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DESCRIPTION

Vacuum is an international rapid publications journal with a focus on short communication. All papers are peer-reviewed, with the review process for short communication geared towards very fast turnaround times. The journal also published full research papers, thematic issues and selected papers from leading conferences.

A report in Vacuum should represent a major advance in an area that involves a controlled environment at pressures of one atmosphere or below.

The scope of the journal includes:
1. Vacuum; original developments in vacuum pumping and instrumentation, vacuum measurement, vacuum gas dynamics, gas-surface interactions, surface treatment for UHV applications and low outgassing, vacuum melting, sintering, and vacuum metrology. Technology and solutions for large-scale facilities (e.g., particle accelerators and fusion devices). New instrumentation (e.g., detectors and electron microscopes).
2. Plasma science; advances in PVD, CVD, plasma-assisted CVD, ion sources, deposition processes and analysis.
3. Surface science; surface engineering, surface chemistry, surface analysis, crystal growth, ion-surface interactions and etching, nanometer-scale processing, surface modification.

The aim of the short communications is to enable researchers to rapidly share their most exciting work with their colleagues. The expected time from submission to final decision is approximately 6.4 weeks.

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AUDIENCE
Surface Scientists, Materials Scientists.

IMPACT FACTOR
2018: 2.515 © Clarivate Analytics Journal Citation Reports 2019

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GUIDE FOR AUTHORS

INTRODUCTION

Vacuum is an international rapid publications journal with a focus on short communication. All papers are peer-reviewed, with the review process for short communication geared towards very fast turnaround times. The journal also published full research papers, thematic issues and selected papers from leading conferences. A report in Vacuum should represent a major advance in an area that involves a controlled environment at pressures of one atmosphere or below.

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2. Plasma science; advances in PVD, CVD, plasma-assisted CVD, ion sources, deposition processes and analysis.

3. Surface science; surface engineering, surface chemistry, surface analysis, crystal growth, ion-surface interactions and etching, nanometer-scale processing, surface modification.


Types of Paper

Vacuum will consider three types of peer-reviewed manuscripts:

1. Short Communications: should have the format of a letter (main text without headings) and are intended as brief reports of significant, original and timely research results, which require rapid publication. The submitted manuscripts should be kept concise and short; the number of figures and tables should also be kept to a minimum. See below for details. In considering a manuscript for publication, particular attention will be given to the originality of the research and the desirability of speedy publication and the clarity of the presentation. The editors will aim for a rapid review process and only manuscripts that need no changes or only minor revisions will be accepted.

2. Full Research Papers: should be full reports including in-depth analysis and extensive discussion. The described research should be complete and thorough, and there are no limitations to text length or number of figures/tables, as long as they add to the understanding of the described research. Criteria for publication are completeness, novelty, and clarity. Manuscripts may be accepted after major revisions. The editors will aim to apply a thorough review process.

3. Besides these two types of manuscripts, Vacuum will publish reviews, thematic issues and a selection of conference papers. These contributions must have the Full Research Paper structure. Such contributions must be prepared in consultation with the special issues editor and can only be submitted after invitation by the guest editor for that issue.

Submission checklist

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• 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
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Please submit, with the manuscript, the names, addresses and e-mail addresses of five potential referees. The referees must be independent international experts who have published recently in the field. Note that the editor retains the sole right to decide whether or not the suggested reviewers are used.

**Additional information**

Please ensure that acronyms and their full version appear in the main text when first used, but only one of these (usually the acronym) appears in the title.

**PREPARATION**

**Peer review**

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

**Use of word processing 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**

Follow this order when submitting manuscripts: Title, Authors, Affiliations, Abstract, Keywords, Main text, Acknowledgements, Appendix, References, Figure Captions and then Tables. For submission via the website you are requested to import low-resolution images into the article at the approximate location you wish them to appear. Thus the PDF which is created for refereeing purposes will contain all necessary information. In addition you will be asked to separately upload high quality images. Collate acknowledgements in a separate section at the end of the article and do not include them on the title page, as a footnote to the title or otherwise.

**Text Layout**

Use double spacing and wide (3 cm) margins. (Avoid full justification, i.e., do not use a constant right-hand margin.) Ensure that each new paragraph is clearly indicated. Present tables, figures and figure legends at the point they will appear in the manuscript. If possible, consult a recent issue of the journal to become familiar with layout and conventions. Number all pages consecutively, use 12 or 10 pt font size and standard fonts.

**Subdivision Main Text:**

This journal accepts two different types of unsolicited manuscripts with different subdivision of text: Short Communications (Letters) and Full Research Papers.

1. Short Communications
Short Communications should be kept concise and short, the number of figures and tables should also be kept to a minimum. The main text of the manuscripts should not exceed 2,500 words, and the number of combined tables/images/figures should not exceed 5. Abstract should contain less than 150 words. The main text should not contain any headings. The main text should end with a concluding statement and optional acknowledgement.

