

<div>T1</div> <div>element</div>	<div>T1</div> <div>compound</div>	<div>T1</div> <div>mixture</div>
<div>T1</div> <div>homogeneous</div>	<div>T1</div> <div>heterogeneous</div>	<div>T1</div> <div>filtration</div>
<div>T1</div> <div>evaporation</div>	<div>T1</div> <div>crystallization</div>	<div>T1</div> <div>distillation</div>

<p>T1</p> <p>A combination of substances that are not chemically bonded together in fixed proportions.</p>	<p>T1</p> <p>A substance containing two or more different elements chemically bonded in fixed proportions.</p>	<p>T1</p> <p>A substance made of atoms with the same proton number.</p>
<p>T1</p> <p>Separating insoluble particles from a fluid by passing the mixture through a porous barrier.</p>	<p>T1</p> <p>Of a mixture: not uniform, with visibly different parts or phases.</p>	<p>T1</p> <p>Of a mixture: uniform throughout, with one phase and no visible boundaries.</p>
<p>T1</p> <p>Separating substances by vaporising and condensing them, using differences in volatility or boiling point.</p>	<p>T1</p> <p>Forming solid crystals from a solution, often by cooling or evaporating the solvent.</p>	<p>T1</p> <p>The escape of particles from the surface of a liquid into its vapour without the whole liquid boiling.</p>

<p>T1</p> <p>solvation</p>	<p>T1</p> <p>saturated</p>	<p>T1</p> <p>kinetic molecular theory</p>
<p>T1</p> <p>sublimation</p>	<p>T1</p> <p>endothermic</p>	<p>T1</p> <p>deposition</p>
<p>T1</p> <p>exothermic</p>	<p>T1</p> <p>purity</p>	<p>T1</p> <p>average kinetic energy</p>

<p>T1</p> <p>The model that matter is made of particles in constant motion whose energy rises with temperature.</p>	<p>T1</p> <p>Describing fatty acids whose hydrocarbon chains contain no carbon-carbon double or triple bonds.</p>	<p>T1</p> <p>Solvent molecules surrounding and attracting dissolved particles.</p>
<p>T1</p> <p>A gas changing directly into a solid.</p>	<p>T1</p> <p>Describing a process that takes in heat from its surroundings.</p>	<p>T1</p> <p>The direct change of a substance from solid to gas without passing through a liquid phase.</p>
<p>T1</p> <p>The mean energy of motion of the particles, proportional to absolute temperature.</p>	<p>T1</p> <p>How free a substance is of other substances; a pure substance has a sharp melting point.</p>	<p>T1</p> <p>Describing a process that transfers heat to its surroundings.</p>

<div>T1</div> <div>absolute zero</div>	<div>T2</div> <div>nucleus</div>	<div>T2</div> <div>proton</div>
<div>T2</div> <div>neutron</div>	<div>T2</div> <div>electron</div>	<div>T2</div> <div>nucleon</div>
<div>T2</div> <div>atomic number</div>	<div>T2</div> <div>mass number</div>	<div>T2</div> <div>nuclear symbol</div>

<p>T2</p> <p>A positively charged subatomic particle found in an atom's nucleus.</p>	<p>T2</p> <p>The small, dense central part of an atom, containing protons and usually neutrons.</p>	<p>T1</p> <p>The lowest temperature on the thermodynamic temperature scale, equal to zero kelvin.</p>
<p>T2</p> <p>A proton or neutron in an atomic nucleus.</p>	<p>T2</p> <p>A negatively charged subatomic particle found outside an atom's nucleus.</p>	<p>T2</p> <p>An electrically neutral subatomic particle found in most atomic nuclei.</p>
<p>T2</p> <p>Notation writing the mass number at the top left and the atomic number at the bottom left of the element symbol.</p>	<p>T2</p> <p>The total number of protons and neutrons in an atomic nucleus.</p>	<p>T2</p> <p>The number of protons in the nucleus of an atom.</p>

<div>T2</div> <div>ion</div>	<div>T2</div> <div>isotope</div>	<div>T2</div> <div>abundance</div>
<div>T2</div> <div>mass spectrometer</div>	<div>T3</div> <div>electromagnetic spectrum</div>	<div>T3</div> <div>photon</div>
<div>T3</div> <div>continuous spectrum</div>	<div>T3</div> <div>line emission spectrum</div>	<div>T3</div> <div>energy level</div>

<p>T2</p> <p>The amount or relative frequency of a particular entity, such as a species or an isotope.</p>	<p>T2</p> <p>An atom of an element with the same proton number but a different neutron number from another atom of that element.</p>	<p>T2</p> <p>An atom or group of atoms with a net electric charge from losing or gaining electrons.</p>
<p>T3</p> <p>A quantum of electromagnetic radiation with energy equal to Planck's constant multiplied by its frequency.</p>	<p>T3</p> <p>The complete range of electromagnetic radiation, ordered by frequency or wavelength.</p>	<p>T2</p> <p>An instrument that separates ions by mass-to-charge ratio to find isotopes and their abundances.</p>
<p>T3</p> <p>An allowed value of energy that a quantum system can have.</p>	<p>T3</p> <p>Separate coloured lines of light emitted when excited electrons fall to lower levels.</p>	<p>T3</p> <p>A spectrum containing all wavelengths in a range without gaps.</p>

<div>T3</div> <div>excited state</div>	<div>T3</div> <div>quantized</div>	<div>T3</div> <div>converge</div>
<div>T3</div> <div>convergence limit</div>	<div>T3</div> <div>principal quantum number</div>	<div>T3</div> <div>sublevel</div>
<div>T3</div> <div>atomic orbital</div>	<div>T3</div> <div>degenerate</div>	<div>T3</div> <div>Aufbau principle</div>

<p>T3</p> <p>Of spectral lines: get closer together toward higher frequency.</p>	<p>T3</p> <p>Able to take only certain fixed values, like the energies of electrons in an atom.</p>	<p>T3</p> <p>States of a system with energy above its ground-state energy.</p>
<p>T3</p> <p>A division of an energy level: s, p, d or f.</p>	<p>T3</p> <p>The positive integer identifying an electron's main shell and helping determine its orbital energy and size.</p>	<p>T3</p> <p>The frequency where spectral lines merge, used to find ionization energy.</p>
<p>T3</p> <p>Electrons fill the lowest-energy orbitals available first.</p>	<p>T3</p> <p>Of orbitals: having the same energy, like the three 2p orbitals.</p>	<p>T3</p> <p>A region around the nucleus where an electron is likely to be found; it holds up to two electrons.</p>

