

Glossary

A

absolute zero: believed to be the lowest possible temperature

acid: a compound that ionizes in water to form hydrogen ions (according to Arrhenius' theory); a proton donor (according to the Brønsted-Lowry concept); a substance that, in aqueous solution, turns blue litmus red (empirical definition)

acid rain: any form of natural precipitation that has an abnormally high acidity

actinide: actinium and the 13 elements that follow it in the seventh row of the periodic table, elements 89 to 102

activity series: a list of elements arranged in order of their reactivity, based on empirical evidence gathered from single displacement reactions

actual yield: the amount of product that is actually obtained at the end of a procedure

acyclic hydrocarbons: open-chain hydrocarbons without any rings of carbon atoms

addition polymerization: a reaction in which unsaturated monomers combine with each other to form a polymer

agricultural runoff: the surface water, with its load of pollutants in solution and in suspension, that drains off farmland

alchemy: a medieval chemical philosophy or practice, the principal goals of which were to transmute elements (e.g., lead to gold), to cure all illness, and to manufacture an essence that would allow long life

alicyclic hydrocarbons: hydrocarbons that have a structure based on rings of carbon atoms

aliphatic compound: one that has a structure based on straight or branched bond chains or rings of carbon atoms; not including aromatic compounds, for example, benzene

alkali metal: an element in Group 1 of the periodic table

alkaline earth metal: an element in Group 2 of the periodic table

alkane: a hydrocarbon with only single bonds between carbon atoms

alkenes: a hydrocarbon family of molecules that contain at least one carbon-carbon double bond; general formula, C_nH_{2n}

alkyl group: a hydrocarbon group derived from an alkane by the removal of a hydrogen atom; often a substitution group or branch on an organic molecule

alkynes: a hydrocarbon family of molecules that contain at least one carbon-carbon triple bond; general formula, C_nH_{2n-2}

alloy: a homogeneous mixture (a solution) of two or more metals

alpha decay: the process in which alpha particles are emitted

alpha particle: the nucleus of a helium atom

alpha ray: a stream of alpha particles

amphiprotic: a substance capable of acting as an acid or a base in different chemical reactions; an entity that can gain or lose a proton (sometimes called amphoteric)

analogy: a comparison of a situation, object, or event with more familiar ideas, objects, or events

aqueous solution: a solute dissolved in water

aquifer: an underground formation of permeable rock or loose material that can produce useful quantities of water when tapped by a well

artificial transmutation: the artificial bombardment of a nucleus by a small entity such as a helium nucleus, a proton, or a neutron

atmospheric pressure: the force per unit area exerted by air on all objects

atom: the smallest particle of an element that has all the properties of that element (theoretical definition)

atomic mass: the relative mass of an atom on a scale on which the mass of one atom of carbon-12 is exactly 12 u; represented by A_r

atomic mass unit: a unit of mass defined as 1/12 the mass of a carbon-12 atom; represented by u

atomic number: the number of protons present in the nucleus of an atom of a given element; represented by Z

atomic radius: a measurement of the size of an atom in picometres ($1 \text{ pm} = 10^{-12} \text{ m}$)

Avogadro's constant: the number of entities in one mole: 6.02×10^{23} ; represented by N_A

Avogadro's theory: equal volumes of gases at the same temperature and pressure contain equal numbers of molecules

B

base: an ionic hydroxide that dissociates in water to produce hydroxide ions (according to Arrhenius' theory); a proton acceptor (according to the Brønsted-Lowry concept); a substance that, in aqueous solution, turns red litmus blue (empirical definition)

beta decay: the process in which beta particles are emitted

beta particle: an electron emitted by certain radioactive atoms

beta ray: a stream of beta particles

binary compound: a compound composed of two kinds of atoms or two kinds of monatomic ions

bond energy: the energy required to break a chemical bond; the energy released when a bond is formed

bonding capacity: the number of electrons lost, gained, or shared by an atom when it bonds chemically

Boyle's law: as the pressure on a gas increases, the volume of the gas decreases proportionally, provided that the temperature and amount of gas remain constant; the volume and pressure of a gas are inversely proportional

C

calorimeter: an isolated system consisting of some chemical system surrounded by a measured quantity of water and other components

calorimetry: the technological process of measuring energy changes in chemical systems

carbon-14 dating: a technique that uses radioactive carbon-14 to identify the date of death of once-living material

catalyst: a substance that speeds up the rate of a reaction without undergoing permanent change itself

catalytic converter: a device that uses catalysts to convert pollutant molecules in vehicle exhaust to less harmful molecules

