

TABLE II  
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 Vigoureux, 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 Angstrom units; millimicron is specifically unacceptable.

Prefixes to the Names of Units						Other Units	
Multiplier	Prefix	Symbol	Multiplier	Prefix	Symbol		
10 <sup>-1</sup>	deci	d	10	deca	da	mole	mol
10 <sup>-2</sup>	centi	c	10 <sup>2</sup>	hecto	h	becquerel <sup>c</sup>	Bq
10 <sup>-3</sup>	milli	m	10 <sup>3</sup>	kilo	k	curie	Ci
10 <sup>-6</sup>	micro	μ	10 <sup>6</sup>	mega	M	dalton	Da
10 <sup>-9</sup>	nano	n	10 <sup>9</sup>	giga	G	equivalent	eq
10 <sup>-12</sup>	pico	p	10 <sup>12</sup>	tera	T	counts per minute	cpm
10 <sup>-15</sup>	fermi	f	10 <sup>15</sup>	peta	P	revolutions per minute	rpm
10 <sup>-18</sup>	atto	a	10 <sup>18</sup>	exa	E	cycles per second (hertz)	Hz
						degree centigrade or Celsius	°C
						degree absolute (kelvin)	K
<i>Units of Concentration<sup>a</sup></i>						calorie	cal
molar (moles/liter) <sup>b</sup>				M		kilocalorie	kcal
millimolar (millimoles/liter)			mM (rather than 10 <sup>-3</sup> M)			joule	J
micromolar (micromoles/liter)			μM (rather than 10 <sup>-6</sup> M)			gauss	G
nanomolar			nM (not mμM)			ampere	A
picomolar			pM (not μμM)			volt	V
						Svedberg (10 <sup>-13</sup> s)	S
<i>Units of Length</i>						<i>Physical and Chemical Quantities)</i>	
meter				m		absorbance	A
centimeter				cm		equilibrium constant	K
millimeter				mm		Michaelis constant	K <sub>m</sub>
micrometer (not micron)				μm (not μ)		relative molecular mass <sup>d</sup>	M <sub>r</sub>
nanometer				nm (not mμ)		retardation factor	R <sub>F</sub>
picometer				pm		acceleration of gravity	g
Angstrom (0.1 nm)				Å		specific rotation	[α] <sup>t</sup>
<i>Units of Area and Volume</i>						sedimentation coefficient	s
square centimeter				cm <sup>2</sup>		sedimentation coefficient in water at 20 °C,	S <sub>20,w</sub> <sup>o</sup>
cubic centimeter				cm <sup>3</sup>		extrapolated to zero concentration	
milliliter				ml		diffusion coefficient	D
microliter				μl (not λ)		<i>Thermodynamic Terms<sup>e</sup></i>	
<i>Units of Mass</i>						Gibbs energy change (formerly ΔF)	ΔG
gram				g		entropy change	ΔS
milligram				mg		enthalpy change	ΔH
microgram				μg (not γ)			
<i>Units of Time</i>							
second				s			
minute				min			
hour				h			

<sup>a</sup> Terms such as milligram percent (mg%) should not be used. Weight concentrations should be given as g/ml, g/100 ml, etc.  
<sup>b</sup> The letter m is not an abbreviation for mole; it is reserved for molar. Use mM for 10<sup>-3</sup> and μM for 10<sup>-6</sup> M. 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<sup>-4</sup> M and 10<sup>-5</sup> M).  
<sup>c</sup> 1 becquerel = 1 disintegration per second or 60 dpm. 1 Ci = 3.7 × 10<sup>10</sup> Bq. Note: becquerel is the preferred term in the International System of Units (SI).  
<sup>d</sup> *Molecular mass* (symbol m) is expressed in daltons (Da); one dalton is 1/12 of the mass of carbon 12. *Molecular weight* (M<sub>r</sub>, 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<sub>r</sub> in daltons.  
<sup>e</sup> For thermodynamic terms see the Recommendations of the Interunion Commission on Biothermodynamics ((1976) *J. Biol. Chem.* **251**, 6879-6886).