

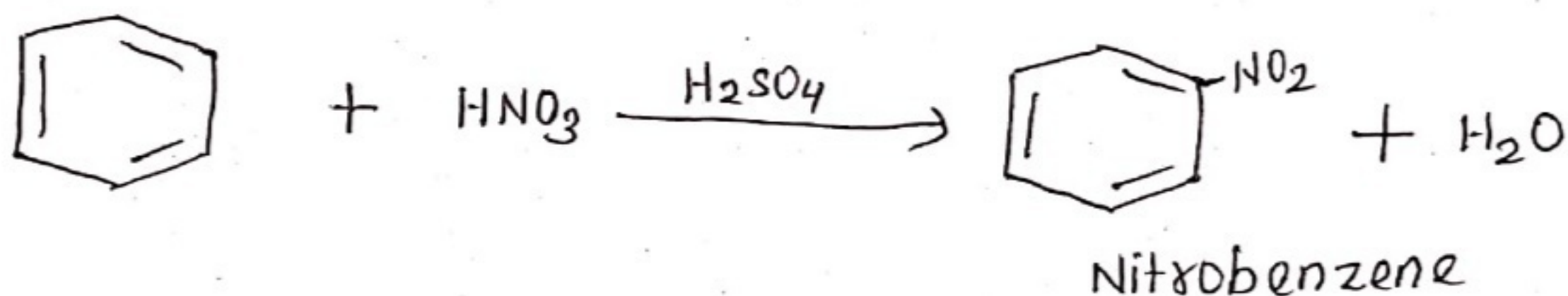
27-04-2020 (LECTURE - 5)

Deg-II (H&S)

Topic - Nitration & Sulphonation of Benzene

NITRATION OF BENZENE

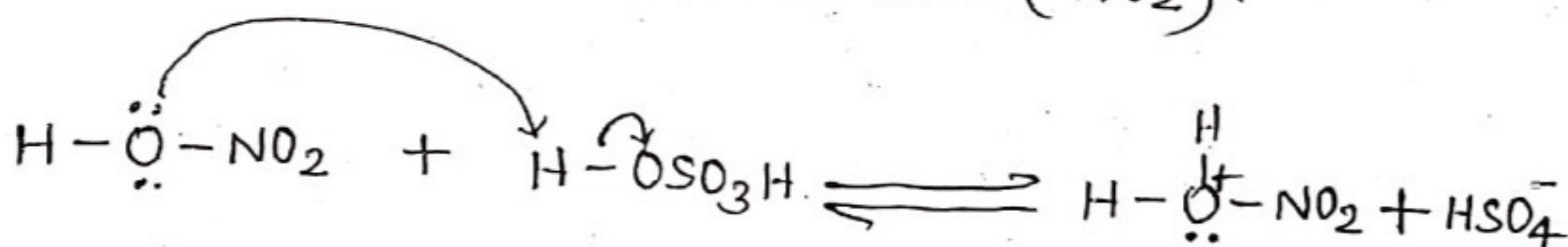
Benzene reacts with concentrated HNO_3 in the presence of conc. H_2SO_4 as a catalyst.



Mechanism

Step 1.

