

Organic Chemistry

Before we start with organic chemistry in detail I will advise you to review some physical chemistry aspects like bonding, periodic chemistry, atomic structure, rate of reaction, and thermochemistry.

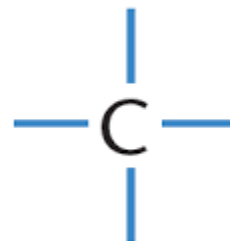
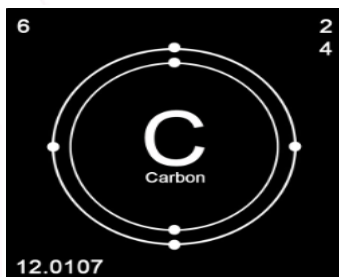
Definition:

The branch of chemistry, originally limited to substances found only in living organisms, deals with the compounds of carbon. This definition was partially correct. The correct definition of Organic Chemistry was given by a German Scientist known as Kekule who defined Organic Chemistry as the study of compounds containing carbon with the exception of simple compounds e.g. carbonates (CO_3^{2-}), carbon dioxide (CO_2), Cyanate (CN^-) and carbon monoxide (CO).

Characteristic of Carbon

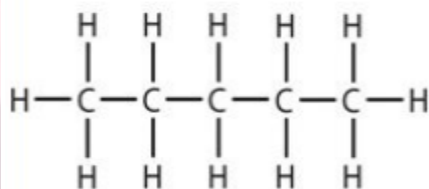
Why is carbon so important in organic chemistry? This is because of the unique properties of Carbon like

