual summary of your paper.

## Preparing for Submission

Manuscripts, graphics, supporting information, and required forms, as well as manuscript revisions, must all be submitted in digital format through [ACS Paragon Plus](#), which requires an ACS ID to log in. Registering for an ACS ID is fast, free, and does not require an ACS membership. Please refer to Appendix 1 for additional information on preparing your submission

## Prior Publication Policy

[Industrial & Engineering Chemistry Research](#) (*I&EC Research*) considers for publication original work that has not been previously published and is not under consideration for publication elsewhere. Related work under consideration for publication in any medium must be cited in the manuscript and the Editor-in-Chief informed at the time of submission. An author must inform the Editor-in-Chief of prior dissemination of the content in print or electronic formats in the cover letter. Common types of prior dissemination are addressed individually below.

1. Posting of the original submitted manuscript to a pre-print server is acceptable. Please note the use of a pre-print server explicitly in the cover letter, and as appropriate, state how the manuscript has been adjusted/updated between the pre-print version and the version submitted to *I&EC Research*. Authors may not revise these preprints. Upon publication in *I&EC Research*, authors are advised to add a link from the preprint to the published paper via the Digital Object Identifier (DOI). Some services, such as [ChemRxiv](#) and bioRxiv, add this link for authors automatically after publication.
2. Authors submitting material that has been used in their thesis/dissertation must notify the Editor-in-Chief in the cover letter. Authors should confirm that they alone hold the copyright to the work and have read and comply with the [ACS dissertation policy](#) and the conditions and procedures laid out in the [ACS Journal Publishing Agreement](#).
3. Publishing material that has been used in reports to research sponsors is acceptable provided one or more of the authors holds the copyright.

## Editorial Policies

## Related Work by Author

When a reference concerning related work by the author is cited in the submitted manuscript and such work is not available to the reviewers because it is “under review”, “in press” (accepted), or has been submitted to any other journals, it must be uploaded with the manuscript for use by the Editors and reviewers if it is relevant to the present manuscript. This type of reference material should be uploaded separately, with the designation “Supporting Information for Review Only” at the time of submission. If only hardcopy is available, the author must first convert it to an electronic file (e.g., scan to PDF).

## General Considerations

*I&EC Research* has no current restrictions on page or word limits. An appropriate length is left to the joint discretion of the authors and reviewers. Authors should present their materials with the utmost conciseness consistent with clarity. Papers should be written in a style that addresses a wider audience than papers prepared for more specialized journals.

**Chemical Structures.** Structure drawing preferences (preset in the ACS Stylesheet in ChemDraw) are as follows:

- As drawing settings, select: chain angle, 120° bond spacing, 18% of width fixed length, 14.4 pt (0.508 cm, 0.2 in.) bold width, 2.0 pt (0.071 cm, 0.0278 in.) line width, 0.6 pt (0.021 cm, 0.0084 in.) margin width, 1.6 pt (0.056 cm, 0.0222 in.) hash spacing, 2.5 pt (0.088 cm, 0.0347 in.)
- As text settings, select: font, Arial/Helvetica size, 10 pt
- Under the preferences, choose: units, points tolerances, 5 pixels
- Under page setup, choose: paper, US Letter scale, 100%

Authors using other drawing packages should, in as far as possible, modify their program's parameters so that they reflect the above guidelines.

## Revised Manuscripts

When a revision is requested, authors must submit the revised manuscript promptly. The revision deadlines for peer-reviewed manuscripts in *I&EC Research* are as follows:

- Minor Revision: 21 days
- Major Revision: 30 days
- Reject & Resubmit: 90 days

A revised manuscript received after the given deadline will be handled as a new submission and will be given a new receipt date.

## Providing Potential Reviewer Names

Please suggest a minimum of 6-8 reviewers (including their affiliation and email address) that are competent to review the manuscript. Authors are asked to refrain from suggesting colleagues solely from one geographic region. Authors are encouraged to avoid suggesting reviewers from the authors' institutions. Do not suggest reviewers who may have a [real or perceived conflict of interest](#). Whenever possible, suggest academic email addresses rather than personal email addresses.



## Manuscript Transfer

If your submission is declined for publication by this journal, the editors might deem your work to be better suited for another ACS Publications journal or partner journal and suggest that the authors consider transferring the submission. [Manuscript Transfer](#) simplifies and shortens the process of submitting to another ACS journal or partner journal, as all the coauthors, suggested reviewers, manuscript files, and responses to submission questions are copied by ACS Paragon Plus to the new draft submission. Authors are free to accept or decline the transfer offer.

