

Types				Definition	Wikipedia/Other Links
Chemical_elements				A chemical element is a chemical substance that cannot be broken down into other substances. The basic particle that constitutes a chemical element is the atom, and chemical elements are distinguished from each other by the number of protons in the nuclei of their atoms. This is in contrast to chemical compounds and mixtures.	<a href="https://en.wikipedia.org/wiki/Chemical_element">https://en.wikipedia.org/wiki/Chemical_element</a>
Chemical_elements	Sets_of_chemical_elements	Halogens		The halogens are a group in the periodic table consisting of six chemically related elements: fluorine (F), chlorine (Cl), bromine (Br), iodine (I), astatine (At), and tennessine (Ts), though some authors would exclude tennessine as its chemistry is unknown and is theoretically expected to be more like that of gallium. In the modern IUPAC nomenclature, this group is known as group 17.	<a href="https://en.wikipedia.org/wiki/Halogen">https://en.wikipedia.org/wiki/Halogen</a>
Chemical_elements	Sets_of_chemical_elements	Transition_metals		In chemistry, a transition metal (or transition element) is a chemical element in the d-block of the periodic table (groups 3 to 12), though the elements of group 12 (and less often group 3) are sometimes excluded. The lanthanide and actinide elements (the f-block) are called inner transition metals and are sometimes considered to be transition metals as well.	<a href="https://en.wikipedia.org/wiki/Transition_metal">https://en.wikipedia.org/wiki/Transition_metal</a>
Chemical_elements	Sets_of_chemical_elements	Noble_gases		The noble gases (historically also the inert gases; sometimes referred to as aerogens) make up a class of chemical elements with similar properties; under standard conditions, they are all odorless, colorless, monatomic gases with very low chemical reactivity. The six naturally occurring noble gases are helium (He), neon (Ne), argon (Ar), krypton (Kr), xenon (Xe), and the radioactive radon (Rn).	<a href="https://en.wikipedia.org/wiki/Noble_gas">https://en.wikipedia.org/wiki/Noble_gas</a>
Chemical_properties				A chemical property is any of a material's properties that becomes evident during, or after, a chemical reaction; that is, any quality that can be established only by changing a substance's chemical identity. Simply speaking, chemical properties cannot be determined just by viewing or touching the substance; the substance's internal structure must be affected greatly for its chemical properties to be investigated. When a substance goes under a chemical reaction, the properties will change drastically, resulting in chemical change. However, a catalytic property would also be a chemical property.	<a href="https://en.wikipedia.org/wiki/Chemical_property">https://en.wikipedia.org/wiki/Chemical_property</a>
Chemical_properties	Thermodynamic_properties			In thermodynamics, a physical property is any property that is measurable, and whose value describes a state of a physical system. Thermodynamic properties are defined as characteristic features of a system, capable of specifying the system's state. Some constants, such as the ideal gas constant, R, do not describe the state of a system, and so are not properties. On the other hand, some constants, such as Kf (the freezing point depression constant, or cryoscopic constant), depend on the identity of a substance, and so may be considered to describe the state of a system, and therefore may be considered physical properties.	<a href="https://en.wikipedia.org/wiki/List_of_thermodynamic_properties">https://en.wikipedia.org/wiki/List_of_thermodynamic_properties</a>
Chemical_reactions	Catalysis			Catalysis is the process of increasing the rate of a chemical reaction by adding a substance known as a catalyst. Catalysis may be classified as either homogeneous, whose components are dispersed in the same phase (usually gaseous or liquid) as the reactant, or heterogeneous, whose components are not in the same phase. Enzymes and other biocatalysts are often considered as a third category. Catalysis is ubiquitous in chemical industry of all kinds. Estimates are that 90% of all commercially produced chemical products involve catalysts at some stage in the process of their manufacture.	<a href="https://en.wikipedia.org/wiki/Catalysis">https://en.wikipedia.org/wiki/Catalysis</a>
Chemical_reactions	Catalysis	Catalysts		Catalysts are not consumed in the reaction and remain unchanged after it. If the reaction is rapid and the catalyst recycles quickly, very small amounts of catalyst often suffice; mixing, surface area, and temperature are important factors in reaction rate. Catalysts generally react with one or more reactants to form intermediates that subsequently give the final reaction product, in the process of regenerating the catalyst.	<a href="https://en.wikipedia.org/wiki/Catalyst_(disambiguation)">https://en.wikipedia.org/wiki/Catalyst_(disambiguation)</a>