2. Full Research Papers
The described research should be complete and thorough, and there are no limitations to text or number of figures/tables, as long as they add to the understanding of the described research. The main text of your article should be divided into clearly defined and numbered sections with appropriate headings (Introduction, Materials and Methods, Theory/Calculation, Results, Discussion, Conclusions). 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.

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

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

**Abstract**
A self-contained abstract of up to 150 words for Short Communications (Letters) and 200 words for Full Research Papers, outlining in a single paragraph the purpose of the research, the principal results and major conclusions. An abstract is often presented separate from the article, so it must be able to stand alone. For this reason, references should be avoided, but if essential, they must be cited in full, without reference to the reference list. Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

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

**Keywords**
Immediately after the abstract, provide a maximum of 6 keywords, using British 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.

**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.).

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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].

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**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., 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 can build footnotes into the text, and this feature may be used. Otherwise, please indicate the position of footnotes in the text and list the footnotes themselves separately at the end of the article. Do not include footnotes in the Reference list.

Units to be used in 'Vacuum'
**Pressure:** Authors are asked to use bar (bar), millibar (mbar) or the pascal (Pa).
The SI unit of pressure is the pascal (Pa), the special name for the newton per square metre (N m^{-2}). The standard atmosphere (atm) is defined in ISO 31/111-1978 (E) as exactly 101.325 kPa. The standard atmosphere should only be used to define a reference environment and not as a pressure unit. The 'bar' has become widely used as a unit of pressure in vacuum measurement.

1 bar = 10^5 Pa exactly
1 millibar (mbar) = 100 Pa exactly.

Other units of pressure are sometimes to be found in published literature but their use is deprecated in ISO 31/111-1978(E) and in some countries their use is unlawful for certain purposes. A table of conversion factors for such units is given below to allow authors to change their units to pascals or millibars.
The pascal can be combined with other SI units to give the units for other quantities commonly measured in vacuum science and technology. Some examples of these quantities are given below.

**Pump speed:** Authors are asked to use cubic metre per second (m^3 s^{-1}), cubic metre per hour (m^3 h^{-1}), or litre per second (l s^{-1}). The SI unit for volumetric rate of flow such as is used when expressing the speed of a vacuum pump is cubic metre per second (m^3 s^{-1}). The speed of most mechanical pumps is expressed in terms of cubic metre per hour (m^3 h^{-1}).

1 m^3 h^{-1} = 1/3600 m^3 s^{-1} 0.000278 m^3 s^{-1}).
The speed of most high vacuum pumps such as diffusion and turbomolecular pumps is expressed in terms of liter per second (l s^{-1}).

1 l s^{-1} = 10^{-3} m^3 s^{-1}.

**Leak rate:** Authors are asked to use pascal metre cube per second (Pa m^3 s^{-1}) or millibar litre per second (mbar l s^{-1}). The SI unit for leak rate is pascal metre cube per second (Pa m^3 s^{-1}). Other commonly used units of leak rate with their conversion to the SI unit are given in the table.

**Outgassing rate:** Authors are asked to use pascal metre cube per second per square metre (Pa m^3 s^{-1} m^{-2}) or millibar litre per second per square centimetre (mbar l s^{-1} cm^{-2}). The SI unit for outgassing rate from surfaces is pascal metre cube per second per square metre (Pa m^3 s^{-1} m^{-2}). Other commonly used units of outgassing rate with their conversion to the SI unit are given in the table.

1 (1) Quantity measured in (2) Multiply by (3) Resulting number in (4) Multiply column (3) by (5) Resulting number in

<table>
<thead>
<tr>
<th>Quantity measured in</th>
<th>Multiply by (3) Resulting number in (4) Multiply column (3) by (5) Resulting number in</th>
</tr>
</thead>
<tbody>
<tr>
<td>torr</td>
<td>133.322 Pa</td>
</tr>
<tr>
<td>mbar millimetre</td>
<td>0.01</td>
</tr>
<tr>
<td>kilogramme centimeter</td>
<td>10 mbar</td>
</tr>
<tr>
<td>kilogramme</td>
<td>0.133322 Pa</td>
</tr>
<tr>
<td>kilogramme</td>
<td>0.01 mbar</td>
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<tr>
<td>technical atmospheres</td>
<td>98.0665 kPa</td>
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<tr>
<td>Pa</td>
<td>10 mbar</td>
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<tr>
<td>mbar</td>
<td>0.000278 m^3 s^{-1}</td>
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<tr>
<td>Pa</td>
<td>0.001 m^3 s^{-1}</td>
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<tr>
<td>mbar</td>
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<td>mbar</td>
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<td>10 mbar</td>
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<td>Pa</td>
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<tr>
<td>mbar</td>
<td>0.001 mbar</td>
</tr>
</tbody>
</table>

Table of conversion factors
**Artwork**

*Electronic artwork*

**General points**

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- Aim to use the following fonts in your illustrations: Arial, Courier, Times New Roman, Symbol, or use fonts that look similar.
- Number the illustrations according to their sequence in the text.
- Use a logical naming convention for your artwork files.
- Provide captions to illustrations separately.
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A detailed guide on electronic artwork is available.

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

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