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DESCRIPTION

The Chemical Engineering Journal focuses upon five aspects of chemical engineering: catalysis, chemical reaction engineering, environmental chemical engineering, green and sustainable science and engineering, and novel materials.

The Chemical Engineering Journal is an international research journal and invites contributions of original and novel fundamental research. The journal aims to provide an international forum for the presentation of original fundamental research, interpretative reviews and discussion of new developments in chemical engineering. Papers which describe novel theory and its application to practice are welcome, as are those which illustrate the transfer of techniques from other disciplines. Reports of carefully executed experimental work, which is soundly interpreted are also welcome. The overall focus is on original and rigorous research results that have generic significance.

Within the Chemical Engineering Journal, the Catalysis section presents Experimental and Theoretical studies in the fields of heterogeneous catalysis, molecular catalysis, and biocatalysis with industrial impact on chemicals, energy, materials, foods, healthcare, and environmental protection.

Within the Chemical Engineering Journal, the Environmental Chemical Engineering section presents papers dealing with emerging topics in environmental chemical and process engineering, including pollution control, separation processes, advanced oxidation processes, adsorption of contaminants, resources recovery, waste-to-energy, environmental nanotechnology and bioprocesses, CO2 capture and utilization, and micro(nano) plastic detection and remediation.

Within the Chemical Engineering Journal, the Chemical Reaction Engineering section presents papers on a wide range of topics including reaction kinetics, simulation and optimization of different types of reactors, unsteady-state reactors, multiphase reactors, and process intensification including fundamental investigations of the processes of heat, mass and momentum transfer that take place along with chemical reactions. Innovative research works addressing critical areas of reactor engineering (e.g. novel reactor designs and materials, reactor safety and environmental issues), and emerging reactor technologies (e.g. membrane reactors, chromatographic reactors, unconventional fluidized bed reactors, electrochemical reactors, micro-reactors, photoreactors, fuel cells, enzymatic reactors, etc.) are particularly welcome. Submissions based entirely on e.g., numerical simulations with commercial CFD codes without novel experimental validation; novel sensing devices without a component of reaction engineering; theoretical mathematics; combustion in the context of energy conversion; or straightforward bioreactor applications (bacteria or animal cells) are highly discouraged, as these will find better fit in other existent journals.
Within the *Chemical Engineering Journal*, the **Green and Sustainable Science and Engineering** section presents papers focusing on innovative scientific and engineering solutions for sustainable future of human beings and nature. Topics in this section include, but are not limited to, the following: 1) Emerging materials and processes for green conversion of resources (including oil, gas, coal, biomass, plastics, and synthesis gas); 2) Green processes and system integration for renewable and clean energy production (including biofuels and H2), advanced treatment of air/water/solids, resource recovery (including nutrients, heavy metals, rare earth elements, and energy), energy-food-water nexus, and minimization of environmental pollution and hazardous materials (including environmental and economic impact assessment); and 3) Innovative separation, purification, and storage technologies for renewable and clean energy, greenhouse gases (e.g., CO2 and CH4), and intermediates/by-products.

The **Novel Materials for Energy and Advanced Applications** section of Chemical Engineering Journal considers papers describing the development of new functional materials and/or materials processing strategies with demonstrated practical applications. Theoretical calculations can be included, but all papers considered must have an experimental component. Any paper with a demonstrated application will be considered, including:

- Materials for sensors (gas sensors, strain sensors, electrochemical sensors, biosensors, optical sensors, or biomedical sensors provided the emphasis is new materials development)
- Biomedical materials (nanomedicine, photothermal/photodynamic therapy, tissue engineering, drug delivery, wound healing, gene therapy)
- Materials for agriculture (agrochemical delivery vehicles, materials for pest management)
- Functional polymer composites (shape memory or self-healing materials with demonstrated applications, flame-retardant materials, adhesives, sustainable materials, thermal management materials, electromagnetic shielding materials)
- Functional surfaces (superhydrophobic/self-cleaning surfaces, antimicrobial surfaces, anti-icing surfaces, anti-corrosion coatings)
- Materials for photo(electro)catalytic fuel production (water splitting, nitrogen fixation, CO2 reduction)
- Materials for solar cells (dye-sensitized solar cells, perovskite solar cells, organic solar cells)
- Materials for electrochemical energy storage (primary and secondary batteries, flow batteries, supercapacitors, dielectric capacitors)
- Materials for thermal/thermochemical energy storage/conversion (phase change materials, energy storage materials, thermolectric devices)
- Energetic materials (explosives, propellants)
- Materials for electrocatalytic reactions (water splitting, hydrogen/oxygen evolution)
- Light-emitting and light-filtering materials (LEDs/OLEDs, photodetectors, optical thermometry, electrochromic materials)

**AUDIENCE**

Chemical and Process Engineers, Applied Chemists and Product Engineers, Biochemical Engineers and Biotechnologists.

