HALOALKANES AND HALOARENES

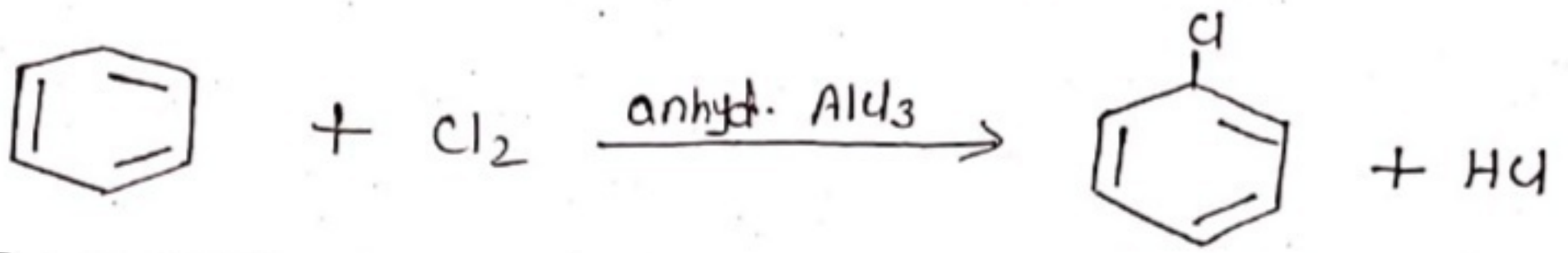
14/05/2020

Lecture-5

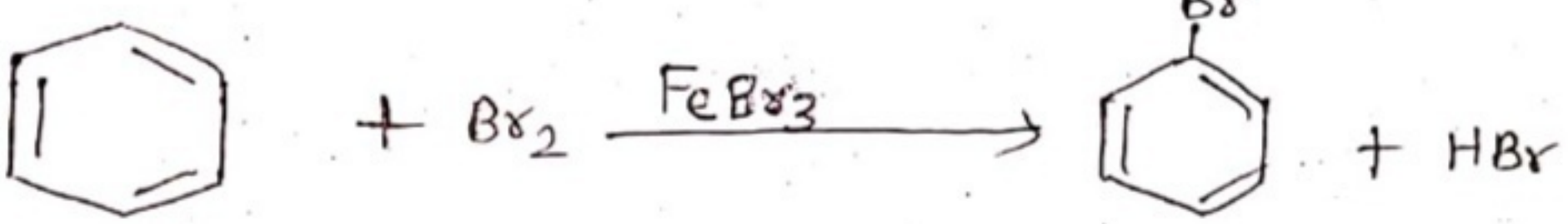
Chemistry.
Class - XII
Unit - 10

Topic -Preparation Of Haloarenes

1. From Benzene (By Halogenation)



Benzene — Chlorobenzene

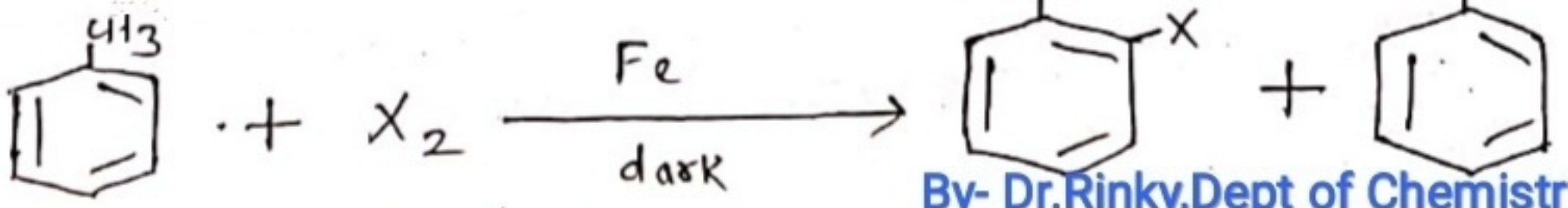


Benzene — Bromobenzene

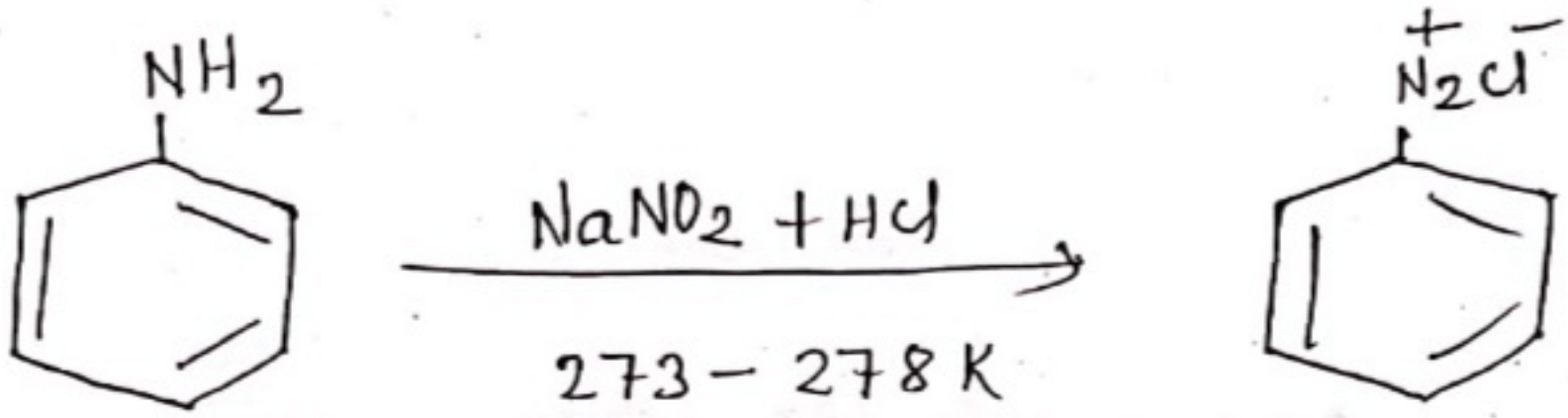
* Reaction with I_2 are reversible in nature and require the presence of an oxidising agent (HNO_3 or HIO_4).

* Fluorobenzene are not prepared by this method.