<p>T3</p> <p>Pauli exclusion principle</p>	<p>T3</p> <p>opposite spins</p>	<p>T3</p> <p>Hund's rule</p>
<p>T3</p> <p>full electron configuration</p>	<p>T3</p> <p>condensed configuration</p>	<p>T3</p> <p>orbital diagram</p>
<p>T3</p> <p>negative ion</p>	<p>T3</p> <p>positive ion</p>	<p>T3</p> <p>transition element</p>

<p>T3</p> <p>Electrons fill degenerate orbitals singly, with parallel spins, before pairing.</p>	<p>T3</p> <p>The two allowed spin states of electrons sharing an orbital, shown as up and down arrows.</p>	<p>T3</p> <p>An orbital holds at most two electrons, and they must have opposite spins.</p>
<p>T3</p> <p>Boxes for orbitals with arrows for electrons showing their spins.</p>	<p>T3</p> <p>An electron configuration starting from the previous noble gas, such as [Ne] 3s¹.</p>	<p>T3</p> <p>The complete list of occupied sublevels, such as 1s² 2s² 2p⁶ 3s¹ for sodium.</p>
<p>T3</p> <p>A d-block element that forms at least one ion with a partly filled d sublevel.</p>	<p>T3</p> <p>An atom or group that has lost electrons and carries a positive charge.</p>	<p>T3</p> <p>An atom or group that has gained electrons and carries a negative charge.</p>

<div>T3</div> <div>first ionization energy</div>	<div>T3</div> <div>nuclear charge</div>	<div>T3</div> <div>shielding</div>
<div>T3</div> <div>successive ionization energy</div>	<div>T4</div> <div>mole</div>	<div>T4</div> <div>amount of substance</div>
<div>T4</div> <div>Avogadro constant</div>	<div>T4</div> <div>formula unit</div>	<div>T4</div> <div>relative atomic mass</div>

<p>T3</p> <p>The reduction in nuclear attraction experienced by an electron because of repulsion from other electrons.</p>	<p>T3</p> <p>The total positive charge of an atomic nucleus, determined by its number of protons.</p>	<p>T3</p> <p>The energy to remove one electron from each atom in a mole of gaseous atoms.</p>
<p>T4</p> <p>The quantity of particles in a sample, measured in moles.</p>	<p>T4</p> <p>The SI unit of amount of substance, containing exactly $6.02214076 \times 10^{23}$ specified entities.</p>	<p>T3</p> <p>The energy to remove each further electron in turn; big jumps reveal the shells.</p>
<p>T4</p> <p>The weighted mean mass of an element's atoms relative to one twelfth of the mass of a carbon-12 atom.</p>	<p>T4</p> <p>The simplest ratio of ions in an ionic compound, such as NaCl.</p>	<p>T4</p> <p>The number of specified elementary entities in one mole, exactly $6.02214076 \times 10^{23}$ per mole.</p>

<div>T4</div> <div>relative formula mass</div>	<div>T4</div> <div>molar mass</div>	<div>T4</div> <div>empirical formula</div>
<div>T4</div> <div>molecular formula</div>	<div>T4</div> <div>solution</div>	<div>T4</div> <div>solute</div>
<div>T4</div> <div>solvent</div>	<div>T4</div> <div>concentration</div>	<div>T4</div> <div>standard solution</div>

<p>T4</p> <p>A formula showing the simplest whole-number ratio of atoms of each element in a compound.</p>	<p>T4</p> <p>The mass of one mole of a substance.</p>	<p>T4</p> <p>The sum of the relative atomic masses in one formula unit.</p>
<p>T4</p> <p>A substance dissolved in a solvent to form a solution.</p>	<p>T4</p> <p>A homogeneous mixture in which one or more solutes are dissolved in a solvent.</p>	<p>T4</p> <p>A formula showing the actual numbers of atoms of each element in one molecule.</p>
<p>T4</p> <p>A solution of accurately known concentration.</p>	<p>T4</p> <p>The amount of a substance per unit volume of a mixture or solution.</p>	<p>T4</p> <p>The substance in which a solute dissolves to form a solution.</p>

<div>T4</div> <div>Avogadro's law</div>	<div>T5</div> <div>kinetic molecular theory</div>	<div>T5</div> <div>ideal gas</div>
<div>T5</div> <div>elastic</div>	<div>T5</div> <div>pressure</div>	<div>T5</div> <div>kelvin scale</div>
<div>T5</div> <div>absolute zero</div>	<div>T5</div> <div>Avogadro's law</div>	<div>T5</div> <div>molar volume</div>

<p>T5</p> <p>A model of a gas with point particles that exert no intermolecular forces except during perfectly elastic collisions.</p>	<p>T5</p> <p>The model that matter is made of particles in constant motion whose energy rises with temperature.</p>	<p>T4</p> <p>Equal volumes of all gases, at the same temperature and pressure, contain equal numbers of molecules.</p>
<p>T5</p> <p>The absolute temperature scale starting at absolute zero; $K = ^\circ C + 273.15$.</p>	<p>T5</p> <p>Force acting normally per unit area.</p>	<p>T5</p> <p>Of gas collisions: losing no kinetic energy overall.</p>
<p>T5</p> <p>The volume of one mole of gas, 22.7 dm^3 at STP.</p>	<p>T5</p> <p>Equal volumes of all gases, at the same temperature and pressure, contain equal numbers of molecules.</p>	<p>T5</p> <p>The lowest temperature on the thermodynamic temperature scale, equal to zero kelvin.</p>

<div>T5</div> <div>ideal gas equation</div>	<div>T5</div> <div>gas constant</div>	<div>T5</div> <div>real gas</div>
<div>T6</div> <div>ionic model</div>	<div>T6</div> <div>ion</div>	<div>T6</div> <div>cation</div>
<div>T6</div> <div>anion</div>	<div>T6</div> <div>transition element</div>	<div>T6</div> <div>polyatomic ion</div>