Chemical_reactions	Catalysis	Catalysts	Enzymes	Enzymes are proteins that act as biological catalysts by accelerating chemical reactions. The molecules upon which enzymes may act are called substrates, and the enzyme converts the substrates into different molecules known as products. Almost all metabolic processes in the cell need enzyme catalysis in order to occur at rates fast enough to sustain life. Metabolic pathways depend upon enzymes to catalyze individual steps. The study of enzymes is called enzymology and the field of pseudoenzyme analysis recognizes that during evolution, some enzymes have lost the ability to carry out biological catalysis, which is often reflected in their amino acid sequences and unusual 'pseudocatalytic' properties.	<a href="https://en.wikipedia.org/wiki/Enzyme">https://en.wikipedia.org/wiki/Enzyme</a>
Chemical_reactions	Catalysis	Catalysts		In chemistry, homogeneous catalysis is catalysis by a soluble catalyst in a solution. Homogeneous catalysis refers to reactions where the catalyst is in the same phase as the reactants, principally in solution. In contrast, heterogeneous catalysis describes processes where the catalysts and substrate are in distinct phases, typically solid-gas, respectively. The term is used almost exclusively to describe solutions and implies catalysis by organometallic compounds. Homogeneous catalysis is an established technology that continues to evolve. An illustrative major application is the production of acetic acid. Enzymes are examples of homogeneous catalysts.	<a href="https://en.wikipedia.org/wiki/Homogeneous_catalysis">https://en.wikipedia.org/wiki/Homogeneous_catalysis</a>
Chemical_reactions	Catalysis	Catalysts		With rare exceptions, H2 is unreactive toward organic compounds in the absence of metal catalysts. The unsaturated substrate is chemisorbed onto the catalyst, with most sites covered by the substrate. In heterogeneous catalysts, hydrogen forms surface hydrides (M-H) from which hydrogens can be transferred to the chemisorbed substrate. Platinum, palladium, rhodium, and ruthenium form highly active catalysts, which operate at lower temperatures and lower pressures of H2. Non-precious metal catalysts, especially those based on nickel (such as Raney nickel and Urushibara nickel) have also been developed as economical alternatives, but they are often slower or require higher temperatures. The trade-off is activity (speed of reaction) vs. cost of the catalyst and cost of the apparatus required for use of high pressures. Notice that the Raney-nickel catalysed hydrogenations require high pressures: Catalysts are usually classified into two broad classes: homogeneous and heterogeneous.	<a href="https://www.sigmaaldrich.com/US/en/products/chemistry-and-biochemicals/catalysts/hydrogenation-catalysts">https://www.sigmaaldrich.com/US/en/products/chemistry-and-biochemicals/catalysts/hydrogenation-catalysts</a>
Chemical_reactions	Chemical_reaction_engineering	Chemical_kinetics		Chemical kinetics, also known as reaction kinetics, is the branch of physical chemistry that is concerned with understanding the rates of chemical reactions. It is to be contrasted with chemical thermodynamics, which deals with the direction in which a reaction occurs but in itself tells nothing about its rate. Chemical kinetics includes investigations of how experimental conditions influence the speed of a chemical reaction and yield information about the reaction's mechanism and transition states, as well as the construction of mathematical models that also can describe the characteristics of a chemical reaction.	<a href="https://en.wikipedia.org/wiki/Chemical_kinetics">https://en.wikipedia.org/wiki/Chemical_kinetics</a>
Chemical_reactions	Organic_reactions			Organic reactions are chemical reactions involving organic compounds. The basic organic chemistry reaction types are addition reactions, elimination reactions, substitution reactions, pericyclic reactions, rearrangement reactions, photochemical reactions and redox reactions. In organic synthesis, organic reactions are used in the construction of new organic molecules. The production of many man-made chemicals such as drugs, plastics, food additives, fabrics depend on organic reactions.	<a href="https://en.wikipedia.org/wiki/Organic_reaction">https://en.wikipedia.org/wiki/Organic_reaction</a>
Chemical_reactions	Organic_reactions	Carbon-carbon_bond_forming_reactions		Carbon-carbon bond-forming reactions are organic reactions in which a new carbon-carbon bond is formed. They are important in the production of many man-made chemicals such as pharmaceuticals and plastics. The reverse reaction, where a carbon-carbon bond is broken, is known as carbon-carbon bond activation. Some examples of reactions which form carbon-carbon bonds are the aldol reaction, Diels-Alder reaction, Grignard reaction, cross-coupling reactions, the Michael reaction and the Wittig reaction.	<a href="https://en.wikipedia.org/wiki/Category:Carbon-carbon_bond_forming_reactions">https://en.wikipedia.org/wiki/Category:Carbon-carbon_bond_forming_reactions</a>
Chemical_reactions	Organic_reactions	Coupling_reactions		A coupling reaction in organic chemistry refers to a variety of reactions where two fragments are joined together. Often such reactions require the aid of a metal catalyst. In one important reaction type, a main group organometallic compound of the type R-M (R = organic fragment, M = main group center) reacts with an organic halide of the type R'-X with formation of a new carbon-carbon bond in the product R-R'. The most common type of coupling reaction is the cross coupling reaction.	<a href="https://en.wikipedia.org/wiki/Coupling_reaction">https://en.wikipedia.org/wiki/Coupling_reaction</a>
