

REACTION OF BENZENE

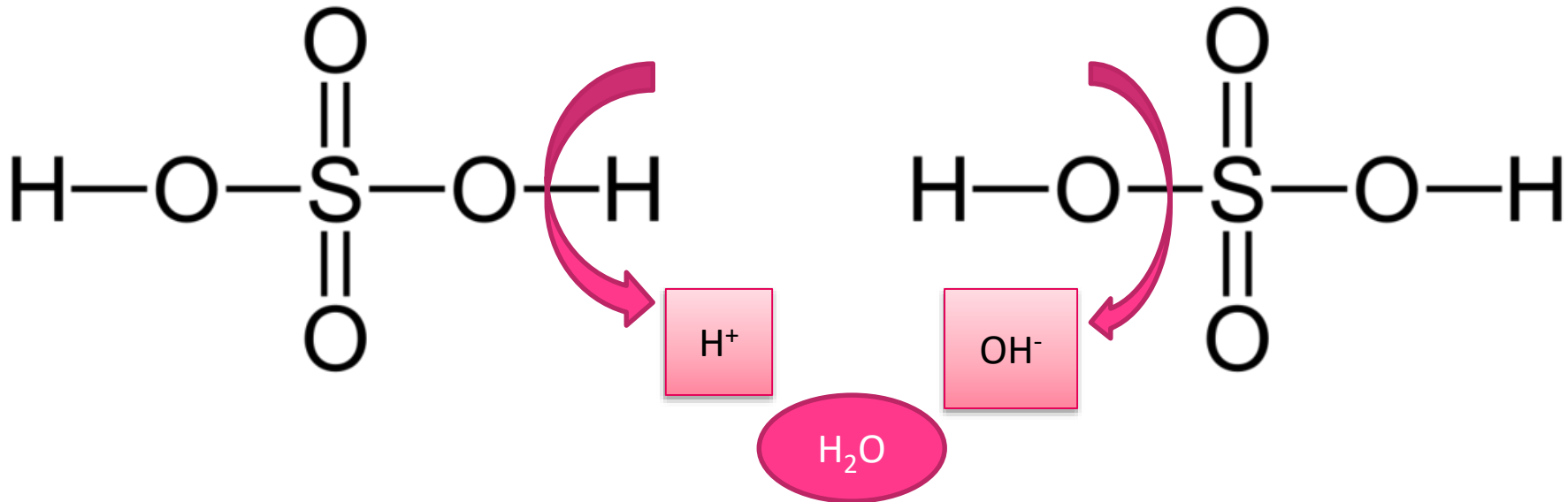
- NITRATION
- SULPHONATION
- HALOGENATION
- FRIDEL CRAFT ALKYLATION & ACYLATION

SULPHONATION

- Sulphonation of benzene is a chemical process where a sulphonic acid group SO_3H is added to benzene ring
- Sulphonation can be done in presence of conc. H_2SO_4 or $\text{H}_2\text{S}_2\text{O}_7$ (oleum)
- 2 molecules of concentrated sulphuric acid are required

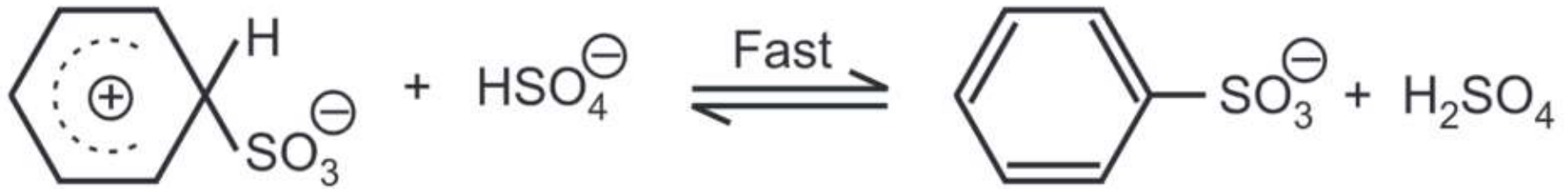
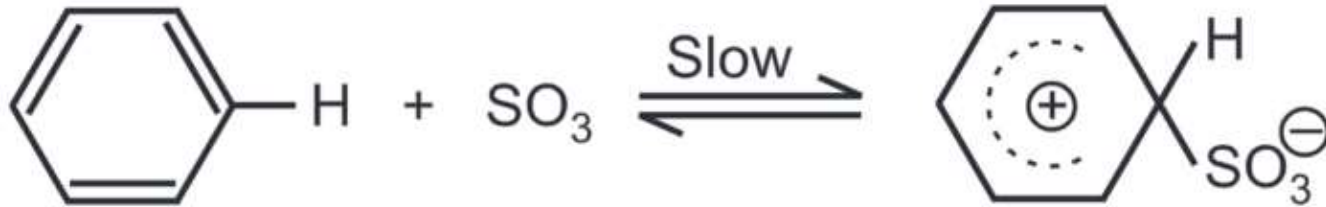
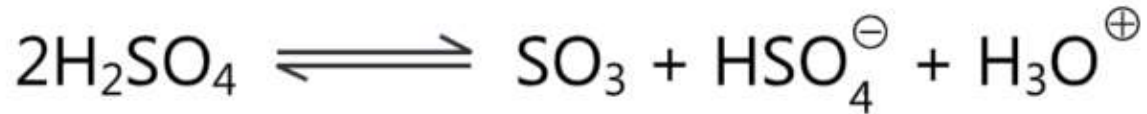
SULPHONATION MECHANISM