<p>T5</p> <p>A gas whose particles have volume and attract each other, deviating at high pressure and low temperature.</p>	<p>T5</p> <p>$R = 8.31 \text{ J K}^{-1} \text{ mol}^{-1}$, the constant in the ideal gas equation.</p>	<p>T5</p> <p>$pV = nRT$, linking pressure, volume, amount and temperature of a gas.</p>
<p>T6</p> <p>An ion with a positive electric charge.</p>	<p>T6</p> <p>An atom or group of atoms with a net electric charge from losing or gaining electrons.</p>	<p>T6</p> <p>A bonding model in which oppositely charged ions are held together by electrostatic attraction.</p>
<p>T6</p> <p>A group of covalently bonded atoms that carries an overall charge.</p>	<p>T6</p> <p>A d-block element that forms at least one ion with a partly filled d sublevel.</p>	<p>T6</p> <p>An ion with a negative electric charge.</p>

<p>T6</p> <p>ionic bond</p>	<p>T6</p> <p>electrostatic attraction</p>	<p>T6</p> <p>electronegativity</p>
<p>T6</p> <p>lattice</p>	<p>T6</p> <p>lattice enthalpy</p>	<p>T6</p> <p>volatility</p>
<p>T7</p> <p>covalent bond</p>	<p>T7</p> <p>intermolecular force</p>	<p>T7</p> <p>shared pair</p>

<p>T6</p> <p>The tendency of an atom in a chemical bond to attract the shared electrons towards itself.</p>	<p>T6</p> <p>The pull between opposite charges, the basis of ionic and other bonding.</p>	<p>T6</p> <p>The electrostatic attraction between oppositely charged ions.</p>
<p>T6</p> <p>The tendency of a substance to vaporise readily under given conditions.</p>	<p>T6</p> <p>The energy to separate one mole of an ionic solid into gaseous ions.</p>	<p>T6</p> <p>A regular, repeating arrangement of particles or points in a solid.</p>
<p>T7</p> <p>Two electrons shared between two atoms, forming a covalent bond.</p>	<p>T7</p> <p>An attraction between separate molecules.</p>	<p>T7</p> <p>A chemical bond involving a shared pair of electrons attracted to the nuclei of bonded atoms.</p>

<p>T7</p> <p>octet rule</p>	<p>T7</p> <p>incomplete octet</p>	<p>T7</p> <p>lone pair</p>
<p>T7</p> <p>Lewis formula</p>	<p>T7</p> <p>coordination bond</p>	<p>T7</p> <p>valence shell electron pair repulsion</p>
<p>T7</p> <p>electron domain</p>	<p>T7</p> <p>molecular geometry</p>	<p>T7</p> <p>electronegativity</p>

<p>T7</p> <p>A pair of outer-shell electrons on one atom that is not shared in a covalent bond.</p>	<p>T7</p> <p>An atom with fewer than eight outer electrons in a molecule, such as boron in BF_3.</p>	<p>T7</p> <p>Atoms tend to bond until they have eight electrons in their outer shell.</p>
<p>T7</p> <p>The theory that electron domains around a central atom repel and spread as far apart as possible.</p>	<p>T7</p> <p>A covalent bond in which both shared electrons come from one atom.</p>	<p>T7</p> <p>A diagram showing all valence electrons as bonding pairs and lone pairs.</p>
<p>T7</p> <p>The tendency of an atom in a chemical bond to attract the shared electrons towards itself.</p>	<p>T7</p> <p>The 3-D arrangement of the atoms in a molecule.</p>	<p>T7</p> <p>A region of electron density around an atom: a lone pair or a single, double or triple bond.</p>

<p>T7</p> <p>polar bond</p>	<p>T7</p> <p>polar</p>	<p>T7</p> <p>dipole moment</p>
<p>T7</p> <p>covalent network structure</p>	<p>T7</p> <p>allotrope</p>	<p>T7</p> <p>delocalized</p>
<p>T7</p> <p>silicon dioxide</p>	<p>T7</p> <p>London force</p>	<p>T7</p> <p>dipole–dipole force</p>

T7	T7	T7
A measure of the charge separation in a bond or molecule.	Having a separation of charge, with a partly positive and a partly negative end.	A covalent bond with unequal sharing because the atoms differ in electronegativity.
T7	T7	T7
Of electrons: spread over several atoms instead of held between two.	A different structural form of the same element, such as diamond and graphite.	A giant structure of atoms joined by covalent bonds, such as diamond or silicon dioxide.
T7	T7	T7
An attraction between the permanent dipoles of polar molecules.	A weak attraction from temporary induced dipoles, present between all molecules.	The compound SiO_2 , whose common solid forms contain a network of silicon and oxygen atoms joined by covalent bonds.

<p>T7</p> <p>hydrogen bonding</p>	<p>T7</p> <p>van der Waals force</p>	<p>T7</p> <p>volatility</p>
<p>T7</p> <p>chromatography</p>	<p>T7</p> <p>stationary phase</p>	<p>T7</p> <p>mobile phase</p>
<p>T7</p> <p>retardation factor</p>	<p>T7</p> <p>resonance structure</p>	<p>T7</p> <p>bond order</p>

T7	T7	T7
The tendency of a substance to vaporise readily under given conditions.	A general name for the weak intermolecular forces: London and dipole forces.	An attraction involving a hydrogen atom bonded to an electronegative atom and an electron-rich site on another atom.
T7	T7	T7
The solvent that moves through the stationary phase in chromatography.	The phase that remains fixed in a chromatography system and interacts differently with components of a mixture.	A separation technique based on different affinities of substances for a stationary phase and a mobile phase.
T7	T7	T7
The number of bonds between two atoms, which may be fractional with resonance.	One of two or more Lewis formulas for a molecule with delocalized electrons.	R _f : distance moved by a spot divided by distance moved by the solvent front.