Chemical_reactions	Organic_reactions	Functional_modification_reactions	Addition_reactions	In organic chemistry, an addition reaction is, in simplest terms, an organic reaction where two or more molecules combine to form a larger one (the adduct). Addition reactions are limited to chemical compounds that have multiple bonds, such as molecules with carbon-carbon double bonds (alkenes), or with triple bonds (alkynes), and compounds that have rings, which are also considered points of unsaturation. Molecules containing carbon-hetero double bonds like carbonyl (C=O) groups, or imine (C=N) groups, can undergo addition, as they too have double-bond character.	<a href="https://en.wikipedia.org/wiki/Addition_reaction">https://en.wikipedia.org/wiki/Addition_reaction</a>

Types				Definition	Wikipedia/Other Links
Chemical_reactions	Organic_reactions	Functional_modification_reactions	Elimination_reactions	An elimination reaction is a type of organic reaction in which two substituents are removed from a molecule in either a one- or two-step mechanism. The one-step mechanism is known as the E2 reaction, and the two-step mechanism is known as the E1 reaction. The numbers refer not to the number of steps in the mechanism, but rather to the kinetics of the reaction: E2 is bimolecular (second-order) while E1 is unimolecular (first-order). In cases where the molecule is able to stabilize an anion but possesses a poor leaving group, a third type of reaction, E1cB, exists. Finally, the pyrolysis of xanthate and acetate esters proceed through an "internal" elimination mechanism, the Ei mechanism.	<a href="https://en.wikipedia.org/wiki/Elimination_reaction">https://en.wikipedia.org/wiki/Elimination_reaction</a>
Chemical_reactions	Organic_reactions	Functional_modification_reactions	Substitution_reactions	A substitution reaction (also known as single displacement reaction or single substitution reaction) is a chemical reaction during which one functional group in a chemical compound is replaced by another functional group. Substitution reactions are of prime importance in organic chemistry. Substitution reactions in organic chemistry are classified either as electrophilic or nucleophilic depending upon the reagent involved, whether a reactive intermediate involved in the reaction is a carbocation, a carbanion or a free radical, and whether the substrate is aliphatic or aromatic. Detailed understanding of a reaction type helps to predict the product outcome in a reaction. It also is helpful for optimizing a reaction with regard to variables such as temperature and choice of solvent.	<a href="https://en.wikipedia.org/wiki/Substitution_reaction">https://en.wikipedia.org/wiki/Substitution_reaction</a>
Chemical_reactions	Organic_reactions	Joining_reactions	Polymerization_reactions	In polymer chemistry, polymerization (American English), or polymerisation (British English), is a process of reacting monomer molecules together in a chemical reaction to form polymer chains or three-dimensional networks. There are many forms of polymerization and different systems exist to categorize them.	<a href="https://en.wikipedia.org/wiki/Polymerization">https://en.wikipedia.org/wiki/Polymerization</a>
Chemical_reactions	Organic_reactions	Name_reactions		A name reaction is a chemical reaction named after its discoverers or developers. Among the tens of thousands of organic reactions that are known, hundreds of such reactions are well-known enough to be named after people. Well-known examples include the Grignard reaction, the Sabatier reaction, the Wittig reaction, the Caisen condensation, the Friedel-Crafts acylation, and the Diels-Alder reaction. Books have been published devoted exclusively to name reactions; the Merck Index, a chemical encyclopedia, also includes an appendix on name reactions.	<a href="https://en.wikipedia.org/wiki/Name_reaction">https://en.wikipedia.org/wiki/Name_reaction</a>
Chemical_reactions	Organic_reactions	Organic_redox_reactions		Organic reductions or organic oxidations or organic redox reactions are redox reactions that take place with organic compounds. In organic chemistry oxidations and reductions are different from ordinary redox reactions, because many reactions carry the name but do not actually involve electron transfer. Instead the relevant criterion for organic oxidation is gain of oxygen and/or loss of hydrogen, respectively.	<a href="https://en.wikipedia.org/wiki/Organic_redox_reaction">https://en.wikipedia.org/wiki/Organic_redox_reaction</a>
Chemical_reactions	Organic_reactions	Ring_forming_reactions		A ring forming reaction or ring-closing reaction in organic chemistry is a general term for a variety of reactions that introduce one or more rings into a molecule. A heterocycle forming reaction is such a reaction that introduces a new heterocycle.	<a href="https://en.wikipedia.org/wiki/Ring_forming_reaction">https://en.wikipedia.org/wiki/Ring_forming_reaction</a>
