DESCRIPTION

*Microelectronic Engineering* has an open access mirror journal *Micro and Nano Engineering*, sharing the same aims and scope, editorial team, submission system and rigorous peer review.

*Microelectronic Engineering* is the premier *nanoprocessing*, and *nanotechnology* journal focusing on fabrication of electronic, photonic, bioelectronic, electromechanic and fluidic devices and systems, and their applications in the broad areas of electronics, photonics, energy, life sciences, and environment. It covers also the expanding interdisciplinary field of "more than Moore" and "beyond Moore" integrated nanoelectronics / photonics and micro-/nano-/bio-systems. Through its unique mixture of peer-reviewed articles, reviews, accelerated publications, short and Technical notes, and the latest research news on key developments, *Microelectronic Engineering* provides comprehensive coverage of this exciting, interdisciplinary and dynamic new field for researchers in academia and professionals in industry.

The journal addresses the following topics and considers mostly experimental work, or theoretical / simulation work directly linked and supporting experiments in the fields: Microelectronics processing & materials (Lithography, Self-assembly, Plasma Processing, Metallization, 3D Integration, Related Materials.) Micro-/Nano-engineering / fabrication / technology / manufacturing Nanoelectronic and photonic devices and their fabrication Microsystems, microdevices (e.g., sensors and nanoenergy devices) and their fabrication Microfluidics, life science devices /sensors, as well as integrated Lab-on-a-chip and their fabrication

In detail the topics covered are as follows:

1. **Nanolithography and Nanopatterning**: Optical Lithography Electron Optical Methods and Systems X-ray Optical Methods and Systems Resists Limits of Nanolithography Nanoimprint Lithography EUV Lithography and Masks Charged Particle Based Lithography and Patterning Nanoimprint Lithography Techniques and Templates Maskless Lithography Emerging Nanopatterning Methods Limits of Nanopatterning

2. **Pattern Transfer** Ion Technology Plasma Processing Transfer of Pattern with Other Methods Plasma Etching Plasma Nanotechnology Plasma / beam Nanopatterning Plasma Surface Modification of Devices Wet transfer methods
3. **Materials** Metallization and Barrier Materials Silicon on Insulators Dielectrics (low K and high K) Interconnects New Resist Materials Nanomaterials for Device Fabrication Block Copolymers Polymers and Flexible Substrates Layered (2D) Materials and Related Transferring Techniques

4. **Nanometrology, Inspection and Testing** Electron Beam Testers Laser Probes Signal and Image Processing Nanometrology AFM and Scanning Probe Measurements


Miniaturized Devices for Biology, Chemistry, MedicineBiosensorsChemical sensorsBiomimetic properties incorporated into devicesBioelectronic devicesMicro / nano / bio interface and interconnection devices

Lab-on-a-chip, bioMEMS, microTASDNA / protein chipsCell on chipOrgan on chipBiomimetic properties incorporated into systemsBioanalytic, diagnostic systemsMicroseparation, pretreatment systemsOn-chip detection systemsEnvironmental and food monitoring systemsMicroreactors

Manuscripts of 5 (five) types are considered: Review Articles that inform readers of the latest research and advances in nanoelectronics, nanofabrication, micro-nano systems, and applications (authors should e-mail editors with a review proposal and outline before submitting) Accelerated Publications (Letters) that feature exciting research breakthroughs in the field Regular original research papers Short / Technical notes intended for original limited investigations or short description of original industrial or industrially-related research and development work News and Opinions that comment on topical issues or express views on the developments in related fields, or comment on previously published work

**AUDIENCE**

Scientists and engineers in industry and academia involved in micro and nanoelectronics.

**IMPACT FACTOR**

2018: 1.654 © Clarivate Analytics Journal Citation Reports 2019
ABSTRACTING AND INDEXING

Science Citation Index
ANTE
Cambridge Scientific Abstracts
Current Contents - Engineering, Technology & Applied Sciences
Engineering Index
INSPEC
Scopus
Research Alert
Web of Science
Science Citation Index Expanded

EDITORIAL BOARD

Editor-in-Chief
Evangelos Gogolides, Institute of Nanoscience and Nanotechnology, Aghia Paraskevi, 15310, Athens, Greece

Editor Special Issues
Jin-Woo Choi, Louisiana State University, Baton Rouge, Louisiana, United States