<div>T7</div> <div>benzene</div>	<div>T7</div> <div>expanded octet</div>	<div>T7</div> <div>formal charge</div>
<div>T7</div> <div>sigma bond</div>	<div>T7</div> <div>pi bond</div>	<div>T7</div> <div>hybridization</div>
<div>T7</div> <div>hybrid orbital</div>	<div>T8</div> <div>metallic model</div>	<div>T8</div> <div>cation</div>

<p>T7</p> <p>Valence electrons minus lone-pair electrons minus half the bonding electrons; used to pick the best Lewis formula.</p>	<p>T7</p> <p>More than eight electrons around a central atom from period 3 or below, as in SF₆.</p>	<p>T7</p> <p>C₆H₆, a ring of six carbons with delocalized π electrons.</p>
<p>T7</p> <p>Mixing atomic orbitals to form new, equal hybrid orbitals.</p>	<p>T7</p> <p>A covalent bond from sideways overlap of p orbitals, above and below the bond axis.</p>	<p>T7</p> <p>A covalent bond from head-on orbital overlap along the line between the nuclei.</p>
<p>T8</p> <p>An ion with a positive electric charge.</p>	<p>T8</p> <p>A bonding model with positive metal ions held together by attraction to delocalized electrons.</p>	<p>T7</p> <p>One of a set of equal orbitals formed by mixing, such as sp³.</p>

<div>T8</div> <div>lattice</div>	<div>T8</div> <div>delocalized electron</div>	<div>T8</div> <div>metallic bond</div>
<div>T8</div> <div>non-directional</div>	<div>T8</div> <div>electrical conductivity</div>	<div>T8</div> <div>thermal conductivity</div>
<div>T8</div> <div>malleability</div>	<div>T8</div> <div>ductility</div>	<div>T8</div> <div>transition element</div>

<p>T8</p> <p>The electrostatic attraction between a lattice of cations and the delocalized electrons.</p>	<p>T8</p> <p>An electron distributed over several atoms rather than confined to one atom or a single bond.</p>	<p>T8</p> <p>A regular, repeating arrangement of particles or points in a solid.</p>
<p>T8</p> <p>Delocalized electrons (and vibrating ions) pass kinetic energy quickly through the metal.</p>	<p>T8</p> <p>A measure of how readily a material allows electric current to flow through it.</p>	<p>T8</p> <p>Acting equally in all directions, like metallic and ionic bonding.</p>
<p>T8</p> <p>A d-block element that forms at least one ion with a partly filled d sublevel.</p>	<p>T8</p> <p>the strain at fracture, the property heat treatment trades away for strength</p>	<p>T8</p> <p>The ability to be hammered into shape without breaking.</p>

<div>T8</div> <div>density</div>	<div>T9</div> <div>material</div>	<div>T9</div> <div>bonding triangle</div>
<div>T9</div> <div>alloy</div>	<div>T9</div> <div>polymer</div>	<div>T9</div> <div>monomer</div>
<div>T9</div> <div>repeating unit</div>	<div>T9</div> <div>biodegradable</div>	<div>T9</div> <div>addition polymerization</div>

<p>T9</p> <p>A triangle chart using electronegativity to place a substance between ionic, covalent and metallic bonding.</p>	<p>T9</p> <p>A substance chosen for its properties to make something, such as a metal, ceramic, polymer or composite.</p>	<p>T8</p> <p>Mass per unit volume.</p>
<p>T9</p> <p>A molecule that can join with other molecules to form a polymer.</p>	<p>T9</p> <p>A large molecule made from many linked repeating units derived from smaller molecules.</p>	<p>T9</p> <p>A mixture of a metal with other metals, or with a non-metal such as carbon.</p>
<p>T9</p> <p>Joining monomers with C=C double bonds into a polymer with no other product.</p>	<p>T9</p> <p>Able to be broken down by living organisms.</p>	<p>T9</p> <p>The part of a polymer chain that repeats again and again.</p>

<div>T9</div> <div>condensation polymerization</div>	<div>T9</div> <div>polyester</div>	<div>T9</div> <div>polyamide</div>
<div>T10</div> <div>periodic table</div>	<div>T10</div> <div>periodicity</div>	<div>T10</div> <div>period</div>
<div>T10</div> <div>group</div>	<div>T10</div> <div>block</div>	<div>T10</div> <div>metalloid</div>

<p>T9</p> <p>A polymer whose chain contains repeating amide links.</p>	<p>T9</p> <p>A polymer containing repeated ester links in its main chain.</p>	<p>T9</p> <p>Joining monomers into a polymer while a small molecule, often water, is lost.</p>
<p>T10</p> <p>A horizontal row of the periodic table, corresponding to the principal shell occupied by the outer electrons of its elements.</p>	<p>T10</p> <p>A repeating pattern in element properties across the periodic table.</p>	<p>T10</p> <p>An arrangement of chemical elements by atomic number that displays recurring patterns in their properties.</p>
<p>T10</p> <p>An element with properties between metals and non-metals, such as silicon.</p>	<p>T10</p> <p>The region of the periodic table named by the sublevel being filled: s, p, d or f.</p>	<p>T10</p> <p>A vertical column in the periodic table whose elements have related outer-electron configurations and chemical properties.</p>

<div>T10</div> <div>alkali metal</div>	<div>T10</div> <div>halogen</div>	<div>T10</div> <div>nuclear charge</div>
<div>T10</div> <div>shielding</div>	<div>T10</div> <div>electron affinity</div>	<div>T10</div> <div>basic</div>
<div>T10</div> <div>acidic</div>	<div>T10</div> <div>amphoteric</div>	<div>T10</div> <div>acid deposition</div>

<p>T10</p> <p>The total positive charge of an atomic nucleus, determined by its number of protons.</p>	<p>T10</p> <p>The elements in group 17 of the periodic table.</p>	<p>T10</p> <p>A group 1 metal, such as sodium, that reacts vigorously with water.</p>
<p>T10</p> <p>Of an oxide: reacting with acids, typical of metal oxides.</p>	<p>T10</p> <p>The energy change when a gaseous atom gains one electron.</p>	<p>T10</p> <p>The reduction in nuclear attraction experienced by an electron because of repulsion from other electrons.</p>
<p>T10</p> <p>Acidic substances from sulfur and nitrogen oxides falling to the ground as rain or dry particles.</p>	<p>T10</p> <p>Able to react as both an acid and a base, like aluminium oxide.</p>	<p>T10</p> <p>Of an oxide: reacting with bases, typical of non-metal oxides.</p>

<p>T10</p> <p>ocean acidification</p>	<p>T10</p> <p>oxidation state</p>	<p>T10</p> <p>transition element</p>
<p>T10</p> <p>ligand</p>	<p>T10</p> <p>coordination number</p>	<p>T10</p> <p>complementary colour</p>
<p>T10</p> <p>paramagnetic</p>	<p>T10</p> <p>diamagnetic</p>	<p>T11</p> <p>skeletal formula</p>