Chemical_reactions	Inorganic_reactions			Inorganic reactions are chemical reactions that involve the formation or breaking of bonds between elements or compounds that do not contain carbon-hydrogen bonds. These reactions typically involve compounds that are not primarily composed of carbon, such as metals, salts, and minerals. Inorganic reactions can be classified into several categories based on the type of reaction, such as precipitation, acid-base, redox, and complexation reactions. These reactions are important in many fields, including materials science, geochemistry, and industrial chemistry.	<a href="https://en.wikipedia.org/wiki/List_of_inorganic_reactions">https://en.wikipedia.org/wiki/List_of_inorganic_reactions</a>
Inorganic_chemistry	Coordination_chemistry			Coordination chemistry refers to the study of coordination complexes composed of ligands attached to coordination centers usually metals by a dative bond.	<a href="https://en.wikipedia.org/wiki/Coordination_complex">https://en.wikipedia.org/wiki/Coordination_complex</a>
Inorganic_chemistry	Coordination_chemistry	Coordination_compounds		A coordination complex consists of a central atom or ion, which is usually metallic and is called the coordination centre, and a surrounding array of bound molecules or ions, that are in turn known as ligands or complexing agents. Many metal-containing compounds, especially those that include transition metals (elements like titanium that belong to the Periodic Table's d-block), are coordination complexes.	<a href="https://en.wikipedia.org/wiki/Coordination_complex">https://en.wikipedia.org/wiki/Coordination_complex</a>
Inorganic_chemistry	Coordination_chemistry	Ligands		In coordination chemistry, a ligand is an ion or molecule (functional group) that binds to a central metal atom to form a coordination complex. The bonding with the metal generally involves formal donation of one or more of the ligand's electron pairs, often through Lewis bases. The nature of metal-ligand bonding can range from covalent to ionic. Furthermore, the metal-ligand bond order can range from one to three. Ligands are viewed as Lewis bases, although rare cases are known to involve Lewis acidic "ligands".	<a href="https://en.wikipedia.org/wiki/Ligand">https://en.wikipedia.org/wiki/Ligand</a>
Inorganic_chemistry	Coordination_chemistry	Non-coordinating_anions		Anions that interact weakly with cations are termed non-coordinating anions, although a more accurate term is weakly coordinating anion. Non-coordinating anions are useful in studying the reactivity of electrophilic cations. They are commonly found as counterions for cationic metal complexes with an unsaturated coordination sphere. These special anions are essential components of homogeneous alkene polymerisation catalysts, where the active catalyst is a coordinatively unsaturated, cationic transition metal complex. For example, they are employed as counterions for the 14 valence electron cations [(C5H5)2ZrR]+ (R = methyl or a growing polyethylene chain). Complexes derived from non-coordinating anions have been used to catalyze hydrogenation, hydrosilylation, oligomerization, and the living polymerization of alkenes. The popularization of non-coordinating anions has contributed to increased understanding of agostic complexes wherein hydrocarbons and hydrogen serve as ligands. Non-coordinating anions are important components of many superacids, which result from the combination of Bräu00f8sted acids and Lewis acids.	<a href="https://en.wikipedia.org/wiki/Non-coordinating_anion">https://en.wikipedia.org/wiki/Non-coordinating_anion</a>
Inorganic_chemistry	Inorganic_compounds			In chemistry, an inorganic compound is typically a chemical compound that lacks carbon-hydrogen bonds, that is, a compound that is not an organic compound. The study of inorganic compounds is a subfield of chemistry known as inorganic chemistry.	<a href="https://en.wikipedia.org/wiki/Inorganic_compound">https://en.wikipedia.org/wiki/Inorganic_compound</a>
Inorganic_chemistry	Inorganic_compounds	Chlorides		The term chloride refers either to a chloride ion (Cl <sup>-</sup> ), which is negatively charged chlorine atom, or a non-charged chlorine atom covalently bonded to the rest of the molecule by a single bond (-Cl). Many inorganic chlorides are salts. Many organic compounds are chlorides.	<a href="https://en.wikipedia.org/wiki/Chloride">https://en.wikipedia.org/wiki/Chloride</a>
Inorganic_chemistry	Inorganic_compounds	Inorganic_carbon_compounds		Inorganic carbon compounds are compounds that do not contain carbon-hydrogen bonds, and are therefore not organic compounds. They include compounds such as carbon dioxide (CO2), carbon monoxide (CO), carbonates (e.g. calcium carbonate), bicarbonates (e.g. sodium bicarbonate), and carbides (e.g. calcium carbide).	<a href="https://en.wikipedia.org/wiki/Carbon_compounds#Inorganic_compounds">https://en.wikipedia.org/wiki/Carbon_compounds#Inorganic_compounds</a>
Inorganic_chemistry	Inorganic_compounds	Inorganic_nitrogen_compounds		The chemical element nitrogen is one of the most abundant elements in the universe and can form many compounds. It can take several oxidation states; but the most oxidation states are -3 and +3. Nitrogen can form nitride and nitrate ions. It also forms a part of nitric acid and nitrate salts.	<a href="https://en.wikipedia.org/wiki/Nitrogen_compounds">https://en.wikipedia.org/wiki/Nitrogen_compounds</a>
