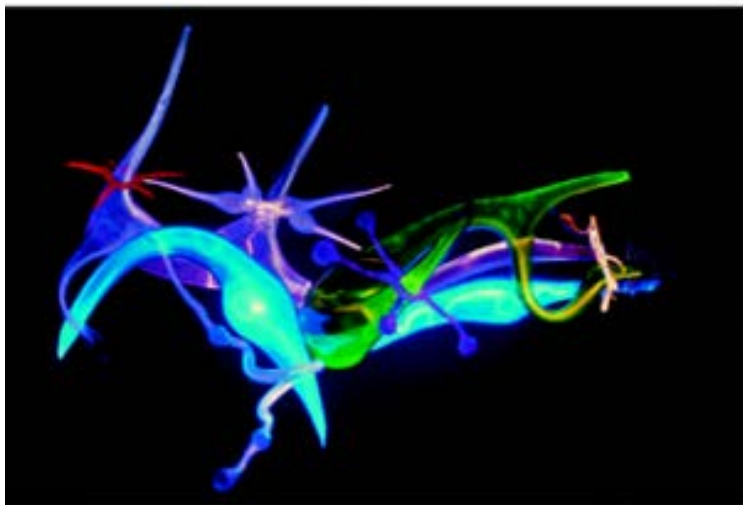


McGRAW-HILL

SECOND
EDITION

DICTIONARY OF CHEMISTRY



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COVERS EVERY DISCIPLINE OF CHEMISTRY

PROVIDES SYNONYMS, ACRONYMS, AND ABBREVIATIONS

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McGraw-Hill

Dictionary of Chemistry

**Second
Edition**

McGraw-Hill

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Preface

The *McGraw-Hill Dictionary of Chemistry* provides a compendium of 8000 terms that are central to chemistry and related fields of science and technology. The coverage in this Second Edition is focused on the the areas of analytical chemistry, general chemistry, inorganic chemistry, organic chemistry, physical chemistry, and spectroscopy, with new terms added and others revised as necessary.

Chemistry deals with the composition, properties, and structure of matter. Its various branches analyze composition and properties, and study the changes that occur in matter, the underlying processes, the energetics of these processes, and the rates at which they occur. Thus, the terms contained in this Dictionary may be used in virtually all areas of science, for example, biochemistry, geochemistry, and cosmochemistry, and in many areas of technology.

All of the definitions are drawn from the *McGraw-Hill Dictionary of Scientific and Technical Terms*, Sixth Edition (2003). Each definition is classified according to the field with which it is primarily associated; if it is used in more than one area, it is identified by the general label [CHEM]. The pronunciation of each term is provided, along with synonyms, acronyms, and abbreviations where appropriate. A guide to the use of the Dictionary appears on pages vii-viii, explaining the alphabetical organization of terms, the format of the book, cross referencing, chemical formulas, and how synonyms, variant spellings, abbreviations, and similar information are handled. The Pronunciation Key is provided on page x. The Appendix provides conversion tables for commonly used scientific units as well as other listings of chemical data.

It is the editors' hope that the Second Edition of the *McGraw-Hill Dictionary of Chemistry* will serve the needs of scientists, engineers, students, teachers, librarians, and writers for high-quality information, and that it will contribute to scientific literacy and communication.

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How to Use the Dictionary

ALPHABETIZATION. The terms in the *McGraw-Hill Dictionary of Chemistry*, Second Edition, are alphabetized on a letter-by-letter basis; word spacing, hyphen, comma, solidus, and apostrophe in a term are ignored in the sequencing. Also ignored in the sequencing of terms (usually chemical compounds) are italic elements, numbers, small capitals, and Greek letters. For example, the following terms appear within alphabet letter “A”:

amino alcohol

1-aminoanthraquinone

γ -aminobutyric acid

***para*-aminophenol**

***n*-amylamine**

4-AP

FORMAT. The basic format for a defining entry provides the term in boldface, the field is small capitals, and the single definition in lightface:

term [FIELD] Definition

A term may be followed by multiple definitions, each introduced by a bold-face number:

term [FIELD] **1.** Definition. **2.** Definition. **3.** Definition.

A term may have definitions in two or more fields:

term [PHYS CHEM] Definition. [SPECT] Definition.

A simple cross-reference entry appears as:

term See another term.

A cross reference may also appear in combination with definitions:

term [PHYS CHEM] Definition. [SPECT] See another term.