Note that each journal is editorially independent. Transferring a manuscript is not a guarantee that the manuscript will be accepted, as the final publication decision will belong to the editor of the next journal.

## PRODUCTION AND PUBLICATION

### Proofs via ACS Direct Correct

Correction of the galley proofs is the responsibility of the Corresponding Author. The Corresponding Author of an accepted manuscript will receive e-mail notification and complete instructions when page proofs are available for review via [ACS Direct Correct](#). Extensive or important changes on page proofs, including changes to the title or list of authors, are subject to review by the editor.

It is the responsibility of the Corresponding Author to ensure that all authors listed on the manuscript agree with the changes made on the proofs. Galley proofs should be returned within 48 hours in order to ensure timely publication of the manuscript.

### Publication Date and Patent Dates

Accepted manuscripts will be published on the ACS Publications Web site as soon as page proofs are corrected and all author concerns are resolved. The first date on which the document is published on the Web is considered the publication date.

Publication of manuscripts on the Web may occur weeks in advance of the cover date of the issue of publication. Authors should take this into account when planning their patent and intellectual property activities related to a document and should ensure that all patent information is available at the time of first publication, whether ASAP or issue publication.

All articles published ahead of print receive a unique Digital Object Identifier (DOI) number, which is used to cite the manuscript before and after the paper appears in an issue. Additionally, any supplemental information submitted along with the manuscript will automatically be assigned a DOI and hosted on Figshare to promote open data discoverability and use of your research outputs.

### ASAP Publication

Manuscripts will be published on the "ASAP Articles" page on the web as soon as page proofs are corrected and all author concerns are resolved. ASAP publication usually occurs within a few working days of receipt of page proof corrections, which can be several weeks in advance of the

cover date of the issue.

## Post-Publication Policies

The American Chemical Society follows guidance from the [Committee on Publication Ethics](#) (COPE) when considering any ethical concerns regarding a published article, Retractions, and Expressions of Concern.

## Additions and Corrections

Additions and Corrections may be requested by the author(s) or initiated by the Editor to address important issues or correct errors and omissions of consequence that arise after publication of an article. All Additions and Corrections are subject to approval by the Editor, and should bring new and directly relevant information and corrections that fix scientific facts. Minor corrections and additions will not be published. Readers who detect errors of consequence in the work of others should contact the corresponding author of that work.

Additions and Corrections must be submitted as new manuscripts via ACS Paragon Plus by the Corresponding Author for publication in the "Addition/Correction" section of the Journal. The corresponding author should obtain approval from all coauthors prior to submitting or provide evidence that such approval has been solicited. The manuscript should include the original article title and author list, citation including DOI, and details of the correction.

## Retractions

Articles may be retracted for scientific or ethical reasons and may be requested by the article author(s) or by the journal Editor(s), but are ultimately published at the discretion of the Editor. Articles that contain seriously flawed or erroneous data such that their findings and conclusions cannot be relied upon may be retracted in order to correct the scientific record. When an article is retracted, a notice of Retraction will be published containing information about the reason for the Retraction. The originally published article will remain online except in extraordinary circumstances (e.g. where deemed legally necessary, or if the availability of the published content poses public health risks).

## Expressions of Concern

Expressions of Concern may be issued at the discretion of the Editor if:

- there is inconclusive evidence of research or publication misconduct by the authors;
- there is evidence that the findings are unreliable but the authors' institution will not investigate the case;
- an investigation into alleged misconduct related to the publication either has not been, or would not be, fair and impartial or conclusive;
- an investigation is underway but a judgment will not be available for a considerable time.

Upon completion of any related investigation, and when a final determination is made about the outcome of the article, the Expression of Concern may be replaced with a Retraction notice or Correction.

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Publishing open access makes it easy to share your work with friends, colleagues, and family members. In addition, ACS Publications makes it easy to share your newly published research with ACS Articles on Request (see below). Don't forget to promote your research and related data on social media, at conferences, and through scholarly communication networks. Increase the impact of your research using the following resources: [Altmetrics](#), [Figshare](#), [ACS Certified Deposit](#)

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When your article is published in an ACS journal or partner journal, corresponding authors are provided with a link that offers up to 50 free digital prints of the final published work. This link is valid for the first 12 months following online publication, and can be shared via email or an author's website. After one year, the access restrictions to your article will be lifted, and you can share the [Articles on Request](#) URL on social media and other channels. To access all your Articles on Request links, log in to your ACS Publishing Center account and visit the "My Published Manuscripts" page.

