**What is Hybridization?**

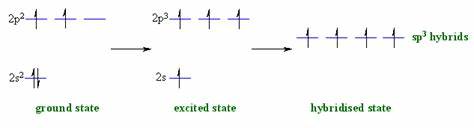
Hybridisation is the redistribution of the energy of orbitals of individual atoms to give new orbitals of equivalent energy. The new orbitals which are formed are called hybrid orbitals.

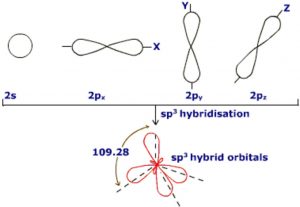
**Types of Hybridisation**

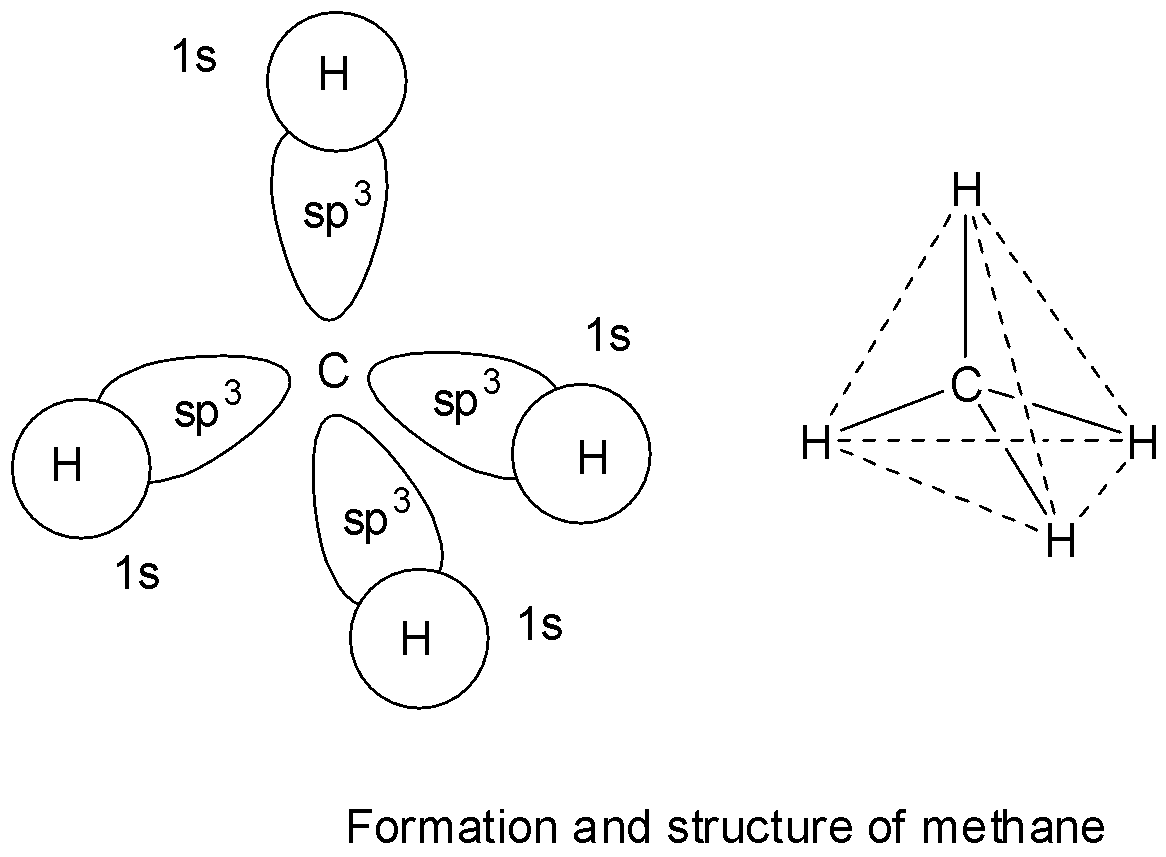
The following are the types of hybridisation:

**1) sp3– Hybridisation**

In such hybridisation one s- and three p-orbitals are mixed to form four sp3–hybrid orbitals having same shape and energy. The angle between any two sp3 hybrid orbital is 109 0 28/.



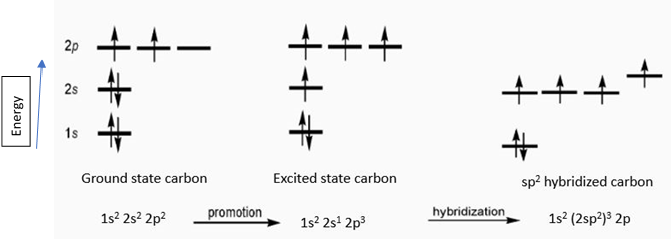


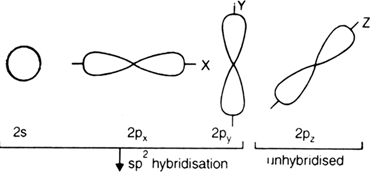


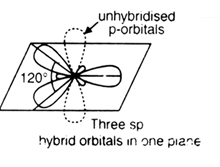
**2) sp2– Hybridisation**

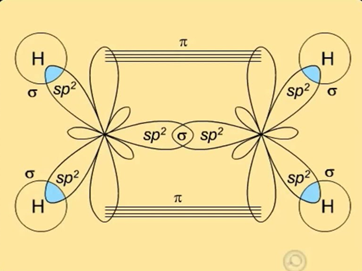
In such hybridisation one s- and to p-orbitals are mixed form three sp2– hybrid orbitals. The three sp2 hybrid orbitals are directed towards the three corner of a planar triangle where the angle between any two orbitalis 120 0

**Formation of C2H4  Molecules**

In C2H4 molecule carbon atoms are sp2-hybridised and one 2p-orbital remains unhybridised. This forms p-bond while sp2 –hybrid orbitals form sigma- bonds

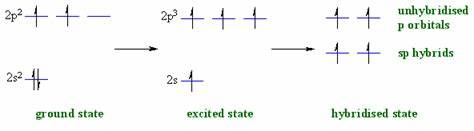


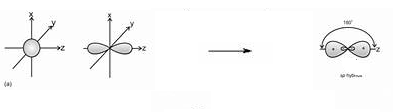


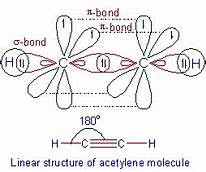


**3) sp – Hybridisation**

In such hybridisation one s- and one p-orbital are mixed to form two sp – hybrid orbitals, having a linear structure with bond angle 180 degrees.







**A Solved Question for You**

Q: Discuss the rules of hybridisation. Are they important to the study of the concept as a whole?

Ans: Yes, the rules of hybridisation are very important to be studied before diving into the subject of hybridisation. Hence, these rules are essential to the understanding of the concepts of the topic. The following are the rules related to hybridisation:

* Orbitals of only a central atom would undergo hybridisation.
* The orbitals of almost the same energy level combine to form hybrid orbitals.
* The numbers of atomic orbitals mixed together are always equal to the number of hybrid orbitals.
* During hybridisation, the mixing of a number of orbitals is as per requirement.
* The hybrid orbitals scattered in space and tend to the farthest apart.
* Hybrid bonds are stronger than the non-hybridised bonds.