CROSS REFERENCING. A cross-reference entry directs the user to the defining entry. For example, the user looking up “arachic acid” finds:

arachic acid See eicosanoic acid.

The user then turns to the “E” terms for the definition. Cross references are also made from variant spellings, acronyms, abbreviations, and symbols.

AES See Auger electron spectroscopy.

aluminium See aluminum.

at. wt See atomic weight.

Au See gold.

CHEMICAL FORMULAS. Chemistry definitions may include either an empirical formula (say, for abietic acid, $C_{20}H_{30}O_2$) or a line formula (for acrylonitrile, CH_2CHCN), whichever is appropriate.

ALSO KNOWN AS . . . , etc. A definition may conclude with a mention of a synonym of the term, a variant spelling, an abbreviation for the term, or other such information, introduced by “Also known as . . . ,” “Also spelled . . . ,” “Abbreviated . . . ,” “Symbolized . . . ,” “Derived from” When a term has more than one definition, the positioning of any of these phrases conveys the extent of applicability. For example:

term [PHYS CHEM] **1.** Definition. Also known as synonym. **2.** Definition. Symbolized T.

In the above arrangement, “Also known as . . .” applies only to the first definition; “Symbolized . . .” applies only to the second definition.

term [PHYS CHEM] **1.** Definition. **2.** Definition. [SPECT] Definition. Also known as synonym.

In the above arrangement, “Also known as . . .” applies only to the second field.

term [PHYS CHEM] Also known as synonym. **1.** Definition. **2.** Definition. [SPECT] Definition.

In the above arrangement, “Also known as . . .” applies only to both definitions in the first field.

term Also known as synonym. [PHYS CHEM] **1.** Definition. **2.** Definition. [SPECT] Definition.

In the above arrangement, “Also known as . . .” applies to all definitions in both fields.

Fields and Their Scope

[ANALY CHEM] **analytical chemistry**—The science of the characterization and measurement of chemicals; qualitative analysis is concerned with the description of chemical composition in terms of elements, compounds, or structural units, whereas quantitative analysis is concerned with the measurement of amount.

[CHEM] **chemistry**—The scientific study of the properties, composition, and structure of matter, the changes in structure and composition of matter, and accompanying energy changes.

[INORG CHEM] **inorganic chemistry**—The branch of chemistry that deals with reactions and properties of all chemical elements and their compounds, excluding hydrocarbons but usually including carbides and other simple carbon compounds (such as CO_2 , CO , and HCN).

[ORG CHEM] **organic chemistry**—The study of the structure, preparation, properties, and reactions of carbon compounds.

[PHYS CHEM] **physical chemistry**—The branch of chemistry that deals with the interpretation of chemical phenomena and properties in terms of the underlying physical processes, and with the development of techniques for their investigation.

[SPECT] **spectroscopy**—The branch of physics concerned with the production, measurement, and interpretation of electromagnetic spectra arising from either emission or absorption of radiant energy by various substances.

Pronunciation Key

Vowels

a	as in bat, that
ā	as in bait, crate
ä	as in bother, father
e	as in bet, net
ē	as in beet, treat
i	as in bit, skit
ī	as in bite, light
ō	as in boat, note
ó	as in bought, taut
ù	as in book, pull
ü	as in boot, pool
ə	as in but, sofa
aʊ	as in crowd, power
oi	as in boil, spoil
yə	as in formula, spectacular
yü	as in fuel, mule

Semivowels/Semiconsonants

w	as in wind, twin
y	as in yet, onion

Stress (Accent)

'	precedes syllable with primary stress
,	precedes syllable with secondary stress
ˈ	precedes syllable with variable or indeterminate primary/secondary stress

Consonants

b	as in bib, dribble
ch	as in charge, stretch
d	as in dog, bad
f	as in fix, safe
g	as in good, signal
h	as in hand, behind
j	as in joint, digit
k	as in cast, brick
ƙ	as in Bach (used rarely)
l	as in loud, bell
m	as in mild, summer
n	as in new, dent
<u>n</u>	indicates nasalization of preceding vowel
ŋ	as in ring, single
p	as in pier, slip
r	as in red, scar
s	as in sign, post
sh	as in sugar, shoe
t	as in timid, cat
th	as in thin, breath
<u>th</u>	as in then, breathe
v	as in veil, weave
z	as in zoo, cruise
zh	as in beige, treasure