Inorganic_chemistry	Inorganic_compounds	Inorganic_phosphorus_compounds		Inorganic phosphorus is essential for every known form of life. Phosphorus forms many compounds such as metal phosphates, phosphides, oxides, halides, and oxyacids. As phosphates, they play a major role in biological molecules. The phosphorus containing compounds are mainly used as fertilizers. Phosphoric acid is the main source of phosphates used in detergents and other non-fertilizer applications. Calcium phosphate salts help to harden bones. Phosphorus oxoacids (hypophosphorous acid, phosphorous acid and phosphoric acid) are commercially important acids. Phosphoric acid is used to prepare buffer solutions and also used as a catalyst in various reactions.	<a href="https://www.alfa.com/en/inorganic-phosphorus-compounds/">https://www.alfa.com/en/inorganic-phosphorus-compounds/</a>
Inorganic_chemistry	Inorganic_compounds	Inorganic_silicon_compounds		Inorganic silicon compounds are a group of chemical compounds that contain silicon atoms bonded to other elements, excluding carbon and hydrogen. These compounds can take on a wide range of forms, including silicates, oxides, halides, and hydrides. Silicates are the most abundant type of inorganic silicon compound and are found in many minerals and rocks, as well as being used in the production of ceramics and glass. Silicon oxides are important as a substrate for the deposition of thin films in the semiconductor industry, while silicon hydrides are used as intermediates in the production of silicon-based materials. Silicon halides are used in the semiconductor industry as precursors for the deposition of silicon dioxide films. Inorganic silicon compounds play a vital role in many industries, including electronics, aerospace, and energy production.	<a href="https://en.wikipedia.org/wiki/Silicon#Chemistry_and_compounds">https://en.wikipedia.org/wiki/Silicon#Chemistry_and_compounds</a>

Types					Definition	Wikipedia/Other Links
Inorganic_chemistry	Inorganic_compounds	Metal_halides			Metal halides are compounds between metals and halogens. Some, such as sodium chloride are ionic, while others are covalently bonded. A few metal halides are discrete molecules, such as uranium hexafluoride, but most adopt polymeric structures, such as palladium chloride.	<a href="https://en.wikipedia.org/wiki/Metal_halides">https://en.wikipedia.org/wiki/Metal_halides</a>
Inorganic_chemistry	Inorganic_compounds	Mineral_acids	Oxoacids		An oxyacid, oxoacid, or ternary acid is an acid that contains oxygen. Specifically, it is a compound that contains hydrogen, oxygen, and at least one other element, with at least one hydrogen atom bonded to oxygen that can dissociate to produce the H <sup>+</sup> cation and the anion of the acid.	<a href="https://en.wikipedia.org/wiki/Oxyacid">https://en.wikipedia.org/wiki/Oxyacid</a>
Inorganic_chemistry	Organometallic_chemistry				Organometallic chemistry is the study of organometallic compounds, chemical compounds containing at least one chemical bond between a carbon atom of an organic molecule and a metal, including alkali, alkaline earth, and transition metals, and sometimes broadened to include metalloids like boron, silicon, and selenium, as well. The field of organometallic chemistry combines aspects of traditional inorganic and organic chemistry.	<a href="https://en.wikipedia.org/wiki/Organometallic_chemistry">https://en.wikipedia.org/wiki/Organometallic_chemistry</a>
					Organometallic compounds are distinguished by the prefix "organo-" (e.g., organopalladium compounds), and include all compounds which contain a bond between a metal atom and a carbon atom of an organyl group. In addition to the traditional metals (alkali metals, alkali earth metals, transition metals, and post transition metals), lanthanides, actinides, semimetals, and the elements boron, silicon, arsenic, and selenium are considered to form organometallic compounds. Examples of organometallic compounds include Gilman reagents, which contain lithium and copper, and Grignard reagents, which contain magnesium. Tetracarbonyl nickel and ferrocene are examples of organometallic compounds containing transition metals. Other examples of organometallic compounds include organolithium compounds such as n-butyllithium (n-BuLi), organozinc compounds such as diethylzinc (Et <sub>2</sub> Zn), organotin compounds such as tributyltin hydride (Bu <sub>3</sub> SnH), organoborane compounds such as triethylborane (Et <sub>3</sub> B), and organoaluminium compounds such as trimethylaluminium (Me <sub>3</sub> Al).	<a href="https://en.wikipedia.org/wiki/Organometallic_chemistry">https://en.wikipedia.org/wiki/Organometallic_chemistry</a>
Inorganic_chemistry	Organometallic_chemistry	Organometallic_compounds			A cyclopentadienyl complex is a coordination complex of a metal and cyclopentadienyl groups (C <sub>5</sub> H <sub>5</sub> , abbreviated as Cp-). Cyclopentadienyl ligands almost invariably bind to metals as a pentahapto (η <sup>5</sup> C <sub>5</sub> H <sub>5</sub> -) bonding mode. The metal-cyclopentadienyl interaction is typically drawn as a single line from the metal center to the center of the Cp ring.	<a href="https://en.wikipedia.org/wiki/Cyclopentadienyl_complex">https://en.wikipedia.org/wiki/Cyclopentadienyl_complex</a>