Charles's law: the volume of a gas varies directly with its temperature in kelvin, if the pressure and amount of gas are constant

chemical bond: the forces of attraction holding atoms or ions together

chemical change: any change in which a new substance is formed

chemical energy: energy derived directly from a chemical reaction; for example, burning of hydrocarbons in a furnace

chemical equation: a representation of a chemical reaction that indicates the chemical formulas, relative number of entities, and states of matter of the reactants and products

chemical nomenclature: the system, such as the one approved by IUPAC, of names used in chemistry

coefficient: a whole number indicating the ratio of molecules or formula units of each substance involved in a chemical reaction

collision–reaction theory: a theory stating that chemical reactions involve collisions and rearrangements of atoms or groups of atoms and that the outcome of collisions depends on the energy and orientation of the collisions

combined gas law: the product of the pressure and volume of a gas sample is proportional to its absolute temperature in kelvin; $pV = kT$

combustion reaction: the reaction of a substance with oxygen, producing oxides and energy

complete combustion: the reaction of an element or compound with oxygen to produce the most common oxides, for example, carbon dioxide, sulfur dioxide, nitrogen dioxide, and water

compound: a pure substance that can be broken down by chemical means to produce two or more pure substances (empirical definition); a substance containing atoms of more than one element combined in fixed proportions (theoretical definition)

concentrated: having a relatively large quantity of solute per unit volume of solution

concentration: the amount of a given solute in a solution

conjugate acid: the acid formed by adding a proton (H^+) to a base

conjugate acid–base pair: an acid–base pair that differs by one proton (H^+)

conjugate base: the base formed by removing a proton (H^+) from an acid

continuous spectrum: the pattern of colours observed when a narrow beam of white light is passed through a prism or spectroscope (empirical definition)

cooling rate: the heat flowing out of a substance per unit time (in units of, e.g., J/min)

coordinate covalent bond: a covalent bond in which both of the shared electrons come from the same atom

corrosion: the unwanted reaction of metals with chemicals in the environment

covalent bond: the attractive force, between two atoms of non-metallic elements, that results when electrons are shared by the atoms

cracking: reaction of a larger hydrocarbon molecule that breaks it into two or more smaller hydrocarbon molecules

crude oil: the fraction of petroleum that is liquid at normal pressure, consisting of higher molar mass hydrocarbons than natural gas; it is refined to separate it into gas, liquid, and solid hydrocarbon components

crystal lattice: a regular, ordered arrangement of atoms, ions, or molecules

cycloalkane: a class of alicyclic hydrocarbon with only single bonds between carbon atoms that are bonded to form a ring structure

D

Dalton's law of partial pressures: the total pressure of a mixture of nonreacting gases is equal to the sum of the partial pressures of the individual gases

decomposition reaction: a chemical reaction in which a compound is broken down into two or more simpler substances

diagnostic test: an empirical test to detect the presence of a chemical

diatomic: a molecule composed of two atoms of the same or different elements

dilute: having a relatively small quantity of solute per unit volume of solution

dilution: the process of decreasing the concentration of a solution, usually by adding more solvent

dipole–dipole force: an attractive force acting between polar molecules

dissociation: the separation of ions that occurs when an ionic compound dissolves in water

double displacement reaction: a reaction in which aqueous ionic compounds rearrange cations and anions, resulting in the formation of new compounds

E

electrical conductivity: the ability of a material to allow electricity to flow through it

electrolyte: a compound that, in aqueous solution, conducts electricity (empirical definition)

electron: a negatively charged subatomic particle

electron affinity: the energy change that occurs when an electron is accepted by a neutral atom in the gaseous state

electron cloud: the region of an atom in which electrons are most probably located

electron dot diagram: a representation of an atom or ion, made up of the chemical symbol and dots indicating the number of electrons in the valence energy level; also called Lewis symbol

electronegativity: a number that describes the relative ability of an atom, when bonded, to attract electrons

element: a pure substance that cannot be broken down into simpler substances by chemical means (empirical definition); a substance composed entirely of one kind of atom (theoretical definition)

empirical definition: a statement that defines an object or process in terms of observable properties

empirical formula: simplest whole-number ratio of atoms or ions in a compound

empirical knowledge: knowledge coming directly from observations

endothermic: changes that usually involve a decrease in the temperature of the surroundings; energy is transferred as heat from the surroundings to a chemical system

endpoint: the point in a titration at which a sharp change in a property occurs (e.g., a colour change)

energy level: a state with definite and fixed energy in which an electron is allowed to move (theoretical definition)

excess reagent: the reactant that is present in more than the required amount for complete reaction

exothermic: changes that usually involve an increase in the temperature of the surroundings; energy is transferred as heat from a chemical system to the surroundings