Area Editors
Joel M. Barnett, Tokyo Electron US Holdings Inc, Austin, Texas, , United States
Ahmed Busnaina, Northeastern University (NU), Nanomanufacturing and the NSF Center for Microcontamination Control, 467 Egan Bldg, Boston, Massachusetts, MA 02115, United States
Yifang Chen, Fudan University, School of Information Science and Engineering, 220 Han Dan Road, 200433, Shanghai, China
Vassilios Constantoudis, Institute of Nanoscience and Nanotechnology, Aghia Paraskevi, 15310, Athens, Greece
Uros Cvelbar, Jozef Stefan Institute, 1000, Ljubljana, Slovenia
Wim De Malsche, VUB University, 1050, Brussel, Belgium
Huigao Duan, Hunan University College of Mechanical and Vehicle Engineering, College of Mechanical and Vehicle Engineering, Hunan University, 410082, Changsha, Hunan, China
Chien-Chong Hong, National Tsing Hua University Department of Power Mechanical Engineering, No. 101, Section 2, Kuang-Fu Road, 30013, Hsinchu, Taiwan
Dong Sung Kim, Pohang University of Science and Technology Department of Mechanical Engineering, 77 Cheongam-Ro, Nam-Gu, 37673, Pohang, South Korea
Wu LU, Ohio State University Department of Electrical and Computer Engineering, 205 Dreese Labs; 2015 Neil Avenue, Columbus, Ohio, 43210, United States
Mario Lanza, Soochow University, Institute of Functional Nano & Soft Materials, Suzhou, China
Jaejong Lee, Korea Institute of Machinery and Materials, Nano-Convergence Mechanical Systems Research Division, 156 Gajeongbuk-Ro, 305-343, Yusong, Daejeon, Korea, Republic of
Sangho Lee, Korea Institute of Industrial Technology, Ansan-si, Republic of Korea
Rodolphe Marie, Danmarks Tekniske Universitet (DTU), DTU Nanotech
Jean Francois de Marneffe, Interuniversity Micro-Electronic Centre, 3001, Leuven, Belgium
Sunggook Park, Louisiana State University, Mechanical & Industrial Engineering Department, 2514B Patrick F. Taylor Hall, Baton Rouge, Louisiana, 70803, United States
Edward Song, University of New Hampshire, Department of Electrical and Computer Engineering, Durham, NH 03824, United States
Li Tao, Southeast University, School of Material Science and Engineering, Jiangsu, China
Guillermo Villanueva, École Polytechnique Fédérale de Lausanne (EPFL), STI-IGM NEMS, ME D2 2726 - Station 9, CH-1015, Lausanne, Switzerland
Shaowei Wang, Shanghai Institute of Technical Physics Chinese Academy of Sciences, 188 Xindai Rd, Jiading Qu, 201815, Shanghai Shi, China

Advisory Editors, Europe
Nuria Barniol, Autonomous University of Barcelona, Barcelona, Spain
Joan Bausells, Institute of Microelectronics of Barcelona IMB-CNM-CSIC, National Microelectronics Center (CNM), Bellaterra (Barcelona), Spain
Holger Becker, Microfluidic ChipShop GmbH, Jena, Germany
Hubert Brückl, Donau-Universitat Krems, Center for Integrated Sensor Systems, Wiener Neustadt, Austria
Yong Chen, University College Paris, Paris, France
Massimo De Vittorio, University of Salento, Lecce, Italy
Michel Despont, Centre Suisse d'Electronique et de Microtechnique (CSEM), Zurich, Switzerland
Athanasios Dimoulas, Ethniko Kentro Ereunas Physikon Epistemon 'Demokritos', Athens, Greece
Zahid A. K. Durrani, Imperial College London, London, United Kingdom
Thomas Ernst, French Alternative Energies and Atomic Energy Commission Electronics and Information Technology Laboratory, Grenoble, France
Maria Farsari, Foundation of Research and Technology Hellas Library, Irakleio, Greece
Guglielmo Fortunato, Consiglio Nazionale delle Ricerche (CNR), Institute for Microelectronics and Microsystems, Catania, Italy
Nikolaj Gadegaard, University of Glasgow, Glasgow, United Kingdom
Jim Greer, University College Cork National University of Ireland, Cork, Ireland
Cornelis Wouter Hagen, TU Delft, Delft, Netherlands
Mervyn E. Jones, Imperial College London, London, United Kingdom
Dieter Kern, Eberhard Karls University Tübingen, Tübingen, Germany
Salvo Mirabella, University of Catania, Catania, Italy
Francesc Pérez-Murano, Universitat Autònoma de Barcelona (UAB), Instituto de Microelectrónica de Barcelona, Bellaterra, Spain
David Peyrade, Microelectronic Technology Laboratory, Grenoble, France
Ivo Rangelow, Ilmenau University of Technology, Ilmenau, Germany
Helmut Schift, Paul Scherrer Institute, Villigen, Switzerland
Urs Stauffer, TU Delft, Delft, Netherlands
Maria Tenje, Uppsala University, Uppsala, Sweden
Dimitris Tsoukalas, National Technical University of Athens, Athens, Greece
Christophe Vieu, Toulouse School of Engineering, Toulouse, France