Syllabication

·	Indicates syllable boundary when following syllable is unstressed
---	---

- disodium methylarsonate** [ORG CHEM] $\text{CH}_3\text{AsO}(\text{ONa})_2$ A colorless, hygroscopic, crystalline solid; soluble in water and methanol; used in pharmaceuticals and as a herbicide. Abbreviated DMA. { dɪ'sɒd-ē-əm 'meth-əl'ärs-ən,ät }
- disodium phosphate** [INORG CHEM] Na_2HPO_4 Transparent crystals, soluble in water; used in the textile processing and other industries to control pH in the range 4–9, as an additive in processed cheese to maintain spreadability, and as a laxative and antacid. Also known as disodium hydrogen phosphate. { dɪ'sɒd-ē-əm 'fäs,fät }
- disodium tartrate** See sodium tartrate. { dɪ'sɒd-ē-əm 'tär,trät }
- disperse phase** [CHEM] The phase of a disperse system consisting of particles or droplets of one substance distributed through another system. Also known as discontinuous phase; internal phase. { də'spərs ,fäz }
- disperse system** [CHEM] A two-phase system consisting of a dispersion medium and a disperse phase. { də'spərs ,sis-təm }
- dispersible inhibitor** [CHEM] An additive that can be dispersed in a liquid with only moderate agitation to retard undesirable chemical action. { di'spər-sə-bəl in'hīb-əd-ər }
- dispersion** [CHEM] A distribution of finely divided particles in a medium. { də'spər-zhən }
- dispersion force** [PHYS CHEM] The force of attraction that exists between molecules that have no permanent dipole. Also known as London force; van der Waals force. { də'spər-zhən ,förs }
- dispersion medium** See continuous phase. { də'spər-zhən ,mēd-ē-əm }
- dispersoid** [CHEM] Matter in a form produced by a disperse system. { də'spər,sɔid }
- displacement** [CHEM] A chemical reaction in which an atom, radical, or molecule displaces and sets free an element of a compound. { dis'pläs-mənt }
- displacement chromatography** [ANALY CHEM] Variation of column-development or elution chromatography in which the solvent is sorbed more strongly than the sample components; the freed sample migrates down the column, pushed by the solvent. { dis'pläs-mənt ,krō-mə'täg-rə-fē }
- displacement series** [CHEM] The elements in decreasing order of their negative potentials. Also known as constant series; electromotive series; Volta series. { dis'pläs-mənt ,sir-ēz }
- disproportionation** [CHEM] The changing of a substance, usually by simultaneous oxidation and reduction, into two or more dissimilar substances. { ,dis-prə,pör-shə'nä-shən }
- dissociation** [PHYS CHEM] Separation of a molecule into two or more fragments (atoms, ions, radicals) by collision with a second body or by the absorption of electromagnetic radiation. { də,sō-sē'ä-shən }
- dissociation constant** [PHYS CHEM] A constant whose numerical value depends on the equilibrium between the undissociated and dissociated forms of a molecule; a higher value indicates greater dissociation. { də,sō-sē'ä-shən ,kän-stənt }
- dissociation energy** [PHYS CHEM] The energy required for complete separation of the atoms of a molecule. { də,sō-sē'ä-shən ,en-ər-jē }
- dissociation limit** [SPECT] The wavelength, in a series of vibrational bands in a molecular spectrum, corresponding to the point at which the molecule dissociates into its constituent atoms; it corresponds to the convergence limit. { də'sō-sē'ä-shən ,lim-ət }
- dissociation pressure** [PHYS CHEM] The pressure, for a given temperature, at which a chemical compound dissociates. { də,sō-sē'ä-shən ,presh-ər }
- dissociation-voltage effect** [PHYS CHEM] A change in the dissociation of a weak electrolyte produced by a strong electric field. { də,sō-sē'ä-shən 'völ-tij i,fekt }
- dissolution** [CHEM] Dissolving of a material. { ,dis-ə'lū-shən }
- dissolve** [CHEM] **1.** To cause to disperse. **2.** To cause to pass into solution. { də'zälv }
- dissymmetry coefficient** [ANALY CHEM] Ratio of the intensities of scattered light at 45 and 135°, used to correct for destructive interference encountered in light-scattering-photometric analyses of liquid samples. { di'sim-ə-trē ,kō-i'fish-ənt }