F

flame test: a diagnostic technique in which a metallic compound is placed in a flame and the colour produced is used to identify the metal in the compound

formula unit: the simplest whole-number ratio of atoms or ions of the elements in an ionic compound

fractional distillation: the separation of components of petroleum by distillation, using differences in boiling points; also called fractionation

fusion: a nuclear change in which small nuclei combine to form a larger nucleus accompanied by the release of very large quantities of energy

G

galvanizing: coating iron or steel with zinc to prevent rusting

gamma rays: high-energy (short wavelength) electromagnetic radiation emitted during radioactive decay

gas constant: the constant of variation that relates the pressure in kilopascals, volume in litres, amount in moles, and temperature in kelvin of an ideal gas; represented by R

geometric (cis-trans) isomers: organic molecules that differ in structure only by the position of groups attached on either side of a carbon-carbon double bond; a cis isomer has both groups on the same side of the molecular structure; a trans isomer has the groups on opposite sides of the molecular structure

geothermal energy: energy from the heat of the Earth; for example, water pumped into and out of hot rock

global warming: the increase in the average temperature of Earth's atmosphere

gravimetric stoichiometry: the procedure for calculating the masses of reactants or products in a chemical reaction

greenhouse effect: a theory stating that heat is trapped near Earth's surface by carbon dioxide gas, atmospheric water vapour, and some other gases

ground state: the lowest energy level that an electron can occupy (theoretical definition)

group: a column of elements in the periodic table; sometimes referred to as a family

H

half-life: the time it takes for one-half the nuclei in a radioactive sample to decay

halogen: an element in Group 17 of the periodic table

hard water: water containing an appreciable concentration of calcium and magnesium ions

heat: the energy being transferred between substances (in units, e.g., of kilojoules and represented by the quantity symbol q)

heat capacity: the energy absorbed or released by a system per degree Celsius (in units of, e.g., kJ/°C; represented by C)

heat of reaction: the heat transferred in a reaction based on the amounts given by the coefficients of the balanced chemical equation (in units of, e.g., kJ)

high solubility: with a maximum concentration at SATP of greater than or equal to 0.1 mol/L

homogeneous mixture: a uniform mixture of only one phase

hydrate: a compound that decomposes to an ionic compound and water vapour when heated (empirical definition); a compound that contains water as part of its crystal structure (theoretical definition)

hydrocarbons: organic compounds that contain only carbon and hydrogen atoms in their molecular structure

hydrogen bond: a relatively strong dipole–dipole force between a positive hydrogen atom of one molecule and a highly electronegative atom (F, O, or N) in another molecule

hydrogen polyatomic ion: a bi-ion; a polyatomic ion with an available hydrogen ion (e.g., hydrogen carbonate (bicarbonate) ion, hydrogen sulfite (bisulfite) ion)

hydronium ion: a hydrated hydrogen ion (proton), conventionally represented as $\text{H}_3\text{O}^+_{(\text{aq})}$

I

ideal gas: a hypothetical gas composed of hypothetical particles that would have zero size, travel in exactly straight lines, and have no attraction to each other (zero intermolecular force)

ideal gas law: the product of the pressure and volume of a gas is directly proportional to the amount and the kelvin temperature of the gas; $pV = nRT$

immiscible: two liquids that form separate layers instead of dissolving

incomplete combustion: the reaction of an element or compound with oxygen to produce some oxides with less oxygen content than the most common oxides, for example, carbon monoxide and nitrogen monoxide

insoluble: having a negligible solubility at SATP

intermolecular force: the attractive force between molecules

intramolecular force: the attractive force between atoms and ions within a compound

ion: a charged entity formed by the addition or removal of one or more electron(s) from a neutral atom (theoretical definition)

ionic bond: the electrostatic attraction between positive and negative ions in a compound; a type of chemical bond

ionic compound: a pure substance formed from a metal and a nonmetal

ionization: any process by which a neutral atom or molecule is converted into an ion

ionization energy: the amount of energy required to remove an electron from an atom or ion in the gaseous state

isotope: atoms of an element that have the same number of protons and neutrons; there may be several isotopes of the same element that differ from each other only in the number of neutrons in the nuclei (theoretical definition)

isotopic abundance: the percentage of an isotope in a sample of an element

IUPAC: the International Union of Pure and Applied Chemistry; the international body that approves chemical names, symbols, and units