Inorganic_chemistry	Organometallic_chemistry	Sandwich_compounds	Cyclopentadienyl_complexes		In organometallic chemistry, a sandwich compound is a chemical compound featuring a metal bound by haptic, covalent bonds to two arene (ring) ligands. The arenes have the formula C <sub>n</sub> H <sub>n</sub> , substituted derivatives (for example C <sub>n</sub> (CH <sub>3</sub> ) <sub>n</sub> ) and heterocyclic derivatives (for example BC <sub>n</sub> H <sub>n</sub> +1). Because the metal is usually situated between the two rings, it is said to be "sandwiched". A special class of sandwich complexes are the metallocenes.	<a href="https://en.wikipedia.org/wiki/Sandwich_compound">https://en.wikipedia.org/wiki/Sandwich_compound</a>
					In organic chemistry, a functional group is a substituent or moiety in a molecule that causes the molecule's characteristic chemical reactions. The same functional group will undergo the same or similar chemical reactions regardless of the rest of the molecule's composition. This enables systematic prediction of chemical reactions and behavior of chemical compounds and the design of chemical synthesis. The reactivity of a functional group can be modified by other functional groups nearby. Functional group interconversion can be used in retrosynthetic analysis to plan organic synthesis.	<a href="https://en.wikipedia.org/wiki/Functional_group">https://en.wikipedia.org/wiki/Functional_group</a>
Organic_chemistry	Functional_groups				In chemistry, many authors consider that organic compound is any chemical compound that contain carbon-hydrogen or carbon-carbon bonds, although the definition of "organic" versus "inorganic" varies from author to author, and it is a topic of debate. For example, methane (CH <sub>4</sub> ) is considered organic, but whether halides of carbon without hydrogen (e.g. carbon tetrachloride CCl <sub>4</sub> ) are organic or inorganic varies from author to author.	<a href="https://en.wikipedia.org/wiki/Organic_compound">https://en.wikipedia.org/wiki/Organic_compound</a>
Organic_chemistry	Organic_compounds				Alkaloids are a class of basic, naturally occurring organic compounds that contain at least one nitrogen atom. This group also includes some related compounds with neutral and even weakly acidic properties. Some synthetic compounds of similar structure may also be termed alkaloids. In addition to carbon, hydrogen and nitrogen, alkaloids may also contain oxygen, sulfur and, more rarely, other elements such as chlorine, bromine, and phosphorus.	<a href="https://en.wikipedia.org/wiki/Alkaloid">https://en.wikipedia.org/wiki/Alkaloid</a>
Organic_chemistry	Organic_compounds	Alkaloids			Aromatic compounds, also known as "mono- and polycyclic aromatic hydrocarbons", are organic compounds containing one or more aromatic rings. The parent member of aromatic compounds is benzene. The word "aromatic" originates from the past grouping of molecules based on smell, before their general chemical properties are understood. The current definition of aromatic compounds does not have any relation with their smell.	<a href="https://en.wikipedia.org/wiki/Aromatic_compound">https://en.wikipedia.org/wiki/Aromatic_compound</a>
Organic_chemistry	Organic_compounds	Aromatic_compounds			A biomolecule or biological molecule is a loosely used term for molecules present in organisms that are essential to one or more typically biological processes, such as cell division, morphogenesis, or development. Biomolecules include large macromolecules (or polyelectrolytes) such as proteins, carbohydrates, lipids, and nucleic acids, as well as small molecules such as primary metabolites, secondary metabolites and natural products. A more general name for this class of material is biological materials. Biomolecules are an important element of living organisms, those biomolecules are often endogenous, produced within the organism but organisms usually need exogenous biomolecules, for example certain nutrients, to survive.	<a href="https://en.wikipedia.org/wiki/Biomolecule">https://en.wikipedia.org/wiki/Biomolecule</a>
Organic_chemistry	Organic_compounds	Biomolecules			A heterocyclic compound or ring structure is a cyclic compound that has atoms of at least two different elements as members of its ring(s). Heterocyclic chemistry is the branch of organic chemistry dealing with the synthesis, properties, and applications of these heterocycles.	<a href="https://en.wikipedia.org/wiki/Heterocyclic_compound">https://en.wikipedia.org/wiki/Heterocyclic_compound</a>
Organic_chemistry	Organic_compounds	Heterocyclic_compounds			Macrocycles are often described as molecules and ions containing a ring of twelve or more atoms. Classical examples include the crown ethers, calixarenes, porphyrins, and cyclodextrins. Macrocycles describe a large, mature area of chemistry.	<a href="https://en.wikipedia.org/wiki/Macrocycle">https://en.wikipedia.org/wiki/Macrocycle</a>