Advisory Editors, America
Mohamed Chaker, Institut National de la Recherche Scientifique (INRS), Varennes, Quebec, Canada
Maxime Darnon, University of Sherbrooke, Sherbrooke, Quebec, Canada
Panos Datskos, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States
Demetre Economou, University of Houston, Houston, Texas, United States
Stephane Evoy, University of Alberta, Edmonton, Alberta, Canada
Gregg Gallatin, Applied Math Solutions, Newtown, Connecticut, United States
John Hartley, Nuflare Technology USA, Hopewell Junction, New York, United States
Patrick Naulleau, E O Lawrence Berkeley National Laboratory, Berkeley, California, United States
Ian Papautsky, University of Illinois at Chicago, Chicago, Illinois, United States
Kimberly Turner, University of California Santa Barbara, Santa Barbara, California, United States
Joseph Wang, University of California San Diego Department of Nanoengineering, San Diego, California, United States

Advisory Editors, Asia-Oceania
Maan Alkaisi, University of Canterbury, Christchurch, New Zealand
Hsuen-Li Chen, National Taiwan University, Taipei, Taiwan
Toshiaki Iwamatsu, Renesas Technology Corporation, Dept. of Advanced Device Development, Itami, Japan
Beomjoon Kim, The University of Tokyo, Bunkyo-Ku, Tokyo, Japan
Ran Liu, Fudan University, Shanghai, China
Hidenori Mimura, Shizuoka University Research Institute of Electronics, Hamamatsu, Japan
Jeroen Van Kan, National University of Singapore, Singapore, Singapore
Dacheng Wei, Fudan University, Shanghai, China
Sheng-Joue Young, National Formosa University, Huwei, Taiwan
GUIDE FOR AUTHORS

Your Paper Your Way
We now differentiate between the requirements for new and revised submissions. You may choose to submit your manuscript as a single Word or PDF file to be used in the refereeing process. Only when your paper is at the revision stage, will you be requested to put your paper in to a 'correct format' for acceptance and provide the items required for the publication of your article. To find out more, please visit the Preparation section below.

INTRODUCTION
The aim of Microelectronic Engineering is to bring together in one publication the results of international work in the rapidly expanding field of integrated microelectronics.

The journal is dedicated to advanced engineering methods for micro- and nanofabrication of electronic devices, circuits and systems for electronics, electromechanics, and bioelectronics.

Types of Papers
Review Articles Microelectronic Engineering (MEE) welcomes submissions of review articles on scientifically and technically important and current topics within the scope of MEE, from experts in the reviewed subject area. Review Articles should comprehensively cover a subject of current interest, comprise typically around 8000 words and be extensively referenced. Illustrations and summary tables are encouraged.

Usually, MEE welcomes solicited submissions of review articles. However, if you are interested in submitting an unsolicited review article, please contact the editors with a suggested tentative title, a brief 300-word abstract, and a draft outline listing the sections of the review article along with brief biographical data showing your contributions on the subject area. Accelerated Publications (Letters) should feature exciting research breakthroughs in the field, and should typically be maximum 4 journal pages, i.e. comprising typically 3000 words plus 3 single column (8cm x 8cm) figures and/or tables or equivalent. (see sizing instructions below) Regular papers should describe original research work not previously published, and should be complete descriptions of full investigations comprising typically 5000 words plus up to 6 single column figures and/or tables or equivalent (see sizing instructions below). Short Communication should be concise, but complete descriptions of original limited investigations or short description of new industrial or industrially related research and development work. They should be maximum 4 journal pages, i.e. comprising typically 3000 words with up to 3 single column figures and/or tables or equivalent (see sizing instructions below). Opinion Paper that comment on topical issues or express views on the developments in related fields, or comment on previously published work. These types of articles are SOLICITED by at least one of the editors. They should be below 500 words with up to 1 single column figure or table. Exceptions to these criteria may be permitted if you discuss your requirements in advance with an Editor.

