

Organic chemistry assignment



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Organic chemistry Organic chemistry is one of the ‘branches’ of chemistry and is seen as distinct from other branches, such as inorganic and physical chemistry. It can be described as the chemistry living processes (often referred to as biochemistry) but extends beyond that. It focuses almost entirely on the chemistry of covalently bonded carbon molecules and as well as life processes, it includes the chemistry of other types of compounds, including plastics, petrochemicals, drugs and paint. The early chemists didn’t think they would ever be able to make the sort of chemicals involved in living processes but they were wrong.

For example, today very complex chemicals used in the manufacture of drugs can be made and then their structures modified to achieve improvements in their effectiveness. An understanding of organic chemistry can be developed from knowledge of the structure of a carbon atom and how it can combine with other carbon atoms by forming covalent bonds. Alkane are hydrocarbons, which are molecules that contain only carbon and hydrogen. They are made up of carbon atoms linked together by only single covalent bonds and are known as saturated hydrocarbons.

The simplest acyclic alkene, with only one double bond and no other functional groups, known as mono-alkenes, form a homologous series of hydrocarbons with the general formula C_nH_{2n} . They have two hydrogen atoms less than the corresponding alkane (with the same number of carbon atoms). The simplest alkene is ethylene (Ethen), which has the International Union of Pure and Applied Chemistry (IUPAC) name ethene. In the petrochemical industry alkenes are often called olefins. For bridged alkenes, the Bredt’s rule states that a double bond cannot be placed at the

bridgehead of a bridged ring system, unless the rings are large enough (8 or more atoms).

Aromatic compounds are often drawn as cyclic alkenes, but their structure and properties are different and they are not considered to be alkenes.

Liquid Homologous series In chemistry, a homologous series is a series of compounds with a similar general formula, usually varying by a single parameter such as the length of a carbon chain. Examples of such series are the straight-chained alkanes (paraffin), and some of their derivatives (such as the primary alcohols, aldehydes, and (mono)carboxylic acids). Compounds within a homologous series typically have a fixed set of functional groups that gives them similar chemical and physical properties. For example, the series of primary straight-chained alcohols has a hydroxyl group at the end of the carbon chain. These properties typically change gradually along the series, and the changes can often be explained by mere differences in molecular size and mass. The name “homologous series” is also often used for any collection of compounds that have similar structures or include the same functional group, such as the alkanes (straight and branched), the alkenes (olefins), the carbohydrates, etc.

However, if the members cannot be arranged in a linear order by a single parameter, the collection may be better called a “chemical family” or “class of homologous compounds” than a “series”. **Alcohols** Alcohols are the family of compounds that contain one or more hydroxyl (-OH) groups attached to a single bonded carbon. Alcohols are represented by the general formula R-OH. Alcohols are important in organic chemistry because they can be converted to and from many other types of compounds. Reactions with

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alcohols fall into two different categories. Reactions can cleave the R-O bond or they can cleave the O-H bond.