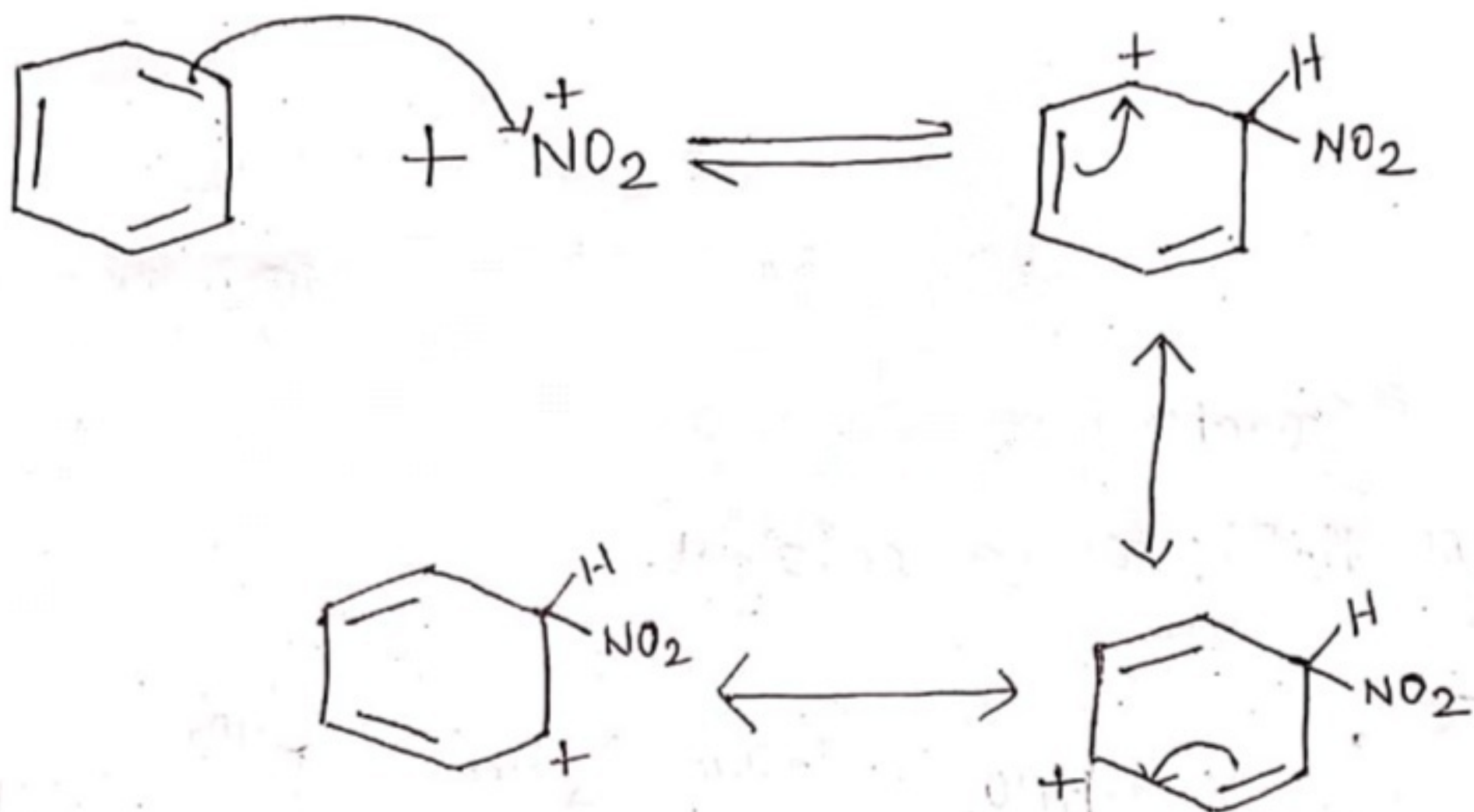
Formation of nitronium ion (NO_2^+).



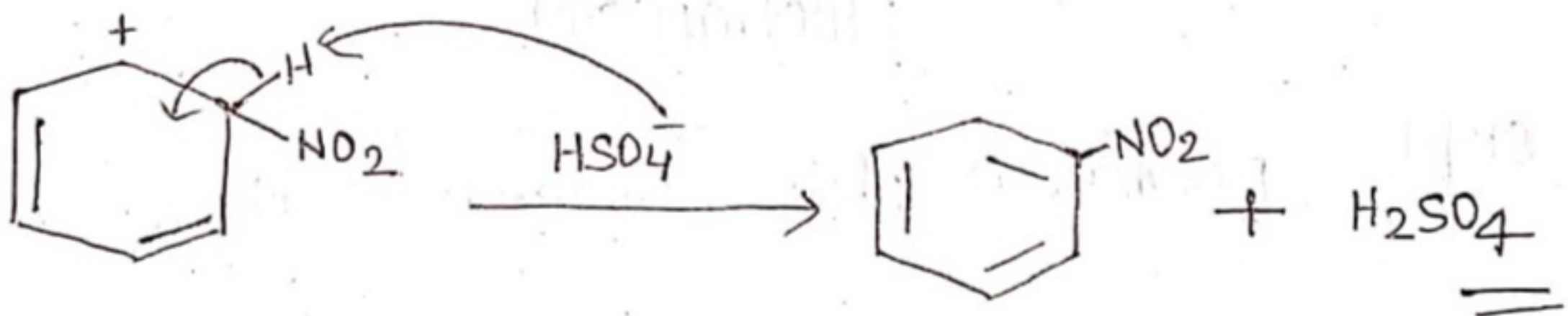
Nitronium
ion

Electrophilic Substitution Reaction Continued

Step 2. The electrophile attacks the benzene ring to form carbocation.



