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DESCRIPTION

The Chemical Engineering Journal focuses upon three aspects of chemical engineering: chemical reaction engineering, environmental chemical engineering, and materials synthesis and processing.

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 which have generic significance.

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 Novel Materials for Energy and Advanced Applications section presents papers dealing with different aspects of the preparation and characterization of advanced materials designed for specific applications. This section represents the evolution of the highly successful Materials Synthesis and Processing section whose scope has...
been redefined to emphasize the design and application of materials in a number of fields, with energy (harvesting, storage, utilization) occupying a prominent but not exclusive role; manuscripts demonstrating applications of novel materials across multiple fields are welcomed. Manuscripts describing novel methods of synthesis as well as the processes used to obtain materials with different morphologies and/or modify the surface and structural properties of those materials will be considered provided the manuscript is written from a chemical engineering point of view. Manuscripts dealing with micro- and nano-structured materials and/or describing the preparation of composite and hybrid materials with advanced properties are particularly welcome. Given the applied character of the CEJ, we will consider manuscripts where specific applications are demonstrated for the materials synthesized.

Comments and Proposals: We are interested in receiving comments/feedback on this and our other journals and welcome publication proposals for books, electronic products, new journals and co-operation for existing journals.

AUDIENCE

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

IMPACT FACTOR

2019: 10.652 © Clarivate Analytics Journal Citation Reports 2020

ABSTRACTING AND INDEXING

BIOSEP Bulletin
BIOSIS Citation Index
Cambridge Scientific Abstracts
Chemical Abstracts
Chemical Engineering Abstracts
Current Contents
Engineered Materials Abstracts
Fluid Abstracts
INSPEC
Material Business Alerts
Metals Abstracts
Mixing and Separation Technology Abstracts
Scopus

EDITORIAL BOARD

Co-Editors

Stephen Allen, Queen’s University Belfast, Belfast, United Kingdom
Dionysios Dionysiou, University of Cincinnati Department of Biomedical Chemical and Environmental Engineering, Cincinnati, Ohio, United States
Water Quality, Water Treatment, Advanced Oxidation Technologies, Harmful Algal Blooms, Environmental Nanotechnology
Guy Marin, Ghent University, Gent, Belgium
chemical kinetics; heterogeneous catalysis; (petro)chemical processes, polymerization, reactor design and modelling, reactor scale-up, crude oil refining, natural gas valorisation, renewables
King-Lun Yeung, The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong
heterogeneous catalysis (including environmental catalysis, photocatalysis and enzyme), novel and hybrid reactor system, miniature flow reactor and microreactor, green and fine chemistry.
Tejraj (Bhavi) Aminabhavi, Soniya Education Trust’s College of Pharmacy, Dharwad, India
Sustainable environmental membrane separation processes, Emerging pollutant separation and solid waste mitigation, MBR and forward osmosis for biowaste mitigation, Effluent or influent wastewater treatment by electro-coagulation, Toxic metal separation and recovery, Desulfurization, Acid/flue gas separation

**Theophilos Ioannides**, Institute of Chemical Engineering Sciences, Patra, Greece

Catalytic reaction engineering, Functional nanomaterials, ((electro)chemical) energy storage

**Dimitris Kondarides**, University of Patras Department of Chemical Engineering, Patras, Greece

Heterogeneous catalysis and photocatalysis. Development and evaluation of catalytic materials and processes for environmental and energy-related applications

**Nuno Reis**, University of Bath, Bath, United Kingdom

Micro-reactor technology, fluid mechanics, CFDs, gas-liquid mixing, multiphase reactors, process intensification, biological reactors, biofuels

**Todd Hoare**, McMaster University, Hamilton, Ontario, Canada

Hydrogels, Microgels, Drug delivery, Tissue engineering, Bioprinting, Smart materials, Biosensors

**Reviews & Perspectives Editor**

**Jesús Santamaria**, University of Zaragoza, Zaragoza, Spain

Nanomaterials synthesis and characterization, nanomedicine, catalysis, advanced reactors (microwave-driven reactors, microreactors, laser pyrolysis reactors)

**Associate Editors**

**Carolina Belver**, Autonomous University of Madrid, Madrid, Spain

Water purification by photocatalysis, Design of novel heterostructures for environmental remediation, Water treatment by adsorption, Advanced oxidation technologies for water treatment, Environmental nanotechnology (fundamental and applications of nanomaterials).