<p>T10</p> <p>A d-block element that forms at least one ion with a partly filled d sublevel.</p>	<p>T10</p> <p>The charge an atom would have if all its bonds were ionic.</p>	<p>T10</p> <p>The fall in ocean pH as seawater absorbs more carbon dioxide.</p>
<p>T10</p> <p>The colour opposite the absorbed one on the colour wheel; it is the colour seen.</p>	<p>T10</p> <p>The number of nearest neighbours around a particle, or of donor atoms directly bonded to the central atom in a complex.</p>	<p>T10</p> <p>An ion or molecule that binds to another species at a specific site, such as a metal centre or a receptor.</p>
<p>T11</p> <p>A formula drawn as lines, with carbon at corners and line ends and hydrogens on carbon not shown.</p>	<p>T10</p> <p>Weakly repelled by a magnetic field because all electrons are paired.</p>	<p>T10</p> <p>Attracted to a magnetic field because of unpaired electrons.</p>

<p>T11</p> <p>phenyl</p>	<p>T11</p> <p>functional group</p>	<p>T11</p> <p>homologous series</p>
<p>T11</p> <p>structural isomer</p>	<p>T11</p> <p>primary</p>	<p>T11</p> <p>secondary</p>
<p>T11</p> <p>tertiary</p>	<p>T11</p> <p>index of hydrogen deficiency</p>	<p>T11</p> <p>mass spectrometer</p>

<p>T11</p> <p>A family of compounds with the same functional group and the same general formula.</p>	<p>T11</p> <p>An atom or group of atoms responsible for characteristic chemical reactions of an organic compound.</p>	<p>T11</p> <p>The C₆H₅– group, a benzene ring attached to the rest of a molecule.</p>
<p>T11</p> <p>Of an alcohol or halogenoalkane: the functional carbon bonded to two other carbons.</p>	<p>T11</p> <p>Of an alcohol or halogenoalkane: the functional carbon bonded to one other carbon.</p>	<p>T11</p> <p>A compound with the same molecular formula but atoms joined in a different order.</p>
<p>T11</p> <p>An instrument that separates ions by mass-to-charge ratio to find isotopes and their abundances.</p>	<p>T11</p> <p>The number of rings plus π bonds in a molecule, found from its formula.</p>	<p>T11</p> <p>Of an alcohol or halogenoalkane: the functional carbon bonded to three other carbons.</p>

<div>T11</div> <div>molecular ion</div>	<div>T11</div> <div>wavenumber</div>	<div>T11</div> <div>fingerprint region</div>
<div>T11</div> <div>nuclear magnetic resonance</div>	<div>T11</div> <div>chemical shift</div>	<div>T11</div> <div>integration</div>
<div>T11</div> <div>stereoisomer</div>	<div>T11</div> <div>cis–trans isomer</div>	<div>T11</div> <div>chiral</div>

T11	T11	T11
The complex infrared region below about 1500 cm^{-1} , unique to each compound.	The reciprocal of wavelength, in cm^{-1} , used for infrared absorptions.	An ion formed from a whole molecule by gaining or losing electrons without breaking the molecule into fragments.
T11	T11	T11
Measuring the area under an NMR signal to determine the relative number of nuclei producing it.	The position of an NMR signal relative to a reference, reflecting the chemical environment of the nucleus.	A technique using magnetic fields to show the environments of hydrogen atoms in a molecule.
T11	T11	T11
Not superimposable on its mirror image, usually because of a carbon with four different groups.	A stereoisomer differing in which side of a double bond or ring groups lie.	A compound with the same structural formula but a different spatial arrangement of atoms.

<div>T11</div> <div>enantiomer</div>	<div>T11</div> <div>plane-polarized light</div>	<div>T11</div> <div>racemic mixture</div>
<div>T12</div> <div>exothermic</div>	<div>T12</div> <div>enthalpy change</div>	<div>T12</div> <div>endothermic</div>
<div>T12</div> <div>activation energy</div>	<div>T12</div> <div>limiting reactant</div>	<div>T12</div> <div>uncertainty</div>

<p>T11</p> <p>An equal mixture of two enantiomers, which does not rotate plane-polarized light.</p>	<p>T11</p> <p>Light vibrating in one plane; enantiomers rotate it in opposite directions.</p>	<p>T11</p> <p>One of a pair of mirror-image forms of a chiral molecule.</p>
<p>T12</p> <p>Describing a process that takes in heat from its surroundings.</p>	<p>T12</p> <p>The heat transferred in a reaction or process at constant pressure.</p>	<p>T12</p> <p>Describing a process that transfers heat to its surroundings.</p>
<p>T12</p> <p>An estimate of the possible range of error in a measurement.</p>	<p>T12</p> <p>The reactant that is used up first and therefore limits the amount of product formed.</p>	<p>T12</p> <p>The minimum energy that reacting particles need for a successful reaction.</p>

T13	T13	T13
energy cycle	bond enthalpy	average bond enthalpy
T13	T13	T13
Hess's law	standard enthalpy change of formation	standard enthalpy change of combustion
T13	T13	T14
Born–Haber cycle	enthalpy of atomization	functional unit

<p>T13</p> <p>The mean energy to break one mole of a bond, averaged over many compounds.</p>	<p>T13</p> <p>The energy needed to break one mole of a covalent bond, with the substances in the gaseous state.</p>	<p>T13</p> <p>A diagram of different routes between the same start and end, used with Hess's law.</p>
<p>T13</p> <p>The enthalpy change when one mole of a substance burns completely in oxygen under standard conditions.</p>	<p>T13</p> <p>The enthalpy change when one mole of a compound forms from its elements in standard states.</p>	<p>T13</p> <p>The total enthalpy change of a reaction is the same whatever route is taken, because energy is conserved.</p>
<p>T14</p> <p>A specified amount of service or function used as the common basis for comparing products in a life-cycle assessment.</p>	<p>T13</p> <p>The enthalpy change to form one mole of gaseous atoms from the element in its standard state.</p>	<p>T13</p> <p>An energy cycle used to calculate lattice enthalpy from other measured enthalpies.</p>

