

CHAPTER 13

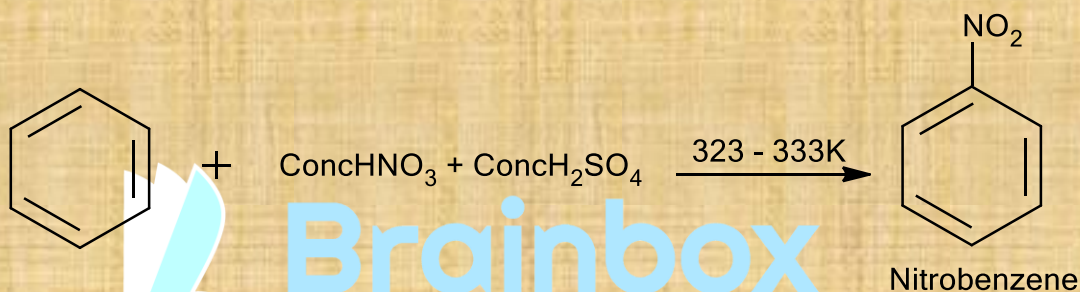
HYDROCARBONS

Chemical properties:

Benzene readily undergoes electrophilic substitution reaction, because of high electron density.

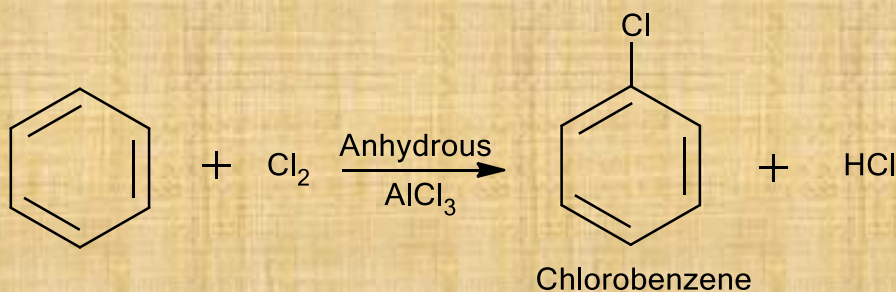
Nitration:

When benzene is treated with nitration mixture (Mixture of concentrated H_2SO_4 and concentrated HNO_3), it undergoes nitration to give nitro benzene.



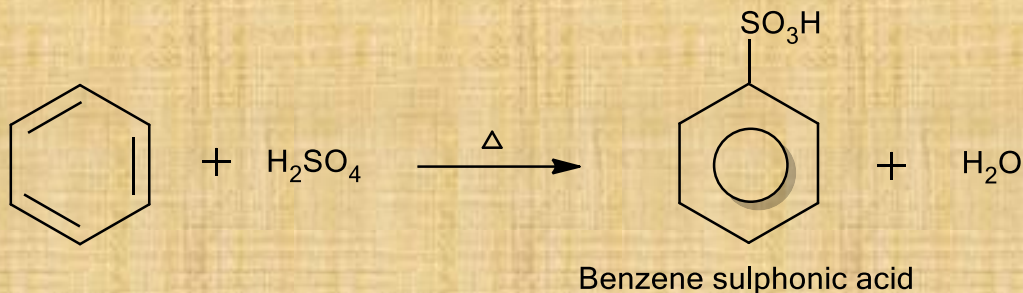
Halogenation:

Arenes when treated with halogen in presence of a Lewis acid catalyst like AlCl_3 , FeCl_3 , FeBr_3 etc. undergoes halogenation.



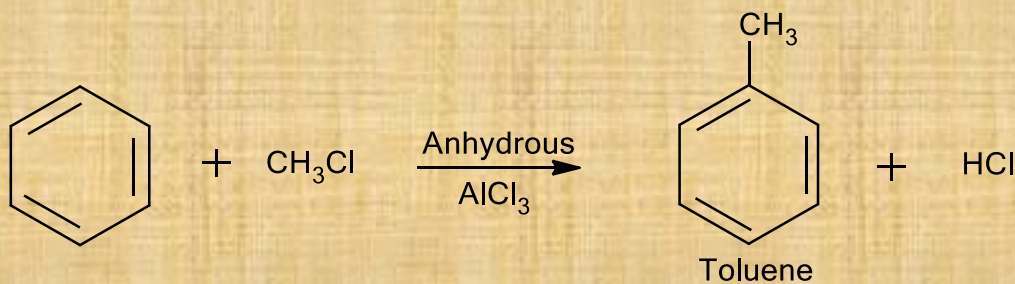
Sulphonation:

Arenes when treated with fuming sulphuric acid undergoes sulphonation.