Authors are encouraged to submit papers with size equal or smaller to the proposed size above, and supply extra information as supplementary data (see below), which are available online. Submission of audiovisual data embedded in the manuscript or supplied as supplementary data is encouraged.

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.

Studies in humans and animals
If the work involves the use of human subjects, the author should ensure that the work described has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans. The manuscript should be in line with the Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals and aim for the inclusion of representative human populations (sex, age and ethnicity) as per those recommendations. The terms sex and gender should be used correctly.

Authors should include a statement in the manuscript that informed consent was obtained for experimentation with human subjects. The privacy rights of human subjects must always be observed.

All animal experiments should comply with the ARRIVE guidelines and should be carried out in accordance with the U.K. Animals (Scientific Procedures) Act, 1986 and associated guidelines, EU Directive 2010/63/EU for animal experiments, or the National Institutes of Health guide for the care and use of Laboratory animals (NIH Publications No. 8023, revised 1978) and the authors should clearly indicate in the manuscript that such guidelines have been followed. The sex of animals must be indicated, and where appropriate, the influence (or association) of sex on the results of the study.

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').

Instructions for sizing a paper to 4 journal pages (e.g. Accelerated publication, or short / technical note, or specific special issue)

Four (4) page articles submitted should be max 3750 words if no figures and tables are included (this word count does not include title, authors and abstract, but does includ references). If you include figures you are urged to have them as 8cmX8cm maximum size for one column figures. Authors should subtract from the 3750 word count 250 words for each one column figure (8cmX8cm), and 500 words for each double figure (in one column or spanning two columns). Approximately the same word cost is included for one and two column tables respectively. Figure and table captions should be included in the total maximum word count remaining after the subtraction of figures / tables.

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.

Article transfer service

This journal is part of our Article Transfer Service. This means that if the Editor feels your article is more suitable in one of our other participating journals, then you may be asked to consider transferring the article to one of those. If you agree, your article will be transferred automatically on your behalf with no need to reformat. Please note that your article will be reviewed again by the new journal. More information.

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.

Open Access
This journal offers authors the following publishing model:

Subscription
• Articles are made available to subscribers as well as developing countries and patient groups through our 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. If the authors want to publish their paper as gold open access, they can do so in Microelectronic Engineering's mirror journal - Micro and Nano Engineering here: https://www.sciencedirect.com/journal/micro-and-nano-engineering

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 and you will be guided stepwise through the creation and uploading of your files. The system automatically converts source files to a single PDF file of the article, which is used in the peer-review process. Please note that even though manuscript source files are converted to PDF files 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 removing the need for a paper trail.

Please follow the instructions given on this site:
Author registers in EES (follow the instructions on the site) Select: Submit Manuscript from Main Menu When choosing Article Type, please select the type of article you wish to submit. If you are submitting to a special issue, please select the title of the special issue you are submitting to. Select one editor. Please select ONLY one of the 3 main editors (Editor in Chief, Editor USA, Editor Japan) For the 3 main editors' expertise and contact details please see http://www.journals.elsevier.com/microelectronic-engineering/editorial-board
If you are submitting to a special issue, please select ONLY the editor for the special issue.

Referees (mandatory)
Please submit, with the manuscript, 1) the names, 2) expertise, 3) addresses and professional e-mail addresses (no yahoo, or gmail or similar) of 5 potential referees. Please, propose referees outside your own country. Note that the editor retains the sole right to decide whether or not the suggested reviewers are used.
Classification codes (mandatory)
Please select the detailed expanded classification codes for the thematic area of your submission. These help editors find reviewers and are an indication of match between journal scope and your submission.

PREPARATION

NEW SUBMISSIONS
Submission to this journal proceeds totally online and you will be guided stepwise through the creation and uploading of your files. The system automatically converts your files to a single PDF file, which is used in the peer-review process.
As part of the Your Paper Your Way service, you may choose to submit your manuscript as a single file to be used in the refereeing process. This can be a PDF file or a Word document, in any format or layout that can be used by referees to evaluate your manuscript. It should contain high enough quality figures for refereeing. If you prefer to do so, you may still provide all or some of the source files at the initial submission. Please note that individual figure files larger than 10 MB must be uploaded separately.

References
There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the article number or pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct.

Formatting requirements
There are no strict formatting requirements but all manuscripts must contain the essential elements needed to convey your manuscript, for example Abstract, Keywords, Introduction, Materials and Methods, Results, Conclusions, Artwork and Tables with Captions.
If your article includes any Videos and/or other Supplementary material, this should be included in your initial submission for peer review purposes.
Divide the article into clearly defined sections.