<div>T14</div> <div>life-cycle assessment</div>	<div>T15</div> <div>entropy</div>	<div>T15</div> <div>Gibbs energy</div>
<div>T16</div> <div>conservation of mass</div>	<div>T16</div> <div>coefficient</div>	<div>T16</div> <div>mole ratio</div>
<div>T16</div> <div>stoichiometry</div>	<div>T16</div> <div>molar volume</div>	<div>T16</div> <div>titration</div>

<p>T15</p> <p>A thermodynamic state function equal to enthalpy minus absolute temperature times entropy.</p>	<p>T15</p> <p>A thermodynamic measure related to energy dispersal and the number of microscopic arrangements consistent with a system's macroscopic state.</p>	<p>T14</p> <p>Assessing a product's environmental impact from raw materials to disposal.</p>
<p>T16</p> <p>The ratio of amounts of substances measured in moles, often given by the coefficients in a balanced equation.</p>	<p>T16</p> <p>A numerical or constant factor multiplying a term in an expression.</p>	<p>T16</p> <p>The principle that total mass remains unchanged in an ordinary chemical reaction within a closed system.</p>
<p>T16</p> <p>A method of finding an unknown concentration by measuring the volume needed to react with a solution of known concentration.</p>	<p>T16</p> <p>The volume of one mole of gas, 22.7 dm³ at STP.</p>	<p>T16</p> <p>The quantitative relationships between reactants and products specified by a balanced chemical equation.</p>

<p>T16</p> <p>standard solution</p>	<p>T16</p> <p>pipette</p>	<p>T16</p> <p>indicator</p>
<p>T16</p> <p>burette</p>	<p>T16</p> <p>end point</p>	<p>T16</p> <p>titre</p>
<p>T16</p> <p>concordant</p>	<p>T16</p> <p>limiting reactant</p>	<p>T16</p> <p>in excess</p>

<p>T16</p> <p>A substance that shows a change in chemical conditions through an observable change, often in colour.</p>	<p>T16</p> <p>Glassware that delivers an exact volume of liquid.</p>	<p>T16</p> <p>A solution of accurately known concentration.</p>
<p>T16</p> <p>The volume of solution added from the burette to reach the end point.</p>	<p>T16</p> <p>The observed signal used to stop a titration, such as an indicator's colour change, which should be close to equivalence.</p>	<p>T16</p> <p>A graduated tube with a tap used to deliver accurately measured volumes of liquid.</p>
<p>T16</p> <p>Present in more than the amount needed to react completely.</p>	<p>T16</p> <p>The reactant that is used up first and therefore limits the amount of product formed.</p>	<p>T16</p> <p>Of titres: agreeing closely, usually within 0.10 cm^3.</p>

<div>T16</div> <div>theoretical yield</div>	<div>T16</div> <div>atom economy</div>	<div>T17</div> <div>rate of reaction</div>
<div>T17</div> <div>tangent</div>	<div>T17</div> <div>initial rate</div>	<div>T17</div> <div>collision theory</div>
<div>T17</div> <div>activation energy</div>	<div>T17</div> <div>Maxwell–Boltzmann distribution</div>	<div>T17</div> <div>surface area</div>

<p>T17</p> <p>The change in the amount or concentration of a reactant or product per unit time.</p>	<p>T16</p> <p>The mass of the desired product as a percentage of the total mass of all products.</p>	<p>T16</p> <p>The mass of product calculated from the limiting reactant.</p>
<p>T17</p> <p>The explanation that reactions require collisions with sufficient energy and suitable orientation.</p>	<p>T17</p> <p>The rate of a reaction or process measured at or very near its beginning.</p>	<p>T17</p> <p>A straight line that touches a curve at a point and has the same direction there.</p>
<p>T17</p> <p>The total area of the outer surfaces of a three-dimensional object.</p>	<p>T17</p> <p>The graph of how many particles have each kinetic energy at a given temperature.</p>	<p>T17</p> <p>The minimum energy that reacting particles need for a successful reaction.</p>

<p>T17</p> <p>catalyst</p>	<p>T17</p> <p>alternative reaction pathway</p>	<p>T17</p> <p>elementary step</p>
<p>T17</p> <p>reaction mechanism</p>	<p>T17</p> <p>molecularity</p>	<p>T17</p> <p>intermediate</p>
<p>T17</p> <p>rate-determining step</p>	<p>T17</p> <p>rate equation</p>	<p>T17</p> <p>order</p>

T17	T17	T17
One single step in a reaction mechanism.	A different route with lower activation energy, provided by a catalyst.	A substance that increases a reaction rate without being used up overall.
T17	T17	T17
A species formed in one step of a reaction mechanism and consumed in a later step.	The number of particles taking part in an elementary step.	A proposed sequence of elementary steps explaining how reactants become products.
T17	T17	T17
The power to which a reactant's concentration is raised in the rate equation.	An expression relating reaction rate to reactant concentrations raised to their experimentally determined orders.	The slowest step in a mechanism, which controls the overall rate.

<div>T17</div> <div>rate constant</div>	<div>T17</div> <div>half-life</div>	<div>T17</div> <div>frequency factor</div>
<div>T18</div> <div>reversible reaction</div>	<div>T18</div> <div>dynamic equilibrium</div>	<div>T18</div> <div>closed system</div>
<div>T18</div> <div>isotope</div>	<div>T18</div> <div>equilibrium constant</div>	<div>T18</div> <div>position of equilibrium</div>

<p>T17</p> <p>A, the Arrhenius constant reflecting how often particles collide with the right orientation.</p>	<p>T17</p> <p>The time for the number of undecayed nuclei in a radioactive sample to halve.</p>	<p>T17</p> <p>The proportionality constant in a reaction's rate equation at a specified temperature.</p>
<p>T18</p> <p>A system that does not exchange matter with its surroundings, although energy may be transferred.</p>	<p>T18</p> <p>A state in which opposing processes continue at equal rates, so there is no overall change in composition.</p>	<p>T18</p> <p>A reaction whose products can react to form the original reactants under suitable conditions.</p>
<p>T18</p> <p>The relative amounts of reactants and products present when forward and reverse reaction rates are equal.</p>	<p>T18</p> <p>A value relating the equilibrium activities, concentrations or partial pressures of products and reactants at a specified temperature.</p>	<p>T18</p> <p>An atom of an element with the same proton number but a different neutron number from another atom of that element.</p>

