## Abbreviations of units of measurement and of physical and chemical quantities

(These abbreviations may be used without definition. They are not followed by periods. The same form is used in the plural.)

The Journal recommends the use of the International System of Units (SI) (Page, C. H., and Vipereux, P., Editors, NBS Special Publication 330, U.S. Government Printing Office; see also the IUPAC Manual of Symbols and Terminology for Physicochemical Quantities and Units (1979) Pergamon Press). However, it will continue to accept certain units as listed here (e.g. Angstrom, calorie, minute) even though they are not part of the SI. Note that wavelength should be expressed in nanometers or in Angström units; millimicron is specifically unacceptable.

<table>
<thead>
<tr>
<th>Multiplier</th>
<th>Prefix</th>
<th>Symbol</th>
<th>Multiplier</th>
<th>Prefix</th>
<th>Symbol</th>
<th>Other Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>$10^{-1}$</td>
<td>deci</td>
<td>d</td>
<td>$10^{2}$</td>
<td>hecto</td>
<td>h</td>
<td>mole</td>
</tr>
<tr>
<td>$10^{-2}$</td>
<td>centi</td>
<td>c</td>
<td>$10^{3}$</td>
<td>kilo</td>
<td>k</td>
<td>mol</td>
</tr>
<tr>
<td>$10^{-3}$</td>
<td>milli</td>
<td>m</td>
<td>$10^{6}$</td>
<td>mega</td>
<td>M</td>
<td>Bq</td>
</tr>
<tr>
<td>$10^{-6}$</td>
<td>micro</td>
<td>µ</td>
<td>$10^{9}$</td>
<td>giga</td>
<td>G</td>
<td>Ci</td>
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<tr>
<td>$10^{-12}$</td>
<td>pico</td>
<td>p</td>
<td>$10^{15}$</td>
<td>tera</td>
<td>T</td>
<td>dalton</td>
</tr>
<tr>
<td>$10^{-15}$</td>
<td>femto</td>
<td>f</td>
<td>$10^{18}$</td>
<td>peta</td>
<td>P</td>
<td>equivalent</td>
</tr>
<tr>
<td>$10^{-18}$</td>
<td>atto</td>
<td>a</td>
<td></td>
<td>exa</td>
<td>E</td>
<td>cycles per minute</td>
</tr>
</tbody>
</table>

### Units of Concentration

- molar (moles/liter) $\text{mol} / \text{L}$
- millimolar (millimoles/liter) $\text{mmol} / \text{L}$
- micromolar (micromoles/liter) $\text{μmol} / \text{L}$
- nanomolar $\text{nmol} / \text{L}$
- picomolar $\text{pmol} / \text{L}$

### Units of Length

- meter $\text{m}$
- centimeter $\text{cm}$
- millimeter $\text{mm}$
- micrometer (not micron) $\text{μm}$
- nanometer $\text{nm}$
- picometer $\text{pm}$
- Angstrom (0.1 nm) $\text{Å}$

### Units of Area and Volume

- square centimeter $\text{cm}^2$
- cubic centimeter $\text{cm}^3$
- milliliter $\text{ml}$
- microliter $\text{μl}$

### Units of Mass

- gram $\text{g}$
- milligram $\text{mg}$
- microgram $\text{μg}$

### Units of Time

- second $\text{s}$
- minute $\text{min}$
- hour $\text{h}$

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1. Terms such as milligram percent (mg%) should not be used. Weight concentrations should be given as g/ml, g/100 ml, etc.
2. The letter μ is not an abbreviation for mole; it is reserved for molar. Use mm for $10^{-3}$ and μm for $10^{-6}$ μ. Avoid designating concentrations as μmol per ml. The designation should, in this case, properly be mm (i.e. millimolar). Maintain consistency in the use of units in situations where they are to be compared (e.g. do not juxtapose $10^{-3}$ μ and $10^{-6}$ μ).
3. 1 becquerel = 1 disintegration per second or 60 dpm. 1 Ci = $3.7 \times 10^{10}$ Bq. Note: becquerel is the preferred term in the International System of Units (SI).
4. Molecular mass (symbol m) is expressed in daltons (Da); one dalton is 1/12 of the mass of carbon 12. Molecular weight (M, relative molecular mass) is the ratio of the mass of a molecule to 1/12 of the mass of carbon 12 and is dimensionless. Hence, it is not correct to express M in daltons.