K

Kelvin temperature scale: a temperature scale with zero kelvin (0 K) at absolute zero and the same size divisions as the Celsius temperature scale

kinetic molecular theory: a theory stating that all matter is made up of particles in continuous random motion; temperature is a measure of the average speed of the particles

L

landfill leachate: water that has filtered through or under a landfill site, picking up pollutants during its passage

lanthanide: lanthanum and the 13 elements that follow it in the sixth row of the periodic table, elements 57 to 70

law of combining volumes: the law stating that when measured at the same temperature and pressure, volumes of gaseous reactants and products of chemical reactions are always in simple, whole-number ratios; also called Gay-Lussac's law of combining volumes

law of conservation of mass: the law stating that during a chemical reaction matter is neither created nor destroyed

law of constant composition: the law stating that compounds always have the same percentage composition by mass

law of definite proportions: the law stating that a specific compound always contains the same elements in definite proportions by mass

Lewis structure: a representation of covalent bonding based on Lewis symbols; shared electron pairs are shown as lines and lone pairs as dots

Lewis symbol: a representation of an atom or ion, made up of the chemical symbol and dots indicating the number of electrons in the valence energy level; an electron dot diagram

limiting reagent: the reactant that is completely consumed in a chemical reaction

line spectrum: a pattern of distinct lines, each of which corresponds to light of a single wavelength, produced when light consisting of only a few distinct wavelengths passes through a prism or spectroscope (empirical definition)

London dispersion force: an attractive force acting between all molecules, including nonpolar molecules

lone pair: a pair of valence electrons not involved in bonding

low solubility: with a maximum concentration at SATP of less than 0.1 mol/L

M

mass number: the sum of the number of protons and neutrons present in the nucleus of an atom; represented by A

mass spectrometer: a sophisticated instrument used for studying the structures of elements and compounds; one application is to precisely determine the mass and abundance of isotopes

metal: an element that is a good conductor of electricity, malleable, ductile, and lustrous

metalloid: an element located near the “staircase line” on the periodic table; having some metallic and some nonmetallic properties

miscible: liquids that mix in all proportions and have no maximum concentration

model: a mental or physical representation of a theoretical concept

molar concentration: the amount of solute, in moles, dissolved in one litre of solution

molar heat of reaction: the quantity of heat transferred in a reaction per mole of a specified substance (in units of, e.g., kJ/mol); represented by ΔH_r

molar mass: the mass, in grams, of one mole of a substance; the SI unit for molar mass is g/mol

molar volume: the volume that one mole of anything occupies at a specified temperature and pressure

mole: the amount of a substance; the number of entities equivalent to Avogadro’s number (6.02×10^{23}); the number of carbon atoms in exactly 12 g of a carbon-12 sample; the unit of stoichiometry

molecular compound: a pure substance formed from two or more nonmetals

molecular formula: a group of chemical symbols representing the number and kind of atoms covalently bonded to form a single molecule

mole ratio: the ratio of the amount in moles of reactants and/or products in a chemical reaction

monomers: the smallest repeating unit of a polymer

multivalent: the property of having more than one possible valence

N

natural gas: the fraction of petroleum that vaporizes at normal temperature and pressure, consisting of low molar mass hydrocarbons; also primarily methane sold as heating fuel

net ionic equation: a way of representing a reaction by writing only those ions or neutral substances specifically involved in an overall chemical reaction

neutral: having no effect on either red or blue litmus paper; neither acidic nor basic

neutralization: a competition for protons that results in a proton transfer from the acid to the base (according to the Brønsted-Lowry concept); a reaction between an acid and a base that results in a pH closer to 7 (empirical definition)

neutralization reaction: a double displacement reaction between an acid and a base to produce an ionic compound (a salt) and usually water

neutron: an uncharged subatomic particle in the nucleus of an atom

noble gas: an element in Group 18 of the periodic table

nonelectrolyte: a compound that, in aqueous solution, does not conduct electricity (empirical definition)