<p>T18</p> <p>Le Chatelier's principle</p>	<p>T18</p> <p>yield</p>	<p>T18</p> <p>compromise</p>
<p>T18</p> <p>reaction quotient</p>	<p>T18</p> <p>approximation</p>	<p>T18</p> <p>Gibbs energy</p>
<p>T19</p> <p>proton</p>	<p>T19</p> <p>Brønsted–Lowry acid</p>	<p>T19</p> <p>Brønsted–Lowry base</p>

<p>T18</p> <p>Industrial conditions chosen to balance yield, rate and cost.</p>	<p>T18</p> <p>The amount of product obtained in a reaction, often expressed as a percentage of the theoretical amount.</p>	<p>T18</p> <p>When a system at equilibrium is disturbed, the position of equilibrium shifts to reduce the effect of the change.</p>
<p>T18</p> <p>A thermodynamic state function equal to enthalpy minus absolute temperature times entropy.</p>	<p>T18</p> <p>A value or representation close to the exact one and sufficiently accurate for a stated purpose.</p>	<p>T18</p> <p>An expression with the same form as an equilibrium constant but evaluated using the current composition, which need not be at equilibrium.</p>
<p>T19</p> <p>A proton (H^+) acceptor.</p>	<p>T19</p> <p>A proton (H^+) donor.</p>	<p>T19</p> <p>A positively charged subatomic particle found in an atom's nucleus.</p>

<p>T19</p> <p>conjugate acid–base pair</p>	<p>T19</p> <p>amphiprotic</p>	<p>T19</p> <p>ionic product of water</p>
<p>T19</p> <p>strong acid</p>	<p>T19</p> <p>weak acid</p>	<p>T19</p> <p>neutralization</p>
<p>T19</p> <p>pH curve</p>	<p>T19</p> <p>equivalence point</p>	<p>T19</p> <p>acid dissociation constant</p>

<p>T19</p> $K_w = [\text{H}^+][\text{OH}^-] = 1.00 \times 10^{-14} \text{ at } 298 \text{ K.}$	<p>T19</p> <p>Able both to donate and to accept a proton, like water.</p>	<p>T19</p> <p>Two species differing by exactly one proton, such as NH_4^+ and NH_3.</p>
<p>T19</p> <p>The reaction of an acid with a base to form a salt and water.</p>	<p>T19</p> <p>An acid that only partially ionises in aqueous solution.</p>	<p>T19</p> <p>An acid that essentially completely ionises in aqueous solution at the concentrations being considered.</p>
<p>T19</p> <p>The equilibrium constant for an acid donating a proton to water, measuring its tendency to dissociate under specified conditions.</p>	<p>T19</p> <p>The stage of a titration at which the reactants have been mixed in their stoichiometric proportions.</p>	<p>T19</p> <p>A graph of pH against volume added during a titration.</p>

<div>T19</div> <div>indicator</div>	<div>T19</div> <div>buffer solution</div>	<div>T20</div> <div>oxidation</div>
<div>T20</div> <div>reduction</div>	<div>T20</div> <div>oxidation state</div>	<div>T20</div> <div>oxidizing agent</div>
<div>T20</div> <div>reducing agent</div>	<div>T20</div> <div>half-equation</div>	<div>T20</div> <div>activity series</div>

<p>T20</p> <p>A chemical change involving a loss of electrons or an increase in oxidation state.</p>	<p>T19</p> <p>A solution that resists pH change when small amounts of acid or base are added.</p>	<p>T19</p> <p>A substance that shows a change in chemical conditions through an observable change, often in colour.</p>
<p>T20</p> <p>The one that is reduced.</p>	<p>T20</p> <p>The charge an atom would have if all its bonds were ionic.</p>	<p>T20</p> <p>A chemical change involving a gain of electrons or a decrease in oxidation state.</p>
<p>T20</p> <p>A list of metals in order of how readily they lose electrons.</p>	<p>T20</p> <p>An equation showing just the oxidation or just the reduction, with electrons.</p>	<p>T20</p> <p>A substance that donates electrons to another substance and is itself oxidised.</p>

<p>T20</p> <p>displacement</p>	<p>T20</p> <p>primary cell</p>	<p>T20</p> <p>anode</p>
<p>T20</p> <p>cathode</p>	<p>T20</p> <p>salt bridge</p>	<p>T20</p> <p>secondary cell</p>
<p>T20</p> <p>fuel cell</p>	<p>T20</p> <p>electrolytic cell</p>	<p>T20</p> <p>electrolysis</p>

<p>T20</p> <p>An electrode at which oxidation occurs.</p>	<p>T20</p> <p>A cell that cannot be recharged.</p>	<p>T20</p> <p>A reaction in which one element replaces another in a compound.</p>
<p>T20</p> <p>A rechargeable cell.</p>	<p>T20</p> <p>A link of ions between two half-cells that completes the circuit.</p>	<p>T20</p> <p>An electrode at which reduction occurs.</p>
<p>T20</p> <p>The decomposition of an electrolyte by an electric current passing through its molten form or a solution.</p>	<p>T20</p> <p>A cell in which an external electrical supply drives a non-spontaneous chemical reaction.</p>	<p>T20</p> <p>An electrochemical device that converts the chemical energy of a continuously supplied fuel and oxidant into electricity.</p>

<div>T20</div> <div>electrolyte</div>	<div>T20</div> <div>distillation</div>	<div>T20</div> <div>reflux</div>
<div>T20</div> <div>hydrogenation</div>	<div>T20</div> <div>standard hydrogen electrode</div>	<div>T20</div> <div>standard electrode potential</div>
<div>T20</div> <div>cell potential</div>	<div>T20</div> <div>spontaneous</div>	<div>T20</div> <div>Faraday constant</div>