## Reprints

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# Appendix 1: PREPARING FOR SUBMISSION

We've developed ACS' publishing and editorial policies in consultation with the research communities that we serve, including authors and librarians. Browse our policies below to learn more.

## Ethical Guidelines

ACS editors have provided [Ethical Guidelines](#) for persons engaged in the publication of chemical research—specifically, for editors, authors, and reviewers. Each journal also has a specific [policy on prior publication](#).

## OFAC Compliance

As a U.S.-based non-profit organization, the American Chemical Society (ACS) is required to comply with U.S. sanctions laws and regulations administered by the [U.S. Treasury Department's Office of Foreign Assets Control](#) (OFAC). While these laws and regulations permit U.S.-based publishers like ACS to engage in publishing-related activities with authors located in sanctioned regions in many cases, ACS may be prohibited under U.S. law from engaging in publishing-related activities in some cases, including, but not limited to, instances where an author or the institution with which an author is affiliated is located in a particular sanctioned region or has been designated by OFAC as a [Specially Designated National](#) (SDN) pursuant to certain U.S. sanctions programs. ACS reserves the right to refrain from engaging in any publishing-related activities that ACS determines in its sole discretion may be in violation of U.S. law.

## Safety Considerations

Authors must emphasize any unexpected, new, and/or significant hazards or risks associated with the reported work. This information should be in the Experimental Section of a full article and included in the main text of a letter. Statement examples can be found in the [Safety Statement Style Sheet](#) and additional information on communicating safety information from the *ACS Guide to Scholarly Communication* [is freely available here](#).

## Conflict of Interest Disclosure

A statement describing any financial conflicts of interest or lack thereof is published in each ACS journal and partner journal article.

During the submission process, the Corresponding Author must provide a statement on behalf of all authors of the manuscript, describing all potential sources of bias, including affiliations, funding sources, and financial or management relationships, that may constitute conflicts of interest. If the manuscript is accepted, the statement will be published in the final article.

If the manuscript is accepted and no conflict of interest has been declared, the following statement will be published in the final article: "The authors declare no competing financial interest."

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## Authorship, Author List, and Coauthor Notification

Authors are required to obtain the consent of all their coauthors prior to submitting a manuscript. The submitting author accepts the responsibility of notifying all coauthors that the manuscript is being submitted.

During manuscript submission, the submitting author must provide contact information (full name, email address, institutional affiliation, and mailing address) for all of the coauthors. Because all of the author names are automatically imported into the electronic [Journal Publishing Agreement](#), the names must be entered into ACS Paragon Plus. (Note that coauthors are not required to register in ACS Paragon Plus.) Author affiliation should reflect where the work was completed, even if the author has since left that institution. Authors may include a note with a current address if their institution has changed since the work was completed.

To expedite the processing of your manuscript, please format your author and affiliation

information according to the guidelines in this link:

<https://pubsapp.acs.org/paragonplus/submission/author-address-information.pdf>.

Criteria for authorship can be found in Part B of the [Ethical Guidelines to Publication of Chemical Research](#). Artificial intelligence (AI) tools do not qualify for authorship. The use of AI tools for text or image generation should be disclosed in the manuscript within the Acknowledgment section with a description of when and how the tools were used. For more substantial use cases or descriptions of AI tool use, authors should provide full details within the Methods or other appropriate section of the manuscript.

If any change in authorship is necessary after a manuscript has been submitted, confirmation is required that all of the authors (including those being added or removed) have been notified and have agreed to the change. To provide this confirmation, authors are asked to complete and sign an [authorship change form](#) and provide the completed form to the appropriate editorial office.

## Patent Activities and Intellectual Property

Authors are responsible for ensuring that all patent activities and intellectual property issues are satisfactorily resolved prior to first publication (ASAP or in issue). Acceptance and publication will not be delayed for pending or unresolved issues of this nature.

## Open Researcher and Contributor ID (ORCID)

Authors submitting manuscript revisions are required to provide their own personal, validated ORCID iD before completing the submission, if an ORCID iD is not already associated with their ACS Paragon Plus user profiles. This ID may be provided during original manuscript submission or when submitting the manuscript revision. All authors are strongly encouraged to register for an ORCID iD, a unique researcher identifier. The ORCID iD will be displayed in the published article for any author on a manuscript who has a validated ORCID iD associated with ACS when the manuscript is accepted.

ORCID iDs should not be typed into the manuscript. ACS publishes only those ORCID iDs that have been properly verified and linked **before the manuscript is accepted**. After your ORCID iD is linked, it will be displayed automatically in all subsequently accepted manuscripts for any/all ACS journals. We do not publish ORCID iDs provided during proof review or via other communications after a manuscript is accepted for publication.