Figures and tables embedded in text
Please ensure the figures and the tables included in the single file are placed next to the relevant text in the manuscript, rather than at the bottom or the top of the file. The corresponding caption should be placed directly below the figure or table.

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.

REVISED SUBMISSIONS
Use of word processing software
Regardless of the file format of the original submission, at revision you must provide us with an editable file of the entire article. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier). 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. Indicative sections follow below:
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.

Theory/calculation
A Theory section should extend, not repeat, the background to the article already dealt with in the
Introduction and lay the foundation for further work. In contrast, a Calculation section represents a
practical development from a theoretical basis.

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.

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.

Abstract (mandatory)
A concise and factual abstract 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, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should
be avoided, but if essential they must be defined at their first mention in the abstract itself.

The abstract may include the following:
The context for the work. The purpose or objectives of the work (what was the research question or problem and why it is important). Theoretical or experimental methods used. Results (qualitative and quantitative). Conclusions and their limitations (what was the meaning of the results). Safety information concerning dangerous compounds or procedures if relevant.

If the paper reports a new instrument or method then the abstract should include a description of its advantages and disadvantages compared to other established techniques. The abstract should not include trivial experimental details, references, figures or equations.

**Graphical Abstract (mandatory)**

A **graphical abstract** is a concise, pictorial and visual summary of the main findings of the article, which can either be the concluding figure from the article or a figure that is specially designed for the purpose. A graphical abstract captures the content of the paper for readers at a single glance. For more information and examples, please see: [https://www.elsevier.com/graphicalabstracts](https://www.elsevier.com/graphicalabstracts)

**Highlights (mandatory)**

**Highlights** are a short collection of bullet points that convey the core findings, and provide readers with a quick textual overview of the article. These three or four bullet points highlight what is distinctive about the research and describe the essence of the article. For more information and examples, please see [https://www.elsevier.com/highlights](https://www.elsevier.com/highlights).

**Keywords (mandatory)**

Immediately after the abstract, provide a maximum of 6 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. They 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].

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**

Follow internationally accepted rules and conventions: use the international system of units (SI). If other units are mentioned, please give their equivalent in SI. You are urged to consult IUPAC: [http://www.iupac.org](http://www.iupac.org) for further information.

**Math formulae**

Please submit math equations as editable text and not as images. Present simple formulae in line with normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., \( \frac{X}{Y} \). In principle, variables are to be presented in italics. Powers of \( e \) are often more conveniently denoted by \( \exp \). Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).
Footnotes
Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors build footnotes into the text, and this feature may be used. Should this not be the case, indicate the position of footnotes in the text and present the footnotes themselves separately at the end of the article.

Artwork
Image manipulation
Whilst it is accepted that authors sometimes need to manipulate images for clarity, manipulation for purposes of deception or fraud will be seen as scientific ethical abuse and will be dealt with accordingly. For graphical images, this journal is applying the following policy: no specific feature within an image may be enhanced, obscured, moved, removed, or introduced. Adjustments of brightness, contrast, or color balance are acceptable if and as long as they do not obscure or eliminate any information present in the original. Nonlinear adjustments (e.g. changes to gamma settings) must be disclosed in the figure legend.

Electronic artwork
General points
• Make sure you use uniform lettering and sizing of your original artwork.
• Preferred fonts: Arial (or Helvetica), Times New Roman (or Times), Symbol, Courier.
• Number the illustrations according to their sequence in the text.
• Use a logical naming convention for your artwork files.
• Indicate per figure if it is a single, 1.5 or 2-column fitting image.
• For Word submissions only, you may still provide figures and their captions, and tables within a single file at the revision stage.
• Please note that individual figure files larger than 10 MB must be provided in separate source files.

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 finalized, 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 (or PDF): Vector drawings. Embed the font or save the text as 'graphics'.
TIFF (or JPEG): Color or grayscale photographs (halftones): always use a minimum of 300 dpi.
TIFF (or JPEG): Bitmapped line drawings: use a minimum of 1000 dpi.
TIFF (or JPEG): Combinations bitmapped line/half-tone (color or grayscale): a minimum of 500 dpi is required.

Please do not:
• Supply files that are optimized for screen use (e.g., 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) in addition to color reproduction in print. Further information on the preparation of electronic artwork.