1. Carbon is tetravalent (it has four electrons in its valence shell)

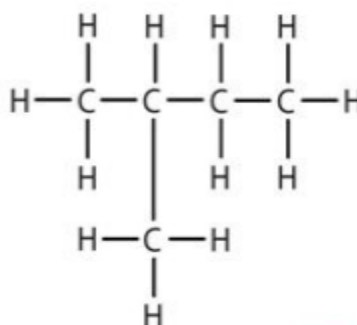


2. Carbon can undergo Catenation that is it can form long chains.

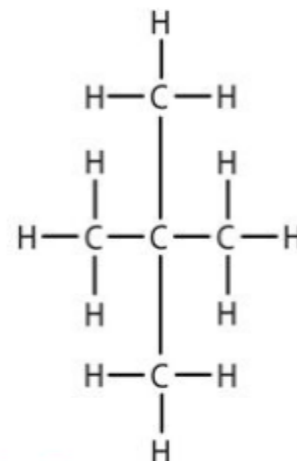
Catenation



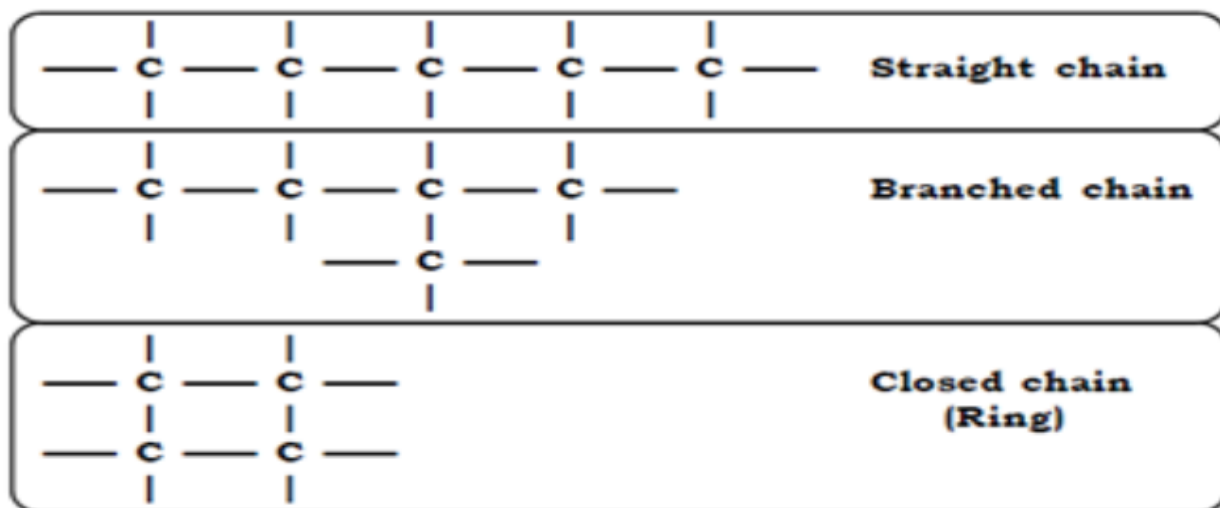
Unbranched Chain



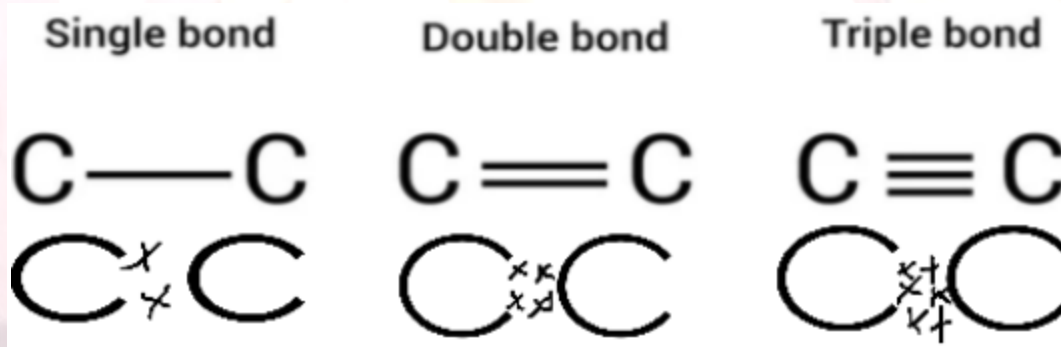
Branched Chain



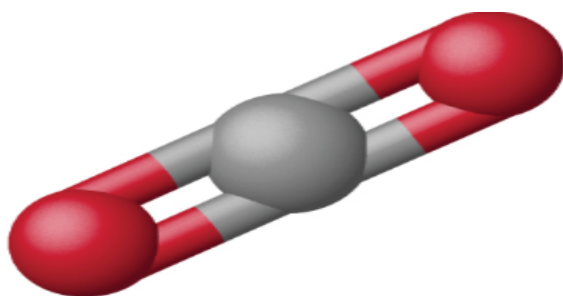
3. Carbon can form different types of chains. That is a straight chain, branched chain, and ring/cyclic chain.



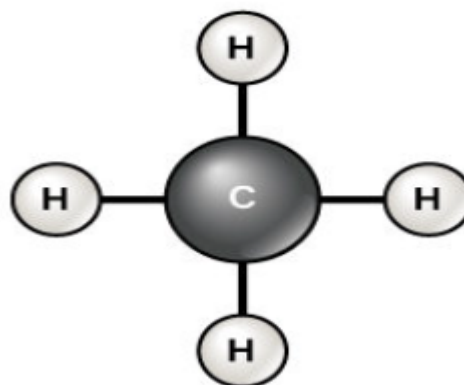
4. Carbon can form different types of bonds that is either single bond (when it has two electrons between the two elements), double bond (when it has four electrons between the two elements), and a triple bond (when it has four electrons between the six elements).



5. Carbon can bond with different types of element except group 18/8 (the noble/inert gases) reason is they are stable that is they have a complete filled valence shell(outermost shell)



carbon dioxide
CO₂



Characteristics of Organic Compound

1. They always undergo a covalent bond (that is the equal sharing of electrons between two nonmetals)
2. These are soluble in organic solvents and mostly insoluble in water.
3. These compounds are combustible in nature.
4. Most properties of the compounds are decided by the functional group attached to them.
5. They have low melting and boiling point.
6. They are volatile.