**Soryong (Ryan) Chae**, University of Cincinnati, Cincinnati, Ohio, United States

Biological processes for water recycling and reuse, Resource recovery, Membrane technology for water and energy, Environmental nanotechnology

**Bin Gao**, University of Florida, Gainesville, Florida, United States

Biocar, nanoparticles, environmental nanotechnology, contaminant fate and transport, organics

**Hrvoje Kušić**, University of Zagreb Faculty of Chemical Engineering and Technology, Zagreb, Croatia

Advanced oxidation technologies for water treatment, (photo)Fenton processes, persulfate based processes, photocatalysis, solar- active materials, process simulation and optimization, mechanistic/phenomenological modeling, QSA/PR modeling

**Eiñann Kwon**, Sejong University Department of Energy and Environment, Seoul, Korea, Republic of

Waste-to-Energy (WtE), Combustion chemistry, Thermo-chemical processes (pyrolysis and gasification), Catalysis, Biofuels, Biorefinery, CO2 utilization, Carbon capture and storage (CCS), Waste and biomass valorization, Green chemistry, Environmental sustainability, Air pollution controls

**Yuekun Lai**, Fuzhou University, College of Chemical Engineering, Fuzhou, China

Bioinspired functional surfaces with special wettability (superhydrophobicity/hydrophilicity), water-oil separation and purification, self-cleaning and antifogging coatings, photo(electro)catalysis, water splitting, functional membranes and fabrics, transparent multifunctional films, biomedical scaffolds, aerogel, sustainable chemical engineering processes, nanomaterials for environmental and energy-related applications

**Alexei Lapkin**, University of Cambridge Department of Chemical Engineering and Biotechnology, Cambridge, United Kingdom

Catalytic reaction engineering, Multiphase catalytic reactors, Membrane catalysis, Membrane gas separation, Life cycle assessment, Machine learning for process development, Process optimisation, Biofeedstocks conversion (valorisation)

**Urška Lavrenčič Štangar**

Heterogenous photocatalysis in water and air, AOPs, self-cleaning and antifogging surfaces, wet chemistry synthesis of materials, materials characterization

**Jinwoo Lee**, Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of


**Angeliki Lemonidou**, Aristotle University of Thessaloniki, Thessaloniki, Greece

Heterogeneous catalysis, chemical kinetics, reactor design, (petro)chemical processes, carbon capture and utilization processes, process intensification (chemical looping), natural gas valorization, biomass chemo and thermocatalytic conversion.

**Wen-Wei Li**, University of Science and Technology of China Department of Chemistry, Hefei, China
Bioelectrochemical systems, Extracellular electron transfer, Photoelectrochemical/electrochemical process for pollutant degradation, Membrane-based water treatment process, Membrane fouling, Nanoparticles biosynthesis, Resource recovery from wastewater

**Lukasz Marciniak**, Institute of Low Temperature and Structure Research Polish Academy of Sciences, Wroclaw, Poland

Nanoparticles, colloidal systems, glasses, single-crystals, optical properties, luminescence, lanthanide ions, transition metal ions, inorganic wet chemistry synthesis, advanced multifunctional materials, luminescence assisted sensing and imaging, luminescence thermometry, luminescence manometry, downshifting, up-conversion, energy transfer processes, material science, material engineering

**Eva Martin Del Valle**, University of Salamanca, Salamanca, Spain

Nanomaterials, affinity separations, drug delivery, simulation, nanomaterials, affinity separations, drug delivery, simulation

**David Nisbet**, Australian National University, Canberra, Australia

Hydrogels, electrospinning, self-assembled peptides, gene therapy, drug delivery, cell transplantation, regenerative medicine, antimicrobial materials

**Bingcai Pan**, Nanjing University, Nanjing, China

Nano-enabled water treatment; Environmental functional materials; Nanomaterials for environmental remediation; Industrial wastewater treatment; Municipal wastewater treatment; Drinking water treatment; Adsorption; Advanced oxidation processes (AOPs); Water quality analysis; POPs and PPCPs removal