nonmetal: an element that is generally a nonconductor of electricity and is brittle

nuclear energy: energy derived directly from a nuclear reaction; for example, a nuclear reactor for production of electricity

nucleon: any particle in the nucleus of an atom

nucleus: the small positively charged centre of the atom

O

octet rule: a generalization stating that when atoms combine, the covalent bonds between them are formed in such a way that each atom achieves eight valence electrons (two in the case of hydrogen)

orbit: a circular (spherical) path in which an electron can move around the nucleus (theoretical definition)

organic chemistry: the study of organic compounds

organic compounds: compounds that contain carbon, except $\text{CO}_{(g)}$, $\text{CO}_{2(g)}$, and ionic compounds with carbon

oxyacid: an acid containing oxygen, hydrogen, and a third element

oxyanion: a polyatomic ion containing oxygen

P

partial pressure: the pressure a gas in a mixture would exert if it were the only gas present in the same volume and at the same temperature; represented by p

parts per million: unit used for very low concentrations; represented by ppm

percentage ionization: the percentage of molecules that form ions in solution

percentage yield: the ratio, expressed as a percentage, of the actual or experimental quantity of product obtained (actual yield) to the maximum possible quantity of product (theoretical yield) derived from a gravimetric stoichiometry calculation

period: a row in the periodic table

periodic law (according to Mendeleev): Mendeleev’s statement that the properties of the elements are a periodic (regularly repeating) function of their atomic masses

periodic law: a rule, developed from many observations, stating that when the elements are arranged in order of increasing atomic number, their properties show a periodic recurrence and gradual change (modern definition)

periodic trend: a gradual and consistent change in properties within periods or groups of the periodic table

petroleum: a complex gas and/or liquid mixture composed mostly of hydrocarbons, obtained by drilling into underground deposits

pH: a measure of the acidity of a solution; the negative logarithm, to the base 10, of the molar concentration of hydrogen ions, $[H^+]$

polar covalent bond: a covalent bond formed between atoms with significantly different electronegativities; a bond with some ionic characteristics

polar molecule: a molecule that is slightly positively charged at one end and slightly negatively charged at the other because of electronegativity differences

polyatomic ion: a covalently bonded group of atoms with an overall charge

polyatomic molecule: a molecule consisting of more than two atoms of the same or different elements

polymerization: a type of chemical reaction involving the formation of very large molecules (polymers) from many small molecules (monomers)

polymers: a long-chain molecule made up of many small identical units (monomers)

precipitate: form a low-solubility solid from a solution (verb); the solid formed in a chemical reaction or by decreased solubility (noun)

pressure: force per unit area

pressure and temperature law (Gay-Lussac's law): the law stating that the pressure exerted by a gas varies directly with the absolute temperature if the volume and amount of gas remain constant

principal quantum number: a number specifying the theoretical energy level of an electron in an atom; represented by n

proton: a positively charged subatomic particle in the nucleus of an atom

pure water: deionized or distilled water

Q

qualitative: describes a quality or change in matter that has no numerical value expressed

qualitative chemical analysis: the identification of substances present in a sample; may involve several diagnostic tests

quantitative: describes a quantity of matter or degree of change of matter; involving measurements related to number or quantity

quantitative analysis: measuring the quantity of a substance

quantum mechanics: a theory of the atom in which electrons are described in terms of their energies and probability patterns

R

radioactive: capable of spontaneously emitting radiation in the form of particles and/or gamma rays

radioactive decay: the spontaneous decomposition of a nucleus

radioisotope: a radioactive isotope of an element, occurring naturally or produced artificially

reactant: a substance that participates in a chemical reaction and that is consumed during the reaction

refining: the physical and/or chemical process that converts complex organic mixtures into simpler mixtures or purified substances

reforming: reaction of two or more smaller hydrocarbon molecules that combines them into a larger or more branched hydrocarbon molecule

relative atomic mass: the mass of an element that would react with a fixed mass of a standard element, currently carbon-12

representative element: an element in any of Groups 1, 2, and 13 through 18

S

SATP (standard ambient temperature and pressure): exactly 25°C and 100 kPa

saturated hydrocarbons: hydrocarbons with only single bonds in their molecules; containing a maximum number of hydrogen atoms

saturated solution: a solution containing the maximum quantity of a solute at specific temperature and pressure conditions

single displacement reaction: the reaction of an element with a compound to produce a new element and a new compound