Organic_chemistry	Organic_compounds	Macrocycles			An organic acid is an organic compound with acidic properties. The most common organic acids are the carboxylic acids, whose acidity is associated with their carboxyl group -COOH. Sulfonic acids, containing the group -SO <sub>2</sub> OH, are relatively stronger acids. Alcohols, with -OH, can act as acids but they are usually very weak. The relative stability of the conjugate base of the acid determines its acidity. Other groups can [also] confer acidity, usually weakly: the thiol group -SH, the enol group, and the phenol group. In biological systems, organic compounds containing these groups are generally referred to as organic acids.	<a href="https://en.wikipedia.org/wiki/Organic_acid">https://en.wikipedia.org/wiki/Organic_acid</a>
Organic_chemistry	Organic_compounds	Organic_acids			A polymer is a substance or material consisting of very large molecules called macromolecules, composed of many repeating subunits. Due to their broad spectrum of properties, both synthetic and natural polymers play essential and ubiquitous roles in everyday life. Polymers range from familiar synthetic plastics such as polystyrene to natural biopolymers such as DNA and proteins that are fundamental to biological structure and function. Polymers, both natural and synthetic, are created via polymerization of many small molecules, known as monomers. Their consequently large molecular mass, relative to small molecule compounds, produces unique physical properties including toughness, high elasticity, viscoelasticity, and a tendency to form amorphous and semicrystalline structures rather than crystals.	<a href="https://en.wikipedia.org/wiki/Polymer">https://en.wikipedia.org/wiki/Polymer</a>
Organic_chemistry	Organic_compounds	Organic_polymers			Halocarbon compounds are chemicals in which one or more carbon atoms are linked by covalent bonds with one or more halogen atoms (fluorine, chlorine, bromine or iodine - group 17) resulting in the formation of organofluorine compounds, organochlorine compounds, organobromine compounds, and organiodine compounds. Chlorine halocarbons are the most common and are called organochlorides.	<a href="https://en.wikipedia.org/wiki/Halocarbon">https://en.wikipedia.org/wiki/Halocarbon</a>
Organic_chemistry	Organic_compounds	Organohalides				

Types					Definition	Wikipedia/Other Links
Organic_chemistry	Organic_compounds	Organonitrogen_compounds			Nitrogen is one of the most important elements in organic chemistry. Many organic functional groups involve a carbon-nitrogen bond, such as amides (RCONR2), amines (R3N), imines (RC(=NR)R), imides (RCO)2NR, azides (RN3), azo compounds (RN2R), cyanates and isocyanates (ROCN or RCNO), nitrates (RONO2), nitriles and isonitriles (RCN or RNC), nitrites (RONO), nitro compounds (RNO2), nitroso compounds (RNO), oximes (RCR=NOH), and pyridine derivatives. C-N bonds are strongly polarised towards nitrogen. In these compounds, nitrogen is usually trivalent (though it can be tetravalent in quaternary ammonium salts, R4N+), with a lone pair that can confer basicity on the compound by being coordinated to a proton. This may be offset by other factors: for example, amides are not basic because the lone pair is delocalised into a double bond (though they may act as bases at very low pH, being protonated at the oxygen), and pyrrole is not basic because the lone pair is delocalised as part of an aromatic ring.	<a href="https://en.wikipedia.org/wiki/Nitrogen#Chemistry_and_compounds">https://en.wikipedia.org/wiki/Nitrogen#Chemistry_and_compounds</a>
Organic_chemistry	Organic_compounds	Organophosphorus_compounds			Organophosphorus chemistry is the scientific study of the synthesis and properties of organophosphorus compounds, which are organic compounds containing phosphorus. They are used primarily in pest control as an alternative to chlorinated hydrocarbons that persist in the environment. Some organophosphorus compounds are highly effective insecticides, although some are extremely toxic to humans, including sarin and VX nerve agents.	<a href="https://en.wikipedia.org/wiki/Organophosphorus_chemistry">https://en.wikipedia.org/wiki/Organophosphorus_chemistry</a>
Organic_chemistry	Organic_compounds	Organosulfur_compounds			Organosulfur compounds are organic compounds that contain sulfur. They are often associated with foul odors, but many of the sweetest compounds known are organosulfur derivatives, e.g., saccharin. Nature abounds with organosulfur compounds-sulfur is vital for life. Of the 20 common amino acids, two (cysteine and methionine) are organosulfur compounds, and the antibiotics penicillin and sulfa drugs both contain sulfur. While sulfur-containing antibiotics save many lives, sulfur mustard is a deadly chemical warfare agent. Fossil fuels, coal, petroleum, and natural gas, which are derived from ancient organisms, necessarily contain organosulfur compounds, the removal of which is a major focus of oil refineries.	<a href="https://en.wikipedia.org/wiki/Organosulfur_chemistry">https://en.wikipedia.org/wiki/Organosulfur_chemistry</a>
Organic_chemistry	Organic_compounds	Reactive_intermediates			In chemistry, a reactive intermediate or an intermediate is a short-lived, high-energy, highly reactive molecule. When generated in a chemical reaction, it will quickly convert into a more stable molecule. Only in exceptional cases can these compounds be isolated and stored, e.g. low temperatures, matrix isolation. When their existence is indicated, reactive intermediates can help explain how a chemical reaction takes place.	<a href="https://en.wikipedia.org/wiki/Reactive_intermediate">https://en.wikipedia.org/wiki/Reactive_intermediate</a>