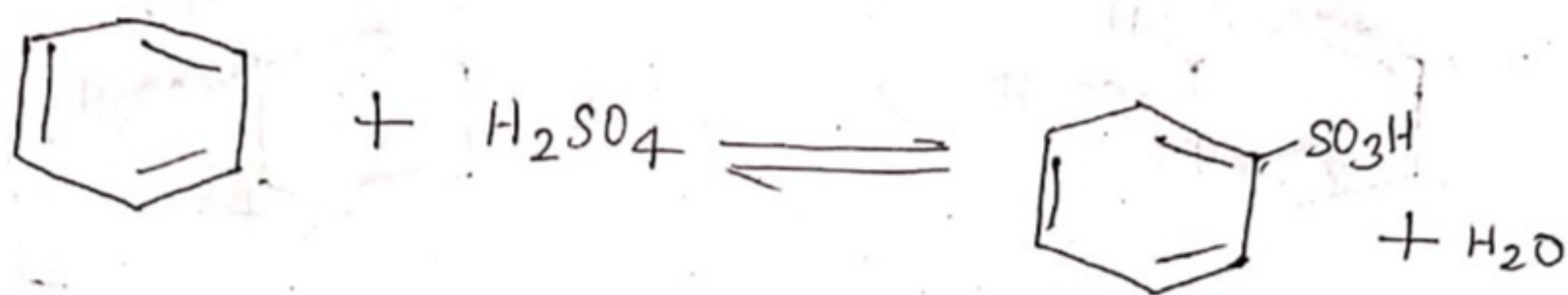
Step 3. Loss of proton yields nitrobenzene.



*** Nitration of benzene Completed ***

SULPHONATION OF BENZENE

Benzene reacts with concentrated sulphuric acid or fuming sulphuric acid to give benzene sulphuric acid.