**Suresh C. Pillai**, Institute of Technology Sligo, Nanotechnology and Bio-Engineering Research Group, Sligo, Ireland


Eva Martin Del Valle, University of Salamanca, Salamanca, Spain

Bingcai Pan, Nanjing University, Nanjing, China

Suresh C. Pillai, Institute of Technology Sligo, Nanotechnology and Bio-Engineering Research Group, Sligo, Ireland

**Eva Martin Del Valle**, University of Salamanca, Salamanca, Spain

Nanomaterials, affinity separations, drug delivery, simulation, nanomaterials, affinity separations, drug delivery, simulation

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**Suresh C. Pillai**, Institute of Technology Sligo, Nanotechnology and Bio-Engineering Research Group, Sligo, Ireland


**Stefania Specchia**, Polytechnic of Turin Department of Applied Science and Technology, Torino, Italy

PEMFC, Catalysis, Catalytic Reactor Engineering, DMFC, AEMFC, Fuel Processors, Hydrogen production

**Radostina Stoyanova**, Bulgarian Academy of Sciences, Institute of General and Inorganic Chemistry, Sofia, Bulgaria

solid state chemistry, materials for energy storage, lithium ion batteries, sodium ion batteries, electron paramagnetic resonance spectroscopy, structure characterization, intercalation chemistry

**Yiu Fai Tsang**, The Education University of Hong Kong, New Territories, Hong Kong

Wastewater and sludge treatment, Bioremediation/environmental bioprocesses, Resource recovery from organic waste, Microbial CO2 fixation, Microfibres and nanoplastics, Odour pollution control

**Jennifer Wilcox**, Worcester Polytechnic Institute, Worcester, Massachusetts, United States

Carbon Capture, Negative Emissions, Combustion, Adsorption, Membrane Separations

**Yusuke Yamauchi**, The University of Queensland School of Chemical Engineering, Brisbane, Queensland, Australia

Nanoarchitectured materials; Nanoporous materials; Inorganic materials chemistry; Inorganic synthetic chemistry; Energy and environmental applications

**Aiping Yu**, University of Waterloo, Waterloo, Ontario, Canada

Nanomaterials development for polymer composites (thermal management, corrosion) and energy storage/conversion (supercapacitors, batteries, photocatalysts)

**Editorial Board**

**Bengt Andersson**, Chalmers University of Technology, Gothenburg, Sweden

**Vemuri Balakotaiah**, City University of New York, New York, New York, United States

New sorbents and catalysts, Surface characterization, Adsorption/desorption phenomena, Gas separation, Deep desulfurization of fuels, Catalytic photooxidation, Graphite oxide based composite, Gas sensors, Energy storage

**Jorge Bedia**, Autonomous University of Madrid, Chemical Engineering Department, Madrid, Spain

Carbon materials, Metal organic frameworks (MOFs), Catalysis, Advanced oxidation processes (AOPs), Ionic liquids

**Federico Bella**, Polytechnic of Turin, Torino, Italy

Solar cells, Batteries, Supercapacitors, Chemometrics, Circular economy, Electrochemical nitrogen reduction

**Silvana Cardoso**, University of Cambridge Department of Chemical Engineering and Biotechnology, Cambridge, United Kingdom

Fluid Mechanics, Environment, Buoyancy, Plumes & Jets, Porous Media

**Raf Dewil**, KU Leuven Science and Technology Group Department of Chemical Engineering, Heverlee, Belgium

**Polycarpous Falaras**, Ethniko Kentro Ereunas Physikon Epistemon 'Demokritos', Athens, Greece

Nanoarchitectured materials; Nanoporous materials; Inorganic materials chemistry; Inorganic synthetic chemistry; Energy and environmental applications

**Aiping Yu**, University of Waterloo, Waterloo, Ontario, Canada

Nanomaterials development for polymer composites (thermal management, corrosion) and energy storage/conversion (supercapacitors, batteries, photocatalysts)
Functional molecular materials; Nanostructured semiconductors; Water purification; Photocatalytic reactors; Third generation solar cells

Maohong Fan, University of Wyoming School of Energy Resources, Laramie, Wyoming, United States

Jorge Gascon, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia

Antoine Ghauch, American University of Beirut, Beirut, Lebanon

Advanced Oxidation Technologies; Effluents Decontamination; Catalysis; Instrumental Analysis; Spectroscopy;

Hans Kuipers, University of Technology Eindhoven Department of Chemical Engineering and Chemistry, Eindhoven, Netherlands

Multiphase Reactors, Multiphase Flow, Computational Fluid Dynamics, Multi-Scale Modelling

Gianluca Li Puma, Loughborough University Department of Chemical Engineering, Loughborough, United Kingdom

Photocatalysis, Environmental nanocatalysis, Advanced oxidation processes, Environmental remediation, Solar energy conversion and Photo-reaction engineering.