soda-lime process: a water-softening process involving sodium carbonate and calcium hydroxide, in which calcium carbonate and magnesium carbonate are precipitated out

solar energy: energy directly and indirectly from solar radiation; for example, directly through a window or indirectly through the water cycle or winds

solubility: a property of a solute; the concentration of a saturated solution of a solute in a solvent at a specific temperature and pressure

solute: a substance that is dissolved in a solvent to form a solution (e.g., salt, NaCl)

solution: a homogeneous mixture of substances composed of at least one solute and one solvent

solution stoichiometry: a method of calculating the concentration of substances in a chemical reaction by measuring the volumes of solutions that react completely; sometimes called volumetric stoichiometry

solvent: the medium in which a solute is dissolved; often the liquid component of a solution (e.g., water)

specific heat: the heat transferred per unit mass (in units of, e.g., J/kg); represented by h

specific heat capacity: the quantity of heat required to change the temperature of a unit mass of a system by one degree Celsius (in units of, e.g., J/(g·°C)); represented by c

spectator: an entity or substance, such as an ion, molecule, or ionic solid, that does not change or take part in a chemical reaction

stable octet: a full shell of eight electrons in the outer energy level of an atom

standard curve: a graph used for reference, plotted with empirical data obtained using known standards

standard solution: a solution for which the precise concentration is known

stock solution: a solution that is in stock or on the shelf (i.e., available); usually a concentrated (possibly even saturated) solution

stoichiometric: involving a single, whole-number ratio of ions, as in a balanced chemical equation

stoichiometry: the study of the relationships between the quantities of reactants and products involved in chemical reactions

STP (standard temperature and pressure): exactly 0°C and 101.325 kPa

strong acid: an acid that ionizes almost completely (>99%) in water to form aqueous hydrogen ions (theoretical definition)

strong base: an ionic hydroxide that dissociates 100% in water to produce hydroxide ions (according to Arrhenius' theory and the "reaction-with-water" theory)

structural formula: a representation of the number, types, and arrangement of atoms in a molecule, with dashes representing covalent bonds

structural isomers: chemicals with the same molecular formula, but with different structures and different names

synthesis reaction: a chemical reaction in which two or more simple substances combine to form a more complex substance; also known as a combination reaction

T

temperature: a measure of the average kinetic energy of a substance's particles; represented by t , when using degrees Celsius

tertiary compound: a compound composed of three different elements

theoretical knowledge: knowledge based on abstract ideas created to explain observations

theoretical yield: the amount of product that we predict will be obtained, calculated from the equation

theory: a comprehensive set of ideas that explains a law or a large number of related observations

thermal decomposition: a decomposition reaction that occurs when the reactant is heated

thermochemical equation: a balanced chemical equation that includes the heat transferred to or from the surroundings

titrant: the solution in the buret during a titration

titration: a laboratory procedure involving the carefully measured and controlled addition of a solution from a buret into a

measured volume of a sample solution

total ionic equation: a chemical equation that shows all high-solubility ionic compounds in their dissociated form

transition: movement of an electron from one energy level to another (theoretical definition)

transition metal: an element in Groups 3 through 12 of the periodic table

transmutation: the changing of one element into another as a result of radioactive decay

transuranic elements: elements that follow uranium in the periodic table, elements 93+

trend: a gradual and consistent change in properties within periods or groups of the periodic table

triad: a group of three elements with similar properties

U

unified atomic mass unit: a unit of mass for atoms; 1/12 of the mass of a carbon-12 atom (theoretical definition); represented by u

unsaturated hydrocarbon: a reactive hydrocarbon whose molecules contain double and triple covalent bonds between carbon atoms; for example, alkenes and alkynes

V

valence: the charge on an ion

valence electrons: those electrons that occupy the highest shell of an atom and are used by the atom to form chemical bonds (theoretical definition)

van der Waals forces: weak intermolecular attractions, including London dispersion forces and dipole–dipole forces

W

weak acid: an acid with characteristic properties less than those of a strong acid (empirical definition); an acid that ionizes only partially (<50%) in water to form hydrogen ions, so exists primarily in the form of molecules (theoretical definition)

weak base: a chemical that reacts less than 50% with water to produce hydroxide ions (according to the "reaction-with-water" theory)

word equation: a representation of a chemical reaction using only the names of the chemicals involved

Y

yield: the amount of product that is obtained in a chemical reaction