High Energy Chemistry, Vol. 34 No. 1, 2000, pp. 52–54. Translated from Khimiya Vysokikh Energii, Vol. 34, No. 1, 2000, pp. 76–78.
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INFORMATION FOR AUTHORS

Terminology, Units, and Symbols Used in the Journal *Khimiya Vysokikh Energii* (High Energy Chemistry)

Units in use together with the SI*

Physical quantity	Name of unit	Symbol for unit	Value in SI units
Time	minute	min	60 s
″	hour	h	3600 s
″	day	day	84600 s
Plane angle	degree	°	(π/180) rad
Volume	liter	l	$dm^3 = 10^{-3}$ m^3
Energy	electronvolt	eV	1.60218×10^{-19} J
Mass	unified atomic mass unit	u**	1.66054×10^{-27} kg

Derived units

For complex units, the use of negative powers is preferable (J cm^{-2}, l mol^{-1} s^{-1}, etc.). A slash (solidus) may be used in limited cases when two dimensions are combined (Gy/s, g/cm^3, but s^{-1} or cm^{-1} rather than 1/s or 1/cm). If necessary, a slash in combination with parentheses may be used in units having two or more dimensions in the denominator to eliminate ambiguity, for example, l/(mol s).

Concentration (*c*)

Amount concentration is an abbreviation for *amount-of-substance concentration*. When there is no risk of confusion, the word *concentration* may be used alone. The SI base unit is mol m^{-3}, but the practical units are mol dm^{-3} or mol l^{-1}. This quantity is also sometimes called molarity. A solution of, for example, 1 mol/l is often called a 1 molar solution, denoted 1 M solution (for example, 6 M H_2SO_4 instead of 6 mol/l H_2SO_4). Thus, M is often treated as a symbol for mol dm^{-3}. However, this abbreviation should not be used in derived units (l mol^{-1} s^{-1} rather than M^{-1} s^{-1}) or other combinations (c = 0.1 mol/l rather than c = 0.1 M).

*These units were approved by IUPAC. SI prefixes may be attached to some of these units such as milliliter (ml), megaelectronvolt (MeV), etc.

** The unified atomic mass unit is also abbreviated amu; it is sometimes called the dalton, with the symbol Da, although the name and the symbol are not commonly used in the chemical literature. The use of the relative molecular (atomic) mass (or molecular weight) is preferable.

Absorbance (*A*)

The logarithm to the base 10 of the ratio of the spectral radiant power of incident radiation to the radiant power of transmitted radiation (symbol *T* denotes the transmittance). According to IUPAC recommendations, the terms *absorbancy*, *extinction*, and *optical density* should no longer be used. The terms *absorbance* and *absorption* (of electromagnetic radiation), which are recommended by IUPAC, should not be confused. In any case, the symbol *A* rather than *D* or *OD* should be used in both figures and the text.

Molar absorption coefficient (ε)

The complete name is *molar decadic absorption coefficient*, as distinct from *linear decadic absorption coefficient*. The SI unit is m^2 mol^{-1}. The terms *absorptivity* and *extinction coefficient* for molar absorption coefficient should be avoided. Numerical values of the *extinction coefficient* are often quoted without specifying units; the absence of units usually means that the units are mol^{-1} dm^3 cm^{-1} (or l mol^{-1} cm^{-1}). Taking into account that a great body of published data were expressed as l mol^{-1} cm^{-1}, this unit may be recommended for use in the journal.

Intensity

Traditional term for photon flux, fluence rate, irradiance, or radiant power (radiant flux). In terms of an object exposed to radiation, the term should now be

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used only for qualitative descriptions. Radiant intensity is power divided by solid angle. In all cases, units should be specified (arbitrary units should be used in limited cases).

When describing mass spectra, one should refer to the *abundance* of an ion, to the *intensity* of an ion beam, and to the *height* or *area* of a peak.

Dose or absorbed dose (*D*)

The energy imparted to matter by ionizing radiation in a suitable small element of volume divided by the mass of that element of volume. Dose should be distinguished from energy fluence and photon fluence.

Absorbed dose rate (*P* or *D*′)

To avoid confusion, pressure should be denoted by p.

Hyperfine coupling constant (*A*)

The interaction energy between the electron spin and a magnetic nucleus is characterized by the hyperfine coupling constant A with units in joules. Expressing A in units of tesla (T), millitesla (mT), or gauss (G) is rejected. Hyperfine interaction usually results in splitting of lines in an EPR spectrum. The splitting (a) is measured in units of millitesla (mT). In the simplest case, the splitting is related to the absolute value of the hyperfine coupling constant by $A = g\mu_B a$. $A/\hbar$ and $A/(\hbar c)$ ($\hbar$ is the Planck constant; c is the velocity of light) may be reported in MHz and cm^{-1}, respectively.

Efficiency/effectiveness

The use of any of these terms should be limited by cases in which it is part of a recommended term (for example, the efficiency of radiation utilization and counting efficiency) and/or is expressed in certain units (e.g., relative biological effectiveness).

Law

A scientific law is a rule or generalization which describes specified natural phenomena within the limits of experimental observation. As applied to chemical reactions (radiolysis, photolysis, etc.), the term *rate law* (or empirical differential rate equation) denotes an expression for the rate of a chemical reaction in terms of concentrations and constant parameters; *mechanism* (of a reaction) is a detailed description of the pathway leading from the reactants to the products.

Accuracy

A quantity referring to the differences between the mean of a set of results or an individual result and the value which is accepted as the true or correct value for the quantity measured. *Precision* is a measure for the reproducibility of measurements within a set, that is, of the scatter or dispersion of a set about its central value. Precision (of an analytical procedure) is conveniently expressed by the standard deviation or relative standard deviation in the analytical result.

Oxidation number (of a chemical element)

The oxidation number (or state) should not be confused with the ionic charge number, which is denoted by a right superscript, for example, Pu^{4+}. Oxidation numbers are denoted by roman numerals or by a zero in parentheses, for example, Pu(VII). In questionable cases, for example, in the notation Sn(4+), the authors should clarify whether it is a multiply charged ion (such as nuclear reactions and ion beams) or it denotes the oxidation state of the element in compounds.

Valence

Although they are frequently confused with each other, oxidation number is not the same thing as valence. The use of the term *valence* is preferable in combinations such as valence shell, valence electron, and valence bond. Valence and coordination number should not be confused.

Standard abbreviations for experimental techniques

IR infrared;

UV ultraviolet;

EPR electron paramagnetic resonance;

NMR nuclear magnetic resonance.

These abbreviations may be used in text without explanation.

Standard abbreviations for synthetic and naturally occurring polymers

DNA deoxyribonucleic acid;

PETP poly(ethylene terephthalate);

PMMA poly(methyl methacrylate);

PTFE polytetrafluoroethylene;

PVC poly(vinyl chloride);

RNA ribonucleic acid.

These abbreviations may be used without explanation. All others, even those appearing in recent lists by IUPAC, should be defined at least once.

Abbreviations for ligand names

The general abbreviation for all ligands, except L, shall be lowercase letters. M rather than Me (accepted for methyl) shall be the general abbreviation for metal (for example, ML_2).

Anionic groups	Neutral groups
acac, acetylacetonate (2,4-pentanedionate)	bpy, 2,2'-bipyridyl
edta, ethylenediaminetetraacetate	en, ethylenediamine
ox, oxalate	phen, 1,10-phenanthroline
	py, pyridine
	ur, urea

These abbreviations may be used without explanation. All other abbreviations should be defined the first time they appear in the text.