Describing Chemical Reactions Section Review

Chemical reaction

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A chemical reaction is a process that leads to the chemical transformation of one set of chemical substances to another. When chemical reactions occur, the atoms are rearranged and the reaction is accompanied by an energy change as new products are generated. Classically, chemical reactions encompass changes that only involve the positions of electrons in the forming and breaking of chemical bonds between atoms, with no change to the nuclei (no change to the elements present), and can often be described by a chemical equation. Nuclear chemistry is a sub-discipline of chemistry that involves the chemical reactions of unstable and radioactive elements where both electronic and nuclear changes can occur.

The substance (or substances) initially involved in a chemical reaction are called reactants...

Reaction mechanism

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A chemical mechanism is a theoretical conjecture that tries to describe in detail what takes place at each stage of an overall chemical reaction. The detailed steps of a reaction are not observable in most cases. The conjectured mechanism is chosen because it is thermodynamically feasible and has experimental support in isolated intermediates (see next section) or other quantitative and qualitative characteristics of the reaction. It also describes each reactive intermediate, activated complex, and transition state, which bonds are broken (and in what order), and which bonds are formed (and in what order). A complete mechanism must also explain the reason for the...

Chemical transport reaction

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In chemistry, a chemical transport reaction describes a process for purification and crystallization of non-volatile solids. The process is also responsible for certain aspects of mineral growth from the effluent of volcanoes. The technique is distinct from chemical vapor deposition, which usually entails decomposition of molecular precursors (e.g. $SiH_4 \rightarrow Si + 2\ H_2$) and which gives conformal coatings.

The technique, which was popularized by Harald Schäfer, entails the reversible conversion of nonvolatile elements and chemical compounds into volatile derivatives. The volatile derivative migrates throughout a sealed reactor, typically a sealed and evacuated glass tube heated in a tube furnace. Because the tube is under a temperature gradient, the volatile derivative reverts to the parent...

Haloform reaction

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In chemistry, the haloform reaction (also referred to as the Lieben haloform reaction) is a chemical reaction in which a haloform (CHX3, where X is a halogen) is produced by the exhaustive halogenation of an acetyl group (R−C(=O)CH3, where R can be either a hydrogen atom, an alkyl or an aryl group), in the presence of a base. The reaction can be used to transform acetyl groups into carboxyl groups (R−C(=O)OH) or to produce chloroform (CHCl3), bromoform (CHBr3), or iodoform (CHI3). Note that fluoroform (CHF3) can't be prepared in this way.

Acta Crystallographica Section A

Cambridge Structural Database, Ceramic Abstracts, Chemical Abstracts, Crossref, the Current Chemical Reactions Database, Google Scholar, the Inorganic Crystal

Acta Crystallographica Section A: Foundations and Advances is a peer-reviewed structural science journal published bimonthly by the International Union of Crystallography. It contains papers describing fundamental developments in structural science. It was founded in 1967 when Acta Crystallographica was split into two sections and was initially titled Acta Crystallographica Section A: Crystal Physics, Diffraction, Theoretical and General Crystallography. The journal's name changed in 1982 to Acta Crystallographica Section A: Foundations of Crystallography. The journal adopted its current title in 2013.

Henry reaction

catalytic carbon-carbon bond-forming reactions and catalytic asymmetric nitroaldol reactions". Journal of the American Chemical Society. 114 (11): 4418–4420.

The Henry reaction is a classic carbon–carbon bond formation reaction in organic chemistry. Discovered in 1895 by the Belgian chemist Louis Henry (1834–1913), it is the combination of a nitroalkane and an aldehyde or ketone in the presence of a base to form β-nitro alcohols. This type of reaction is also referred to as a nitroaldol reaction (nitroalkane, aldehyde, and alcohol). It is nearly analogous to the aldol reaction that had been discovered 23 years prior that couples two carbonyl compounds

to form β-hydroxy carbonyl compounds known as "aldols" (aldehyde and alcohol). The Henry reaction is a useful technique in the area of organic chemistry due to the synthetic utility of its corresponding products, as they can be easily converted to other useful synthetic intermediates. These conversions...

Multiple chemical sensitivity

idiosyncratic reactions, classified under the heading T78, Unerwünschte Nebenwirkungen, anderenorts nicht klassifiziert ("adverse reactions, not otherwise

Multiple chemical sensitivity (MCS) is an unrecognized and controversial diagnosis characterized by chronic symptoms attributed to exposure to low levels of commonly used chemicals. Symptoms are typically vague and non-specific. They may include fatigue, headaches, nausea, and dizziness.

Recent imaging studies have shown that it is likely a neurological condition.

MCS is a chronic disease that requires ongoing management. In the long term, about half of people with MCS get better and about half continue to be affected, sometimes severely.

American Chemical Society

scientific information through its peer-reviewed scientific journals, national conferences, and the Chemical Abstracts Service. Its publications division

The American Chemical Society (ACS) is a scientific society based in the United States that supports scientific inquiry in the field of chemistry. Founded in 1876 at New York University, the ACS currently has more than 155,000 members at all degree levels and in all fields of chemistry, chemical engineering, and related fields. It is one of the world's largest scientific societies by membership. The ACS is a 501(c)(3) non-profit organization and holds a congressional charter under Title 36 of the United States Code. Its headquarters are located in Washington, D.C., and it has a large concentration of staff in Columbus, Ohio.

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Nuclear chain reaction

chain reactions were proposed. It was understood that chemical chain reactions were responsible for exponentially increasing rates in reactions, such

In nuclear physics, a nuclear chain reaction occurs when one single nuclear reaction causes an average of one or more subsequent nuclear reactions, thus leading to the possibility of a self-propagating series or "positive feedback loop" of these reactions. The specific nuclear reaction may be the fission of heavy isotopes (e.g.,

uranium-235, 235U). A nuclear chain reaction releases several million times more energy per reaction than any chemical reaction.

Ritter reaction

Zil'berman, E. N. (1960). "Some reactions of nitriles with the formation of a new nitrogen–carbon bond". Russian Chemical Reviews. 29 (6): 331–340. Bibcode:1960RuCRv

The Ritter reaction (sometimes called the Ritter amidation) is a chemical reaction that transforms a nitrile into an N-alkyl amide using various electrophilic alkylating reagents. The original reaction formed the alkylating agent using an alkene in the presence of a strong acid.