Heng Liang, Harbin Institute of Technology, School of Environment, Harbin, China

Membrane-based water treatment process, Membrane fouling, Drinking water treatment, Water reuse, Advanced oxidation

Jun Ma, Harbin Institute of Technology School of Municipal and Environmental Engineering, Haerbin, China

Dionisis Mantzavinos, University of Patras Department of Chemical Engineering, Patras, Greece

Environmental catalysis; wastewater engineering; advanced oxidation processes; biological processes; process integration; reaction engineering; emerging micro-pollutants; waste valorization

Malikarjuna N. Nadagouda, National Risk Management Research Laboratory, Cincinnati, Ohio, United States

Nanotechnology, Green Chemistry, Water Research, Polymer Chemistry, Materials Chemistry

Alexander Orlov, Stony Brook University, Stony Brook, New York, United States

Environmental Catalysis, Materials Science, Environmental Engineering, Environmental Nanotechnology, Physical and Environmental Chemistry

Xie Quan, Dalian University of Technology School of Environmental Science and Technology, Dalian, China

Advanced oxidation technologies(AOTs), Functional materials for environmental application, Electro-catalysis, Photocatalysis, Membrane separation

Zhiyong Jason Ren, Princeton University, Princeton, New Jersey, United States

Water resource recovery, Wastewater treatment, Microbial electrochemistry, Functional membranes

Alirio Rodrigues, University of Porto, Porto, Portugal

Cyclic adsorption/reaction processes, Perfume Engineering, Lignin valorization, CO2 capture and utilization, Modeling and simulation

Vicente Rodriguez Gonzalez, Potosi Institute of Scientific and Technological Research, San Luis Potosi, Mexico

Photo-inactivation, Agricultural photocatalysis, H2 production, Hydrothermal method, Microwave synthesis

Geoff STEVENS, The University of Melbourne Department of Chemical Engineering, Parkville, Victoria, Australia

Separation Processes, Solvent Extraction, Ion Exchange

Andreas Seidel-Morgenstern, Otto von Guericke University, Magdeburg, Germany

Reaction Engineering, Forced Dynamic Operation, Chromatography, Crystallization

Mahadevan Surianarayanan, Central Leather Research Institute CSIR, Chennai, India

Environmental remediation/degradation of toxic chemicals, Membrane bioreactors for the treatment or separation of toxic/industrial effluents, Chemical process safety, Bioprocess monitoring and control through metabolic heats.

Stanisław Waclawek, Institute for Nanomaterials Advanced Technology and Innovation, Liberec, Czech Republic

AOPs; nanomaterials; green chemistry; catalysis

Laurence Russell Weatherley, The University of Kansas, Lawrence, Kansas, United States

Process intensification, Liquid-Liquid systems, Ion Exchange, Biocatalysis, Phase transfer catalysis

Ruiyang (Ray) Xiao, Central South University, Changsha, China

Advanced oxidation processes, Radical chemistry, Computational chemistry, Environmental modelling

Xing-Gui Zhou, East China University of Science and Technology, Shanghai, China
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

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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• Full postal address

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Referees
Please submit the names and institutional e-mail addresses of several potential referees. For more details, visit our Support site. Note that the editor retains the sole right to decide whether or not the suggested reviewers are used.

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Author indication if manuscript is a re-submission Suggested reviewers with complete contact details and e-mail addresses. Do not list collaborators, colleagues, researchers at your institution, former advisors or advisees. Keywords are provided References are in correct format PDF of manuscript is in correct order upon submission Manuscript length is in compliance with the Guide for Authors

PREPARATION

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.

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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
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Material and methods
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