

**B.Sc. Semester-II
Core Course-III (CC-III)
Organic Chemistry-I**



IV. Aromatic Hydrocarbons

6. Nitration and Sulfonation of Aromatic Ring



Dr. Rajeev Ranjan
University Department of Chemistry
Dr. Shyama Prasad Mukherjee University, Ranchi

IV Aromatic Hydrocarbons

10 Lectures

Aromaticity: Hückel's rule, aromatic/anti-aromatic/non-aromatic character of arenes, cyclic carbocations/carbanions and heterocyclic compounds with suitable examples.

Electrophilic aromatic substitution: Halogenation, Nitration, Sulphonation and Friedel-Craft's alkylation/acylation with their mechanism. Directing effects of mono-functional groups.

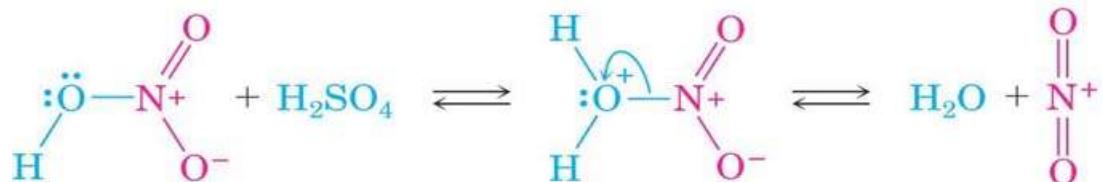
Coverage:

1. Nitration and Sulfonation of Aromatic Ring

Nitration of Aromatic Ring

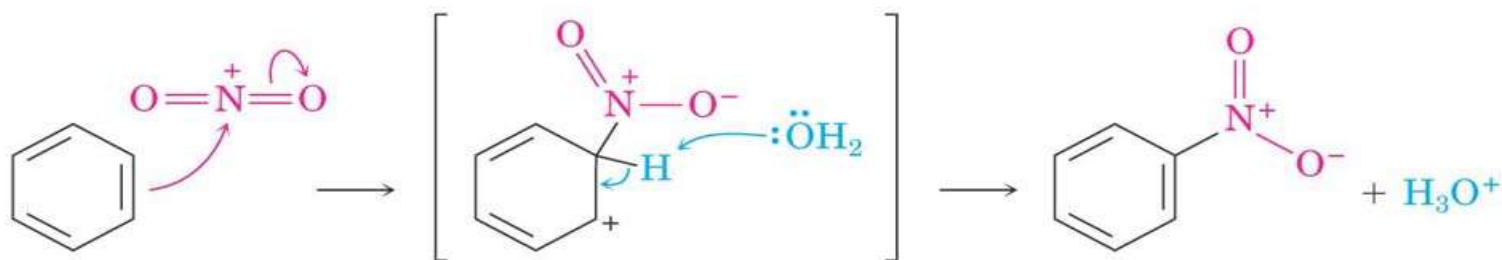
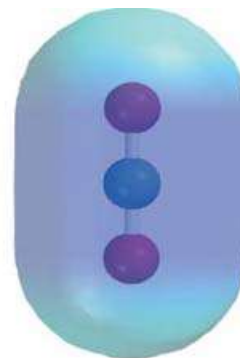
- The combination of nitric acid and sulfuric acid produces NO_2^+ (nitronium ion)
- The reaction with benzene produces nitrobenzene

Mechanism:



