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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
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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.

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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.

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*Use of word processing software*

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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.

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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.

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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.
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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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Please submit math equations as editable text and not as images. Present simple formulae in line with normal text where possible and use the soliddus (/) 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).

**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 = 10⁵ 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.

<table>
<thead>
<tr>
<th>Quantity measured in</th>
<th>Multiply by</th>
<th>Resulting number in</th>
<th>Multiply column (3) by</th>
<th>Resulting number in</th>
</tr>
</thead>
<tbody>
<tr>
<td>torr</td>
<td>133.322 Pa</td>
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