With an ORCID iD, you can create a profile of your research activities to distinguish yourself from other researchers with similar names, and make it easier for your colleagues to find your publications. If you do not yet have an ORCID iD, or you wish to associate your existing ORCID iD with your ACS Paragon Plus account, you may do so by clicking on "Edit Your Profile" from your ACS Paragon Plus account homepage and following the ORCID-related links. Learn more at [www.orcid.org](http://www.orcid.org).

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## Funder Reporting Requirement

Authors are [required to report funding sources](#) and grant/award numbers. Enter **ALL** sources of funding for **ALL** authors in **BOTH** the Funder Registry Tool in ACS Paragon Plus and in your manuscript to meet this requirement.

## Open Access Compliance

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## Appendix 2: Preparing Graphics

### Resolution

Digital graphics pasted into manuscripts should have the following minimum resolutions:

- Black and white line art, 1200 dpi
- Grayscale art, 600 dpi
- Color art, 300 dpi

### Size

Graphics must fit a one- or two-column format. Single-column graphics can be sized up to 240 points wide (3.33 in.) and double-column graphics must be sized between 300 and 504 points (4.167 in. and 7 in.). The maximum depth for all graphics is 660 points (9.167 in.) including the caption (allow 12 pts. For each line of caption text). Lettering should be no smaller than 4.5 points in the final published format. The text should be legible when the graphic is viewed full-size. Helvetica or Arial fonts work well for lettering. Lines should be no thinner than 0.5 point.

### Color

Color may be used to enhance the clarity of complex structures, figures, spectra, and schemes, etc., and color reproduction of graphics is provided at no additional cost to the author. Graphics intended to appear in black and white or grayscale should not be submitted in color.

### Type of Graphics

#### Table of Contents (TOC)/Abstract Graphic

Consult the Guidelines for [Table of Contents/Abstract Graphics](#) for specifications.

Our team of subject-matter experts and graphical designers can also help generate a compelling TOC graphic to convey your key findings. Learn more about our [Graphical Abstract service](#).

## Figures

A caption giving the figure number and a brief description must be included below each figure. The caption should be understandable without reference to the text. It is preferable to place any key to symbols used in the artwork itself, not in the caption. Ensure that any symbols and abbreviations used in the text agree with those in the artwork.

## Charts

Charts (groups of structures that do not show reactions) may have a brief caption describing their contents.

## Tables

Each table must have a brief (one phrase or sentence) title that describes the contents. The title should be understandable without reference to the text. Details should be put in footnotes, not in the title. Tables should be used when the data cannot be presented clearly in the narrative, when many numbers must be presented, or when more meaningful inter-relationships can be conveyed by the tabular format. Tables should supplement, not duplicate, information presented in the text and figures. Tables should be simple and concise.

## Schemes

Each scheme (sequences of reactions) may have a brief caption describing its contents.

## Chemical Structures

Chemical structures should be produced with the use of a drawing program such as ChemDraw.

## Cover Art

*Industrial & Engineering Chemistry Research* authors are encouraged to submit images to be considered for use on the journal's front cover or [Supplementary Covers](#) at the time of the revised manuscript's submission. Cover image submissions should be colorful and visually engaging, with minimal text. The ideal cover image will not resemble a graphical abstract or data figure, but rather should be an artistic and scientifically accurate representation of the manuscript's content.

If your article is accepted for publication, your suggestion may also be selected for use on one of the journal's covers. If your art is selected for front cover, ACS will send you information about how to request one complimentary 18" by 24" printed poster featuring your work.

Image files should be submitted as TIF, JPG, PNG or EPS files with a resolution of at least 300 dpi for pixel-based images. Images should be 6.79 in x 5.44 in. (or 17.19 cm x 13.82 cm). Authors should submit the cover image, along with a short, clear legend explaining the image, as supplementary files to ACS Paragon Plus with their revised manuscript.

If you wish to be considered only for the front cover, and not a paid supplementary cover, please respond NO accordingly to the Supplementary Cover Art question in ACS Paragon Plus. For more information on the Supplementary Covers program, please see [this webpage](#). All art submitted for

consideration for a supplementary cover will also be considered for a front cover.

## **Web Enhanced Objects (WEO)**

The Web editions of ACS journals allow readers to view multimedia attachments such as animations and movies that complement understanding of the research being reported.

WEOs should be uploaded in ACS Paragon Plus with 'Web Enhanced Object' selected as the file designation. Consult the list of [compatible WEO formats](#).