Organic_chemistry	Organic_compounds	Reactive_intermediates	Free_radicals	Carbenes	In organic chemistry, a carbene is a molecule containing a neutral carbon atom with a valence of two and two unshared valence electrons. The general formula is R-C-R' or R=C: where the R represents substituents or hydrogen atoms.	<a href="https://en.wikipedia.org/wiki/Carbene">https://en.wikipedia.org/wiki/Carbene</a>
Organic_chemistry	Organic_compounds	Reactive_intermediates	Free_radicals		In chemistry, a radical, also known as a free radical, is an atom, molecule, or ion that has at least one unpaired valence electron. In some exceptions, these unpaired electrons make radicals highly chemically reactive. Many radicals spontaneously dimerize. Most organic radicals have short lifetimes.	<a href="https://en.wikipedia.org/wiki/Radical_(chemistry)">https://en.wikipedia.org/wiki/Radical_(chemistry)</a>
Organic_chemistry	Organic_compounds	Spiro_compounds			In organic chemistry, spiro compounds are compounds that have at least two molecular rings with only one common atom. The simplest spiro compounds are bicyclic (having just two rings), or have a bicyclic portion as part of the larger ring system, in either case with the two rings connected through the defining single common atom. The one common atom connecting the participating rings distinguishes spiro compounds from other bicyclics: from isolated ring compounds like biphenyl that have no connecting atoms, from fused ring compounds like decalin having two rings linked by two adjacent atoms, and from bridged ring compounds like norbornane with two rings linked by two non-adjacent atoms.	<a href="https://en.wikipedia.org/wiki/Spiro_compound">https://en.wikipedia.org/wiki/Spiro_compound</a>
Organic_chemistry	Reagents_for_Organic_chemistry				In organic chemistry, the term "reagent" denotes a chemical ingredient (a compound or mixture, typically of inorganic or small organic molecules) introduced to cause the desired transformation of an organic substance. Examples include the Collins reagent, Fenton's reagent, and Grignard reagents.	<a href="https://en.wikipedia.org/wiki/Reagent">https://en.wikipedia.org/wiki/Reagent</a>
Organic_chemistry	Reagents_for_Organic_chemistry	Alkylating_agents			Alkylating agents are reagents for effecting alkylation. Alkyl groups can also be removed in a process known as dealkylation. Alkylating agents are often classified according to their nucleophilic or electrophilic character. In oil refining contexts, alkylation refers to a particular alkylation of isobutane with olefins. For upgrading of petroleum, alkylation produces a premium blending stock for gasoline. In medicine, alkylation of DNA is used in chemotherapy to damage the DNA of cancer cells. Alkylation is accomplished with the class of drugs called alkylating antineoplastic agents.	<a href="https://en.wikipedia.org/wiki/Alkylation">https://en.wikipedia.org/wiki/Alkylation</a>
Organic_chemistry	Reagents_for_Organic_chemistry	Protecting_groups			A protecting group or protective group is introduced into a molecule by chemical modification of a functional group to obtain chemoselectivity in a subsequent chemical reaction. It plays an important role in multistep organic synthesis.	<a href="https://en.wikipedia.org/wiki/Protecting_group">https://en.wikipedia.org/wiki/Protecting_group</a>
Organic_chemistry	Stereochemistry				Stereochemistry, a subdiscipline of chemistry, involves the study of the relative spatial arrangement of atoms that form the structure of molecules and their manipulation. The study of stereochemistry focuses on the relationships between stereoisomers, which by definition have the same molecular formula and sequence of bonded atoms (constitution), but differ in structural formula (the three-dimensional orientations of their atoms in space). For this reason, it is also known as 3D chemistry-the prefix "stereo-" means "three-dimensionality".	<a href="https://en.wikipedia.org/wiki/Stereochemistry">https://en.wikipedia.org/wiki/Stereochemistry</a>
Organic_chemistry	Stereochemistry	Isomerism			In chemistry, isomers are molecules or polyatomic ions with identical molecular formula - that is, same number of atoms of each element - but distinct arrangements of atoms in space. Isomerism is existence or possibility of isomers.	<a href="https://en.wikipedia.org/wiki/Isomer">https://en.wikipedia.org/wiki/Isomer</a>
Organic_chemistry	Substituents				A substituent is one or a group of atoms that replaces (one or more) atoms, thereby becoming a moiety in the resultant (new) molecule. (In organic chemistry and biochemistry, the terms substituent and functional group, as well as side chain and pendant group, are used almost interchangeably to describe those branches from the parent structure, though certain distinctions are made in polymer chemistry. In polymers, side chains extend from the backbone structure. In proteins, side chains are attached to the alpha carbon atoms of the amino acid backbone.)	<a href="https://en.wikipedia.org/wiki/Substituent">https://en.wikipedia.org/wiki/Substituent</a>