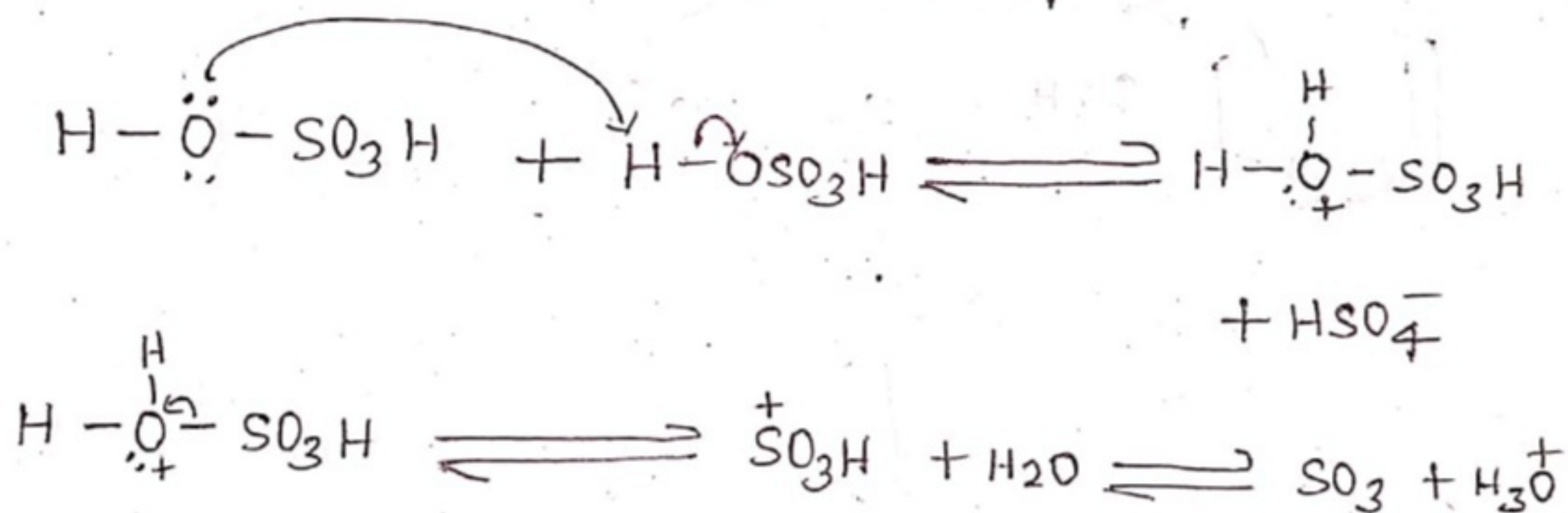


Benzene
Sulphonic acid

Mechanism

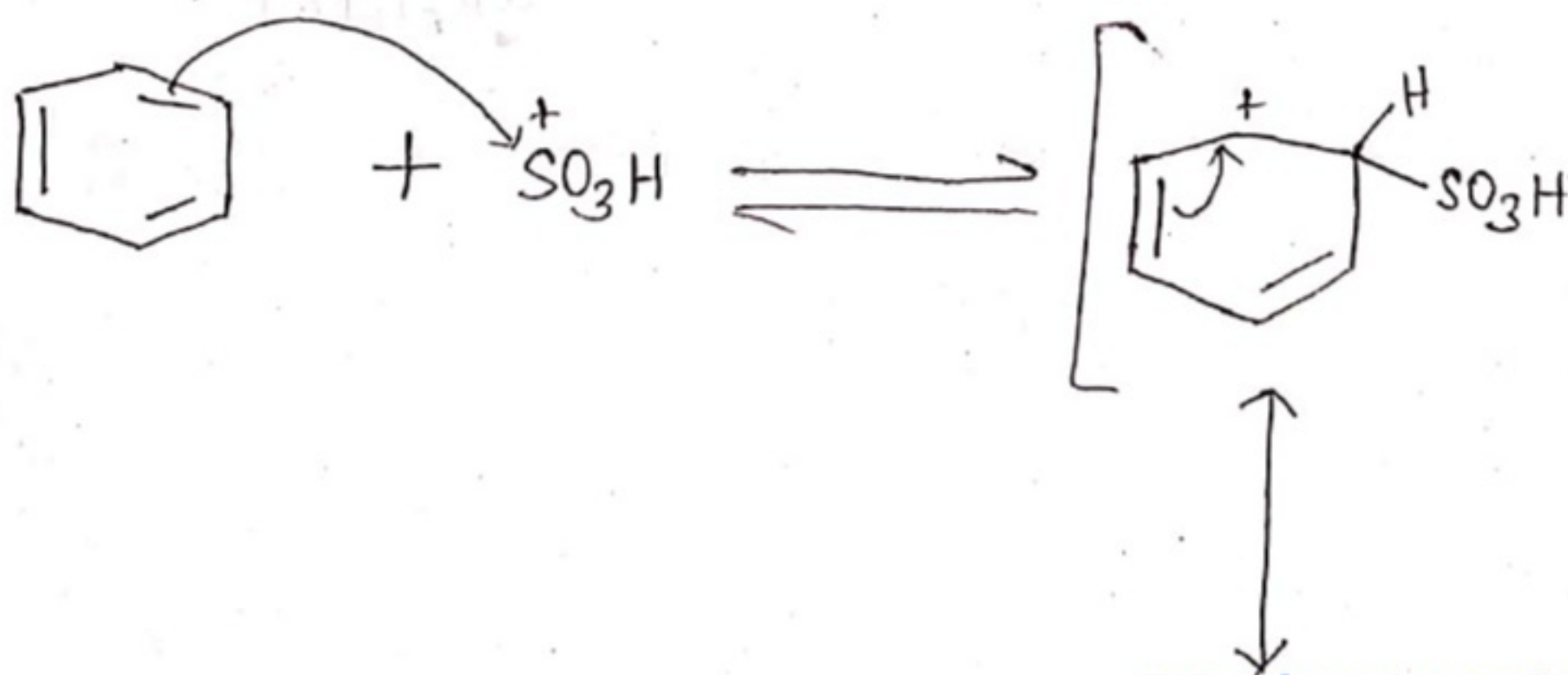
step 1.

Generation of the electrophile.

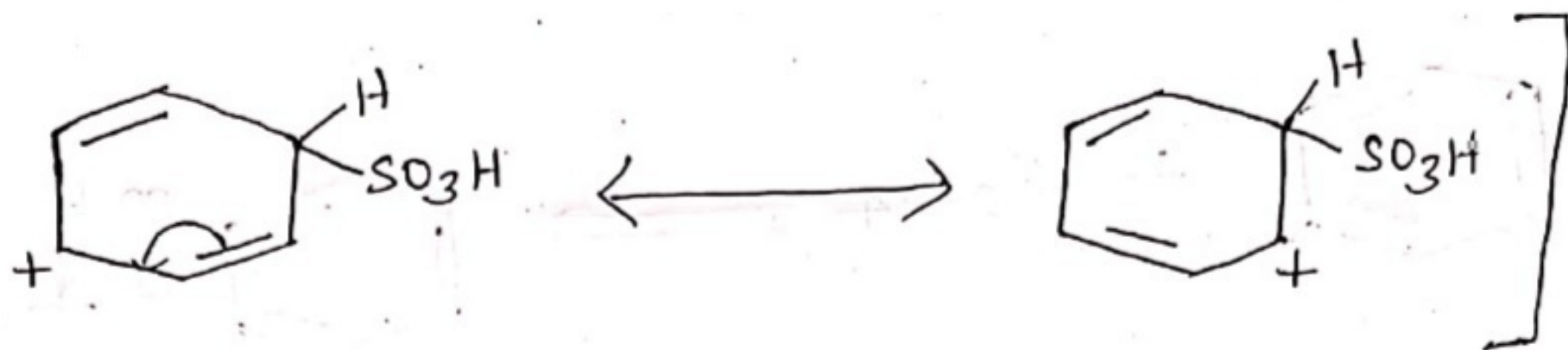


step 2.