- 1 molecule of H_2SO_4 donates H^+ ion while other releases OH^-
- This together forms H_2O
- Back bonding between hydrogen and sulphur is also possible

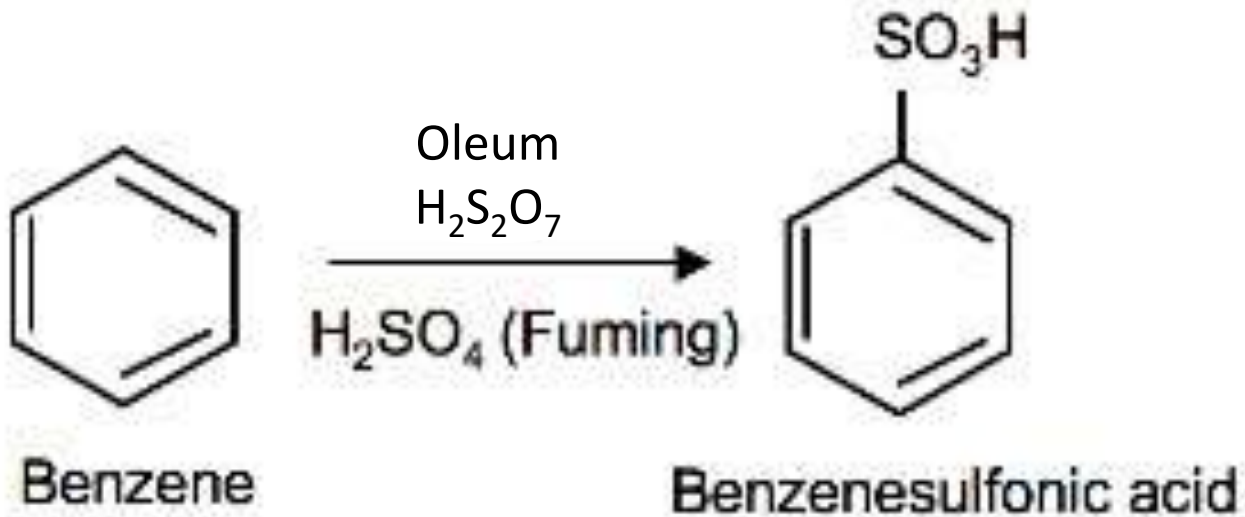


SULPHONATION

- Now, SO_3H is left which attacks the benzene ring and forms benzenesulphonic acid



SULPHONATION



SULPHONATION APPLICATION

- One common application is in the production of detergents and cleaning agents. The sulfonic acid group added to benzene enhances its solubility in water, making it useful in formulating surfactants for cleaning purposes.
- It is also used in the synthesis of dyes, pharmaceuticals, and certain types of polymers
- Benzene sulphonation has a variety of applications beyond detergents and cleaning agents.
- It is commonly used in the production of sulfonated aromatic compounds, which are used as intermediates in the synthesis of various chemicals, including dyes, pigments, and pharmaceuticals.
- Additionally, benzene sulphonation plays a role in the production of certain types of resins, plasticizers, and even flavors and fragrances. It's a versatile process with many practical uses.