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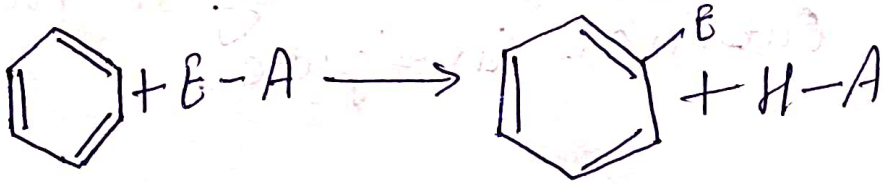
ELECTROPHILIC AROMATIC SUBSTITUTION REACTION

Introduction :

Aromatic hydrocarbons are known generally as arenes. An aryl group is one derived from an arene by removal of a hydrogen atom and its symbol is Ar—. Thus, arenes are designated ArH just as alkanes are designated RH.

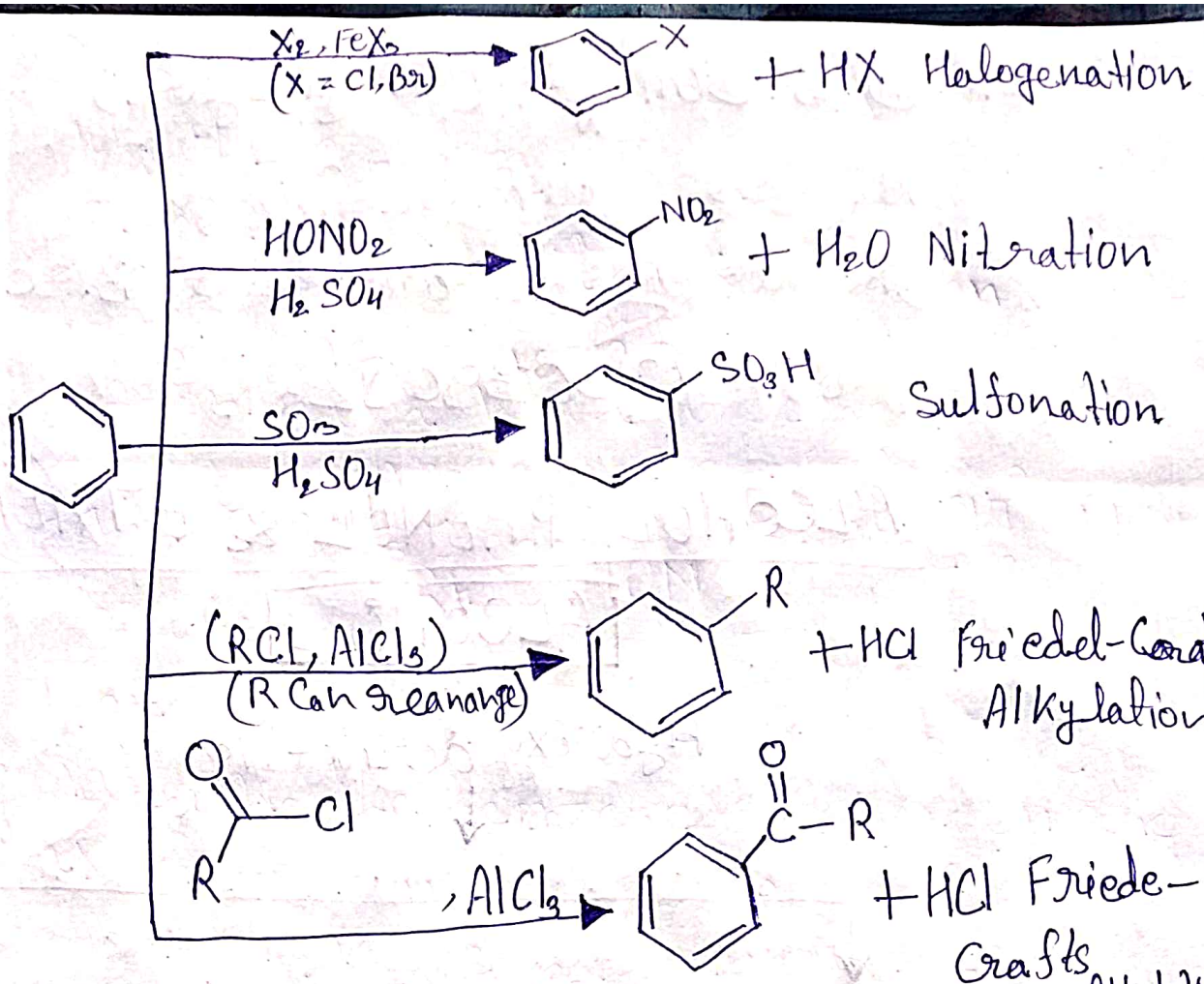
The most characteristic reactions of benzenoid arenes are the substitution reactions that occur when they react with electrophilic reagents. These reactions are of the general type shown below.

$$Ar-H + E-A \longrightarrow Ar-E + H-A$$



The electrophiles are either a positive ion (E^+) or some other electron-deficient species with a large partial positive charge. For example, benzene can be brominated when it reacts with bromine in the presence of $FeBr_3$. Bromine and $FeBr_3$ react to produce positive bromine ions, Br^+. These positive bromine ions act as electrophilic and attack the benzene ring, replacing one of the hydrogen atoms in a reaction that is called an ~~electrophilic~~ electrophilic aromatic substitution (EAS).

Electrophilic aromatic substitutions allow the direct introduction of a wide variety of groups into an aromatic ring, and because of this they provide synthetic routes to many important compounds. The five electrophilic aromatic substitutions that we shall study in this chapter are outlined in figure.



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