<p>T20</p> <p>Heating a reaction mixture while condensing its vapour and returning the condensate to the same vessel.</p>	<p>T20</p> <p>Separating substances by vaporising and condensing them, using differences in volatility or boiling point.</p>	<p>T20</p> <p>A substance that conducts electricity when molten or dissolved because it contains mobile ions.</p>
<p>T20</p> <p>The potential of an electrode relative to the standard hydrogen electrode, measured under standard conditions.</p>	<p>T20</p> <p>The hydrogen reference electrode assigned a standard electrode potential of zero volts.</p>	<p>T20</p> <p>The addition of hydrogen to a substance, often across a carbon-carbon double bond using a catalyst.</p>
<p>T20</p> <p>The charge on one mole of electrons, $96\,500\text{ C mol}^{-1}$.</p>	<p>T20</p> <p>Able to happen without continuous outside energy; ΔG is negative.</p>	<p>T20</p> <p>The potential difference between the electrodes of an electrochemical cell.</p>

<div>T20</div> <div>inert electrode</div>	<div>T20</div> <div>electroplating</div>	<div>T21</div> <div>free radical</div>
<div>T21</div> <div>unpaired electron</div>	<div>T21</div> <div>homolytic fission</div>	<div>T21</div> <div>single-barbed arrow</div>
<div>T21</div> <div>ultraviolet light</div>	<div>T21</div> <div>non-polar</div>	<div>T21</div> <div>radical substitution</div>

<p>T21</p> <p>A species containing one or more unpaired electrons.</p>	<p>T20</p> <p>Using electrolysis to deposit a metal coating onto a conducting object.</p>	<p>T20</p> <p>An electrode, such as platinum or graphite, that does not take part in the reaction.</p>
<p>T21</p> <p>A half-headed arrow showing the movement of one electron.</p>	<p>T21</p> <p>Breaking a covalent bond so that each fragment receives one electron from the bonding pair.</p>	<p>T21</p> <p>An electron alone in an orbital, as in a free radical.</p>
<p>T21</p> <p>Substitution by a radical chain: initiation by UV, propagation steps, and termination when radicals join.</p>	<p>T21</p> <p>Having no overall separation of charge.</p>	<p>T21</p> <p>High-energy light that can split bonds to form radicals.</p>

<div>T21</div> <div>chain reaction</div>	<div>T21</div> <div>initiation</div>	<div>T21</div> <div>propagation</div>
<div>T21</div> <div>termination</div>	<div>T21</div> <div>product mixture</div>	<div>T21</div> <div>chlorofluorocarbon</div>
<div>T21</div> <div>stratosphere</div>	<div>T21</div> <div>ozone</div>	<div>T22</div> <div>nucleophile</div>

<p>T21</p> <p>A chain step in a radical reaction that consumes one radical and produces another.</p>	<p>T21</p> <p>The first stage of a chain reaction, in which reactive species such as free radicals are produced.</p>	<p>T21</p> <p>A reaction in which each step makes a radical that continues the chain.</p>
<p>T21</p> <p>A compound of carbon, chlorine and fluorine that releases chlorine radicals in the stratosphere.</p>	<p>T21</p> <p>The mixture of several products formed, as in radical substitution.</p>	<p>T21</p> <p>The ending stage of a process, such as completion of protein synthesis or the stopping of a reaction chain.</p>
<p>T22</p> <p>An electron-pair donor that forms a covalent bond to an electron-deficient centre.</p>	<p>T21</p> <p>O₃, which absorbs harmful ultraviolet light in the stratosphere.</p>	<p>T21</p> <p>The atmosphere layer from about 10 to 50 km up, containing the ozone layer.</p>

<p>T22</p> <p>electrophile</p>	<p>T22</p> <p>heterolytic fission</p>	<p>T22</p> <p>curly arrow</p>
<p>T22</p> <p>halogenoalkane</p>	<p>T22</p> <p>nucleophilic substitution</p>	<p>T22</p> <p>leaving group</p>
<p>T22</p> <p>electrophilic addition</p>	<p>T22</p> <p>Lewis acid</p>	<p>T22</p> <p>Lewis base</p>

<p>T22</p> <p>An arrow showing the movement of an electron pair in a mechanism.</p>	<p>T22</p> <p>Breaking a covalent bond so that both electrons in the bonding pair go to the same fragment.</p>	<p>T22</p> <p>A species that accepts an electron pair to form a covalent bond.</p>
<p>T22</p> <p>The atom or group that departs with the bonding pair in a substitution.</p>	<p>T22</p> <p>A reaction in which an electron-pair donor replaces a leaving group in a molecule.</p>	<p>T22</p> <p>An alkane derivative in which one or more hydrogen atoms have been replaced by halogen atoms.</p>
<p>T22</p> <p>An electron-pair donor.</p>	<p>T22</p> <p>An electron-pair acceptor.</p>	<p>T22</p> <p>A reaction in which an electron-pair acceptor initiates addition across a multiple bond.</p>

<p>T22</p> <p>A charged species with a central metal ion bonded to surrounding ligands.</p>	<p>T22</p> <p>An ion or molecule that binds to another species at a specific site, such as a metal centre or a receptor.</p>	<p>T22</p> <p>A covalent bond in which both shared electrons come from one atom.</p>
<p>T22</p> <p>Of an alcohol or halogenoalkane: the functional carbon bonded to three other carbons.</p>	<p>T22</p> <p>Of an alcohol or halogenoalkane: the functional carbon bonded to one other carbon.</p>	<p>T22</p> <p>The number of nearest neighbours around a particle, or of donor atoms directly bonded to the central atom in a complex.</p>
<p>T22</p> <p>The flip of a chiral centre's arrangement during an SN2 reaction.</p>	<p>T22</p> <p>Giving one stereoisomer specifically, as SN2 gives inversion.</p>	<p>T22</p> <p>A high-energy arrangement of atoms at the energy barrier along a reaction pathway.</p>

T22	T22	T22
carbocation	rate-determining step	Markovnikov's rule
T22	T22	T22
delocalized	electrophilic substitution	nitronium ion
T23	T23	
systematic error	uncertainty	

T22	T22	T22
In addition of HX to an alkene, H joins the carbon that already has more hydrogens.	The slowest step in a mechanism, which controls the overall rate.	An organic ion in which a carbon atom carries a positive charge.
T22	T22	T22
NO_2^+ , the electrophile that nitrates benzene.	A reaction in which an electrophile replaces an atom or group in a molecule.	Of electrons: spread over several atoms instead of held between two.
	T23	T23
	An estimate of the possible range of error in a measurement.	A consistent measurement bias caused by the method or instrument.