Nitric acid

Nitronium ion

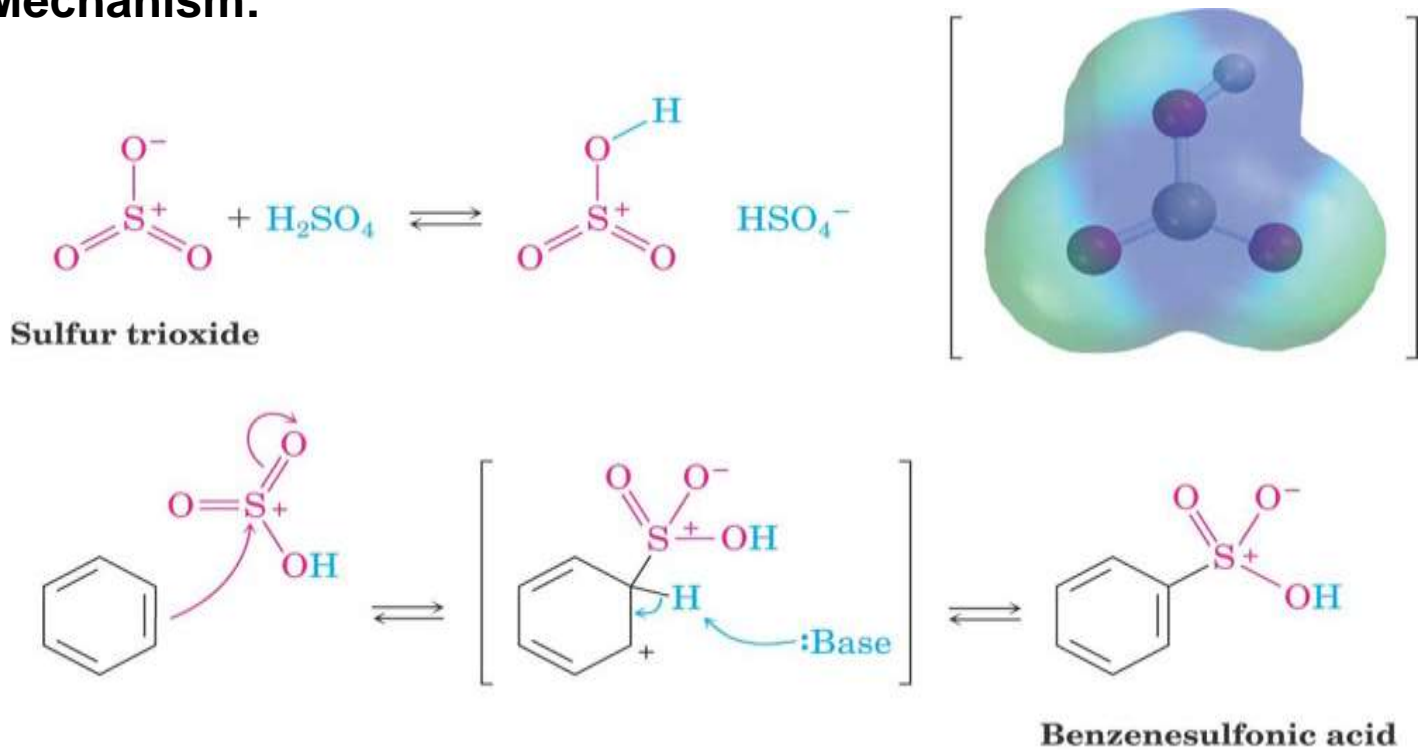


Nitrobenzene

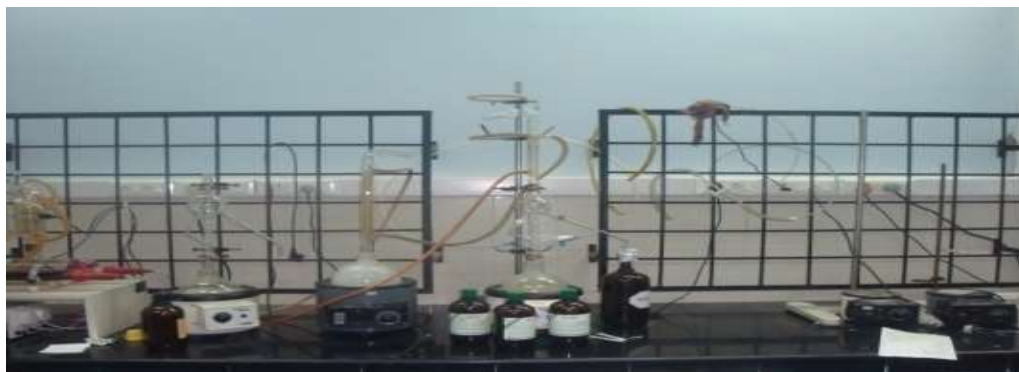
Sulfonation of Aromatic Ring

- Substitution of H by SO_3 (sulfonation)
- Reaction with a mixture of sulfuric acid and SO_3
- Reactive species is sulfur trioxide or its conjugate acid
- Reaction occurs via Wheland intermediate and is reversible

Mechanism:



Thank You



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