The electrophile attacks the benzene ring to form a carbocation.

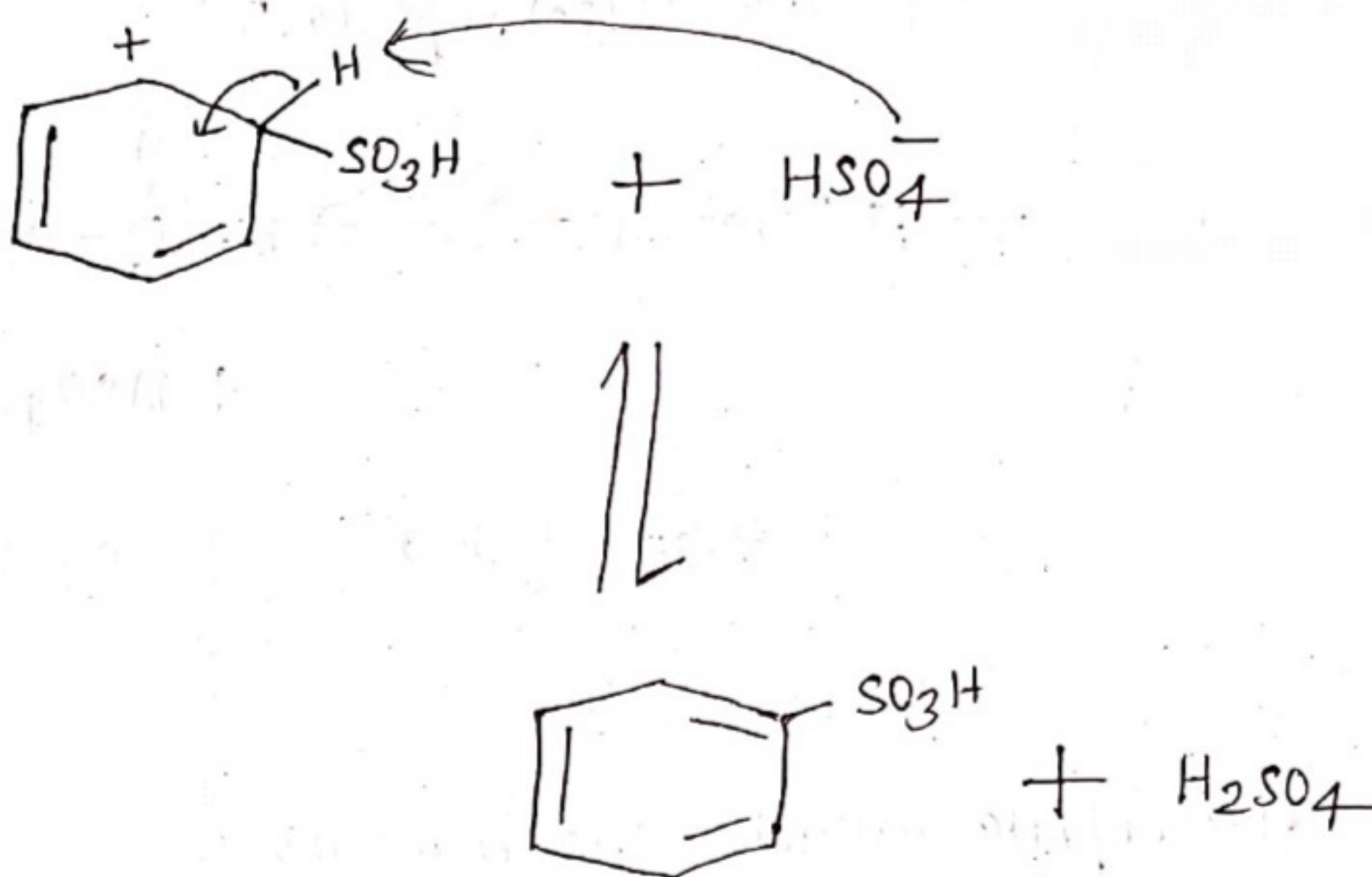


Mechanism Continued...



Step 3.

Loss of proton to give benzene sulphonic acid.



Sulphonation of benzene Completed

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