Figure captions
Ensure that each illustration has a caption. 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
Number tables consecutively in accordance with their appearance in the text. Place footnotes to tables below the table body and indicate them with superscript lowercase letters. Avoid vertical rules. Be sparing in the use of tables and ensure that the data presented in tables do not duplicate results described elsewhere in the article.
Each table should have a title which makes the general meaning understandable without reference to the text. Vertical lines should not be used to separate columns. Column headings should be sufficiently explanatory, and presented in a way consistent with the column width. Columns of figures multiplied by the same power of ten should not be presented as such. The power of ten should be indicated in the column heading, e.g.:

104[NaCl]/mol l-1
4.2
3.5
0.26

rather than:

[NaCl]/mol l-1
4.2 x 10-4
3.5 x 10-4
2.6 x 10-5

In order to demonstrate the repeatability/reproducibility of the method, Authors are asked to include relative standard deviations (RSD) or the coefficient of variations (CV) in tables.

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.

Reference links
Increased discoverability of research and high quality peer review are ensured by online links to the sources cited. In order to allow us to create links to abstracting and indexing services, such as Scopus, CrossRef and PubMed, please ensure that data provided in the references are correct. Please note that incorrect surnames, journal/book titles, publication year and pagination may prevent link creation. When copying references, please be careful as they may already contain errors. Use of the DOI is highly encouraged.

A DOI is guaranteed never to change, so you can use it as a permanent link to any electronic article. An example of a citation using DOI for an article not yet in an issue is: VanDecar J.C., Russo R.M., James D.E., Ambeh W.B., Franke M. (2003). Aseismic continuation of the Lesser Antilles slab beneath northeastern Venezuela. Journal of Geophysical Research, https://doi.org/10.1029/2001JB000884. Please note the format of such citations should be in the same style as all other references in the paper.

Web references
As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

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.

References in a special issue
Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.
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/microelectronic-engineering

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

Reference formatting

There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the article number or pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct. If you do wish to format the references yourself they should be arranged according to the following examples:

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:

Reference to a chapter in an edited book:

Reference to a website:

Reference to a dataset:

Journal abbreviations source

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

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 Data (highly recommended)**

To reduce the size of your paper, improve its readability or enhance the information content of it you are encouraged to include details as supplementary information files, which are peer reviewed and appear online, but not in the printed version of the journal. These can contain extra text, figures, or tables substantiating and expanding on the experimental or theoretical analysis described in the main paper, and play the role of on-line appendixes. Supplementary files could also include other types of files:

Supplementary files offer the author additional possibilities to publish supporting applications, high-resolution images, background datasets, sound clips, and more that cannot be fitted in the paper, or would make the paper too long. Supplementary files supplied will be published online alongside the electronic version of your article in Elsevier Web products, including ScienceDirect: http://www.sciencedirect.com. In order to ensure that your submitted material is directly usable, please provide the data in one of our recommended file formats. Authors should submit the material in electronic format together with the article by selecting in EES the file type "E-components - Supplementary material for online publication only" and supply a concise and descriptive name for each file. For more detailed instructions please visit our artwork instruction pages at https://www.elsevier.com/artworkinstructions.

Please note that all submitted items including artwork, graphical abstracts, videos, and supplementary data will be reviewed by referees.

**Video Data**

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 these either within the body of the article or as supplementary data (see above).

For videos included 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. More specifically to embed audio/video files in the main manuscript, you need to upload the audio/video files by selecting in the EES "E-components - Supplementary material for online publication only". Then you must upload a video frame or image to be embedded in the manuscript by selecting "Video Still" file-type in the drop-down menu of EES and upload a video frame or image. Readers will click on the image to listen/view the audio/video. All submitted files should be properly labelled 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 files in one of our recommended file formats with a preferred maximum size of 50 MB. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect: http://www.sciencedirect.com. For videos included within the body of the article please supply 'stills' with your files by selecting file-type "video still" in EES: 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 at https://www.elsevier.com/artworkinstructions.

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.

**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**

**Article based publishing**

Microelectronic Engineering now offers article-based publishing, which means that: Your article is published in an "Issue in Progress" as soon as it is finalized- no need to wait until the journal issue is complete. Your article is immediately fully citable (includes volume, issue, and page numbering). Your article is published an average of 7 weeks faster than before.
If you would like to know more about article-based publishing, please visit https://www.elsevier.com/authors/journal-authors/article-based-publishing

**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.

**AUTHOR BENEFITS**

The corresponding author, at no cost, will be provided with a PDF file of the article via e-mail or, alternatively, 25 free paper offprints. The PDF file is a watermarked version of the published article and includes a cover sheet with the journal cover image and a disclaimer outlining the terms and conditions of use.

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