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.

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Surface Scientists, Materials Scientists.

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INTRODUCTION

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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.


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Vacuum will consider three types of peer-reviewed manuscripts:

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**Pressure:** Authors are asked to use bar (bar), millibar (mbar) or the pascal (Pa).
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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.

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$$1 \text{ m}^3 \text{ h}^{-1} = \frac{1}{3600} \text{ m}^3 \text{ s}^{-1} 0.000278 \text{ m}^3 \text{ s}^{-1}.$$  

The speed of most high vacuum pumps such as diffusion and turbomolecular pumps is expressed in terms of liter per second ($l \text{ s}^{-1}$).

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

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The SI unit for leak rate is pascal metre cube per second ($Pa \text{ m}^3 \text{ s}^{-1}$). Other commonly used units of leak rate with their conversion to the SI unit are given in the table.

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<table>
<thead>
<tr>
<th>Quantity measured in</th>
<th>Multiply by</th>
<th>Resulting number in</th>
<th>Multiply column (3) by (5) Resulting number in</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>torr</td>
<td></td>
<td>133.322 Pa</td>
<td>0.01 mbar mm Hg 133.322 Pa 0.01 mbar micron 0.133322 Pa 0.01 mbar technical atmospheres (kgf cm$^{-2}$) 98.0665 kPa 10 mbar m$^{-3}$ h$^{-1}$ 0.000278 m$^3$ s$^{-1}$ l$^{-1}$ 0.001 m$^3$ s$^{-1}$ torr l s$^{-1}$ 0.133322 Pa m$^3$ s$^{-1}$ 10 mbar l s$^{-1}$ standard atmosphere (cm$^3$ s$^{-1}$) 0.101325 Pa m$^3$ s$^{-1}$ 10 mbar l s$^{-1}$ torr l s$^{-1}$ cm$^{-2}$ 1333.22 Pa m$^3$ s$^{-1}$ m$^{-2}$ 0.001 mbar l s$^{-1}$ cm$^{-2}$</td>
<td>Table of conversion factors</td>
</tr>
</tbody>
</table>

**Artwork**

Electronic artwork

**General points**

- Make sure you use uniform lettering and sizing of your original artwork.
- Embed the used fonts if the application provides that option.
- 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.
- Size the illustrations close to the desired dimensions of the published version.
- Submit each illustration as a separate file.
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**Formats**

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Regardless of the application used other than Microsoft Office, 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 all used fonts.
- **TIFF (or JPEG):** Color or grayscale photographs (halftones), keep to a minimum of 300 dpi.
- **TIFF (or JPEG):** Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi.
- **TIFF (or JPEG):** Combinations bitmapped line/half-tone (color or grayscale), keep to a minimum of 500 dpi.

**Please do not:**

- Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these typically have a low number of pixels and limited set of colors;
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- Submit graphics that are disproportionately large for the content.

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