**IMPACT FACTOR**

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ABSTRACTING AND INDEXING

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GUIDE FOR AUTHORS

INTRODUCTION

Submission of Papers: Manuscripts should be submitted to one of the following section Editors as defined in the journal Aims & Scope and according to the Editor's specialties. If you are unsure about to whom you should submit a manuscript, please submit it to any Editor in the appropriate section.

Environmental Chemical Engineering:

Stephen Allen: Adsorption (liquid and gas); Ion exchange; Water treatment (physico/chemical methods); Air/gas treatment, NOx control, CO2 capture; Constructed wetlands and reed beds for water treatment; Agricultural wastes (liquid and solid); Solid waste treatment and bioconversion; Sustainable development or processes

Tejraj Aminabhavi: Environmental membrane filtration processes; Emerging pollutant separation and solid-waste minimization; Environmental pollution abatement; Effluent or influent treatment by electrocoagulation and membrane distillation; Toxic metal separation and recovery; Acid/flue gas separation; Desulfurization

Dionysios (Dion) Dionysiou: Advanced oxidation processes/technologies (AOPs/AOTs); Photocatalysis; Environmental catalysis; Membranes processes; Electrooxidation, electrochemical methods; Particle separation; Separation processes; Environmental nanotechnology (focus on environmental remediation, environmental sensing)

Chemical Reaction Engineering:

Guy B. Marin: Chemical kinetics; heterogeneous catalysis; (petro)chemical processes, polymerization, reactor design and modelling, reactor scale-up, crude oil refining, natural gas valorisation, renewables

Nuno M. Reis: Micro-reactor technology, fluid mechanics, CFDs, gas-liquid mixing, multiphase reactors, process intensification, biological reactors, biofuels

King Yeung: Heterogeneous catalysis (including environmental catalysis, photocatalysis and enzyme), novel and hybrid reactor system, miniature flow reactor and microreactor, green and fine chemistry

Novel Materials for Energy and Advanced Applications:

Todd Hoare: Functional polymers and polymer nanocomposites; biomaterials and materials for biomedical applications; superhydrophobic/superwetting materials; flame retardant materials; corrosion inhibiting materials; novel encapsulation methods and applications

Dimitris I. Kondarides: Materials for energy storage devices (primary and secondary batteries, supercapacitors); materials for solar energy conversion and storage (photo(electro)catalytic water splitting, CO2 reduction, nitrogen fixation; dye-sensitized solar cells); energetic materials; electromagnetic wave absorbing materials; luminescent materials and phosphors

Theophilos Ioannides: Electrochemical energy storage (batteries, supercapacitors), Dielectric capacitors, Thermal energy storage (phase change materials), Chemical energy storage, Solar evaporation, Thermoelectrics, Electromagnetic wave absorption and interference shielding, Triboelectric generators, Energetic materials

Reviews and Perspectives:

Jesus Santamaria: Submissions on Review Articles and Perspectives will be handled by Professor Santamaria.

Types of papers

The editors make every effort to ensure that manuscripts are fairly and independently reviewed. Submissions which describe novel theory and its application to practice are welcome, as are those which illustrate the transfer of techniques from other disciplines.
Reports of carefully executed experimental work which is soundly interpreted are also welcome. Manuscripts of routine studies, however, presenting experimental data but without any significant new interpretation or novelty, or that are very specific and applied in their scope, will be rejected by the editors as "lacking in novel content".

**Original papers** - these should be complete and authoritative accounts of work, which has a special significance and must be presented clearly and concisely.

**Review articles** - We expect our reviews to be authoritative pieces of work, aimed at describing recent progress in relevant research areas within the scope of the Journal, with the non-expert reader in mind. Rather than attempting a thorough review of the field, authors should concentrate on essential developments, to give a balanced account of the state of the art, discuss key results and provide insight on the perspectives for that research field. Prospective authors of a review article may consult with the Review Editor or one of the other Editors to check the suitability of their topic and material before submitting their review. To keep the review manuscripts concise and readable, as a general rule they should be limited to 10,000 words, 10 figures and up to 150 references.

**Perspectives** - Perspectives are a new type of contribution in the Chemical Engineering Journal. They are meant as short opinion papers addressing a key, often emerging, research area. They should balance the personal view of the author and a reasoned discussion of recent results of great importance. While they often examine the evolution of the field, they are not meant as a mini-review, but as a scholarly discussion that helps to identify new trends and developments in a given field. Perspective manuscripts should contain no more than 3000 words, up to three figures and 60 references. They are always commissioned by the Editor in charge.

**Short communications** - will be accepted for the early communication of important and original advances. Such accounts may be of a preliminary nature but should always be complete and should not exceed the equivalent of 3000 words, including figures and tables.

**Letters to Editors** - raise scientific or technical questions about a published article. They are typically no longer than 1000 words. These letters will be considered for publication only if they contribute an added value or special consideration to a specific article that has already published in the Chemical Engineering Journal. Letters-to-the-Editor should be submitted directly to the appropriate Editor by e-mail. Publication and/or peer review of submitted letters will occur solely at the Editors discretion. It should be noted that authors of the original research article will be given the opportunity to publicly respond to any Letter-to-the-Editor should it be accepted for publication.

**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.

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    - Include keywords
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  - **Graphical Abstracts / Highlights files** (where applicable)
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- Further considerations
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BEFORE YOU BEGIN

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Reporting sex- and gender-based analyses
Reporting guidance
For research involving or pertaining to humans, animals or eukaryotic cells, investigators should integrate sex and gender-based analyses (SGBA) into their research design according to funder/sponsor requirements and best practices within a field. Authors should address the sex and/or gender dimensions of their research in their article. In cases where they cannot, they should discuss this as a limitation to their research's generalizability. Importantly, authors should explicitly state what definitions of sex and/or gender they are applying to enhance the precision, rigor and reproducibility of their research and to avoid ambiguity or conflation of terms and the constructs to which they refer (see Definitions section below). Authors can refer to the Sex and Gender Equity in Research (SAGER) guidelines and the SAGER guidelines checklist. These offer systematic approaches to the use and editorial review of sex and gender information in study design, data analysis, outcome reporting and research interpretation - however, please note there is no single, universally agreed-upon set of guidelines for defining sex and gender.

Definitions
Sex generally refers to a set of biological attributes that are associated with physical and physiological features (e.g., chromosomal genotype, hormonal levels, internal and external anatomy). A binary sex categorization (male/female) is usually designated at birth ("sex assigned at birth"), most often based solely on the visible external anatomy of a newborn. Gender generally refers to socially constructed roles, behaviors, and identities of women, men and gender-diverse people that occur in a historical and cultural context and may vary across societies and over time. Gender influences how people view themselves and each other, how they behave and interact and how power is distributed in society. Sex
and gender are often incorrectly portrayed as binary (female/male or woman/man) and unchanging whereas these constructs actually exist along a spectrum and include additional sex categorizations and gender identities such as people who are intersex/have differences of sex development (DSD) or identify as non-binary. Moreover, the terms "sex" and "gender" can be ambiguous—thus it is important for authors to define the manner in which they are used. In addition to this definition guidance and the SAGER guidelines, the resources on this page offer further insight around sex and gender in research studies.

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PREPARATION

Queries
For questions about the editorial process (including the status of manuscripts under review) or for technical support on submissions, please visit our Support Center.

Peer review
This journal operates a single anonymized 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. Editors
are not involved in decisions about papers which they have written themselves or have been written by family members or colleagues or which relate to products or services in which the editor has an interest. Any such submission is subject to all of the journal’s usual procedures, with peer review handled independently of the relevant editor and their research groups. More information on types of peer review.

**Language**

All papers submitted to the journal should be written in good English. Authors for whom English is not their native language are encouraged to have their paper checked before submission for grammar and clarity. English language and copyediting services can be provided by: International Science Editing and Asia Science Editing. Please note Elsevier neither endorses nor takes responsibility for any products, goods or services offered by outside vendors through our services or in any advertising. For more information about language editing services please visit our Support Center.

**Use of word processing software**

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. 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, to 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). Note that source files of figures, tables and text graphics will be required whether or not you embed your figures in the text. See also the section on Electronic artwork.

To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your word processor.

**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.

**Material and methods**

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**

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