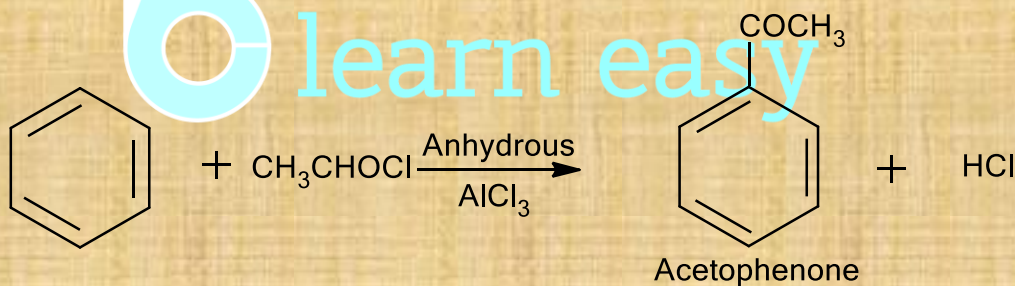
Friedel – Craft’s alkylation:

Arenes when treated with alkyl halides in presence of anhydrous AlCl_3 undergoes alkylation.



Friedel – Craft’s acylation:

Arenes when treated with acyl chloride (CH_3COCl) or acetic anhydride, undergoes acylation.

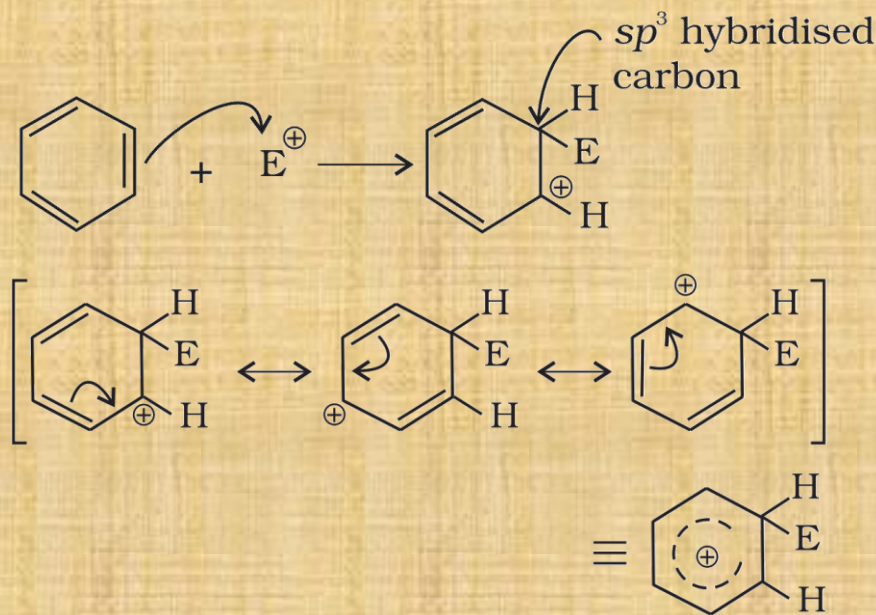


- Above reactions are supposed to proceed via following three steps.

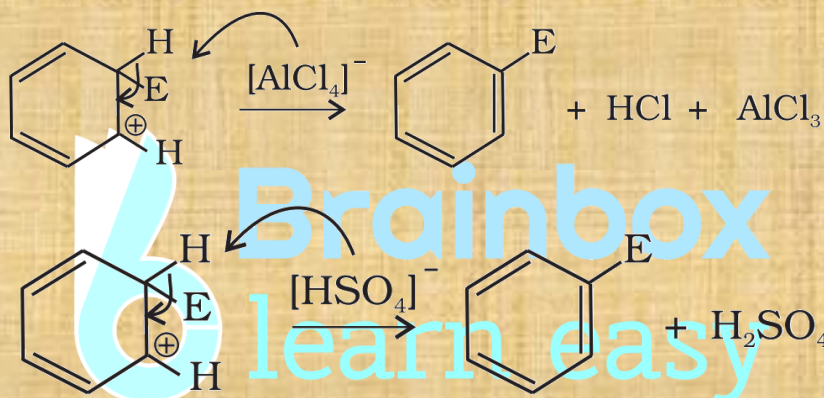
a. Generation of electrophile:



b. Formation carbocation intermediate:



c. Removal of proton:



Addition reactions:

Benzene undergoes hydrogenation at high temperature and pressure to give cyclohexane.

