

Chapter 4 Chemistry

Wine chemistry

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Wine is a complex mixture of chemical compounds in a hydro-alcoholic solution with a pH around 4.

The chemistry of wine and its resultant quality depend on achieving a balance between three aspects of the berries used to make the wine: their sugar content, acidity and the presence of secondary compounds. Vines store sugar in grapes through photosynthesis, and acids break down as grapes ripen. Secondary compounds are also stored in the course of the season. Anthocyanins give grapes a red color and protection against ultraviolet light. Tannins add bitterness and astringency which acts to defend vines against pests and grazing animals.

Environmental factors such as soil, rainfall and

fog affect flavor in ways that can be described collectively as "character" or the French term "terroir". As...

Bioinorganic chemistry

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Bioinorganic chemistry is a field that examines the role of metals in biology. Bioinorganic chemistry includes the study of both natural phenomena such as the behavior of metalloproteins as well as artificially introduced metals, including those that are non-essential, in medicine and toxicology. Many biological processes such as respiration depend upon molecules that fall within the realm of inorganic chemistry. The discipline also includes the study of inorganic models or mimics that imitate the behaviour of metalloproteins.

As a mix of biochemistry and inorganic chemistry, bioinorganic chemistry is important in elucidating the implications of electron-transfer proteins, substrate bindings and activation, atom and group transfer chemistry as well as metal properties in biological

chemistry...

Quantum chemistry

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Quantum chemistry, also called molecular quantum mechanics, is a branch of physical chemistry focused on the application of quantum mechanics to chemical systems, particularly towards the quantum-mechanical calculation of electronic contributions to physical and chemical properties of molecules, materials, and solutions at the atomic level. These calculations include systematically applied approximations intended to make calculations computationally feasible while still capturing as much information about important contributions to the computed wave functions as well as to observable properties such as structures, spectra, and thermodynamic properties. Quantum chemistry is also concerned with the computation of quantum effects on molecular dynamics and chemical kinetics.

Chemists rely heavily...

Computational chemistry

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Computational chemistry is a branch of chemistry that uses computer simulations to assist in solving chemical problems. It uses methods of theoretical chemistry incorporated into computer programs to calculate the structures and properties of molecules, groups of molecules, and solids. The importance of this subject stems from the fact that, with the exception of some relatively recent findings related to the hydrogen molecular ion (dihydrogen cation), achieving an accurate quantum mechanical depiction of chemical systems analytically, or in a closed form, is not feasible. The complexity inherent in the many-body problem exacerbates the challenge of providing detailed descriptions of quantum mechanical systems. While computational results normally complement information obtained by chemical...

Amateur chemistry

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Amateur chemistry or home chemistry is the pursuit of chemistry as a private hobby. Amateur chemistry is usually done with whatever chemicals are available at disposal at the privacy of one's home. It should not be confused with clandestine chemistry, which involves the illicit production of controlled drugs.[a] Notable amateur chemists include Oliver Sacks and Sir Edward Elgar.

List of publications in chemistry

This is a list of publications in chemistry, organized by field. Some factors that correlate with publication notability include: Topic creator – A publication

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Some factors that correlate with publication notability include:

Topic creator – A publication that created a new topic.

Breakthrough – A publication that changed scientific knowledge significantly.

Influence – A publication that has significantly influenced the world or has had a massive impact on the teaching of chemistry.

Solid-state chemistry

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Solid-state chemistry, also sometimes referred as materials chemistry, is the study of the synthesis, structure, and properties of solid phase materials. It therefore has a strong overlap with solid-state physics, mineralogy, crystallography, ceramics, metallurgy, thermodynamics, materials science and electronics with a focus on the synthesis of novel materials and their characterization. A diverse range of synthetic techniques, such as the ceramic method and chemical vapour deposition, make solid-state materials. Solids can be classified as crystalline or amorphous on basis of the nature of order present in the arrangement of their constituent particles. Their elemental compositions, microstructures, and physical properties can be characterized through a variety of analytical methods.

Combinatorial chemistry

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Combinatorial chemistry comprises chemical synthetic methods that make it possible to prepare a large number (tens to thousands or even millions) of compounds in a single process. These compound libraries can be made as mixtures, sets of individual compounds or chemical structures generated by computer software. Combinatorial chemistry can be used for the synthesis of small molecules and for peptides.

Strategies that allow identification of useful components of the libraries are also part of combinatorial chemistry. The methods used in combinatorial chemistry are applied outside chemistry, too.

Mathematical chemistry

York, UK, 2016; Chapter 15, 332-351. [1] A review of the book by Ivan Gutman, Oskar E. Polansky, "Mathematical Concepts in Organic Chemistry" in SIAM Review

Mathematical chemistry is the area of research engaged in novel applications of mathematics to chemistry; it concerns itself principally with the mathematical modeling of chemical phenomena. Mathematical chemistry has also sometimes been called computer chemistry, but should not be confused with computational chemistry.

Major areas of research in mathematical chemistry include chemical graph theory, which deals with topology such as the mathematical study of isomerism and the development of topological descriptors or indices which find application in quantitative structure-property relationships; and chemical aspects of group theory, which finds applications in stereochemistry and quantum chemistry. Another important area is molecular knot theory and circuit topology that describe the topology...

It Chapter Two

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Muschiatti from a screenplay by Gary Dauberman. It is the sequel to It (2017) and the second of a two-part adaptation of the 1986 novel It by Stephen King. The film stars James McAvoy, Jessica Chastain, Bill Hader, Isaiah Mustafa, Jay Ryan, James Ransone, Andy Bean, and Bill Skarsgård as Pennywise the Dancing Clown. Set 27 years after the events of the previous film, the story centers on the Losers Club and their relationships as they reunite to destroy It once and for all.

Talks for an It sequel began in February 2016. By September 2017, New Line Cinema announced that the film would be released in September 2019, with Dauberman writing the script and Muschiatti to direct. On a \$79 million budget, filming took place...

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