

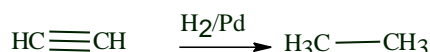
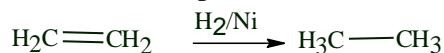
Unit-II (Alkanes)

1). Methods of preparation of alkanes

(1) From unsaturated hydrocarbons

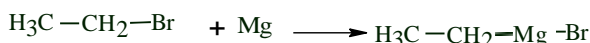
The process of addition of hydrogen to an unsaturated compound in presence of a catalyst is called **hydrogenation or reduction**.

Alkenes and alkynes add one and two molecules of hydrogen in presence of a catalyst such as nickel, platinum, palladium to form alkanes. This hydrogenation of unsaturated hydrocarbons using ordinary nickel at a temperature of about 523-573 K is commonly known as **Sabatier and Sendern's reaction**.

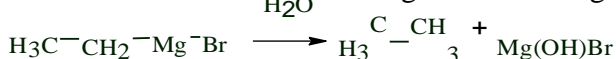


2) From alkyl halides (Grignard reagent)

Alkyl halide especially bromide and iodide react with magnesium metal in presence of dry ethoxyethane to form alkyl magnesium halides. These are commonly known as **Grignard's reagent**.

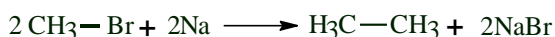


Since carbon is more electronegative than magnesium, therefore, C-Mg bond is quite polar.



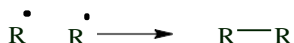
3). Wurtz reaction: Wurtz reaction is a convenient method for the preparation of symmetrical alkanes i.e. alkanes containing even number of carbon atoms.

When an alkyl halide is treated with metallic sodium in presence of dry di ether, a symmetrical alkane, containing double the number of carbon atoms present in the alkyl group is formed. This reaction is called **wurtz reaction**.

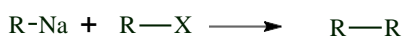
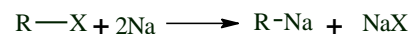


Mechanism

1). Through the intermediate formation of free radicle.



2). Through the intermediate formation of Organo metallic compound.



If two different alkyl halides are used to prepare an alkane with odd number of carbon atoms, a mixture of three alkanes is actually produced.



Wurtz- Fittig Reaction

In which Aryl halide reacts with alkyl halides and sodium metal in the presence of dry ether to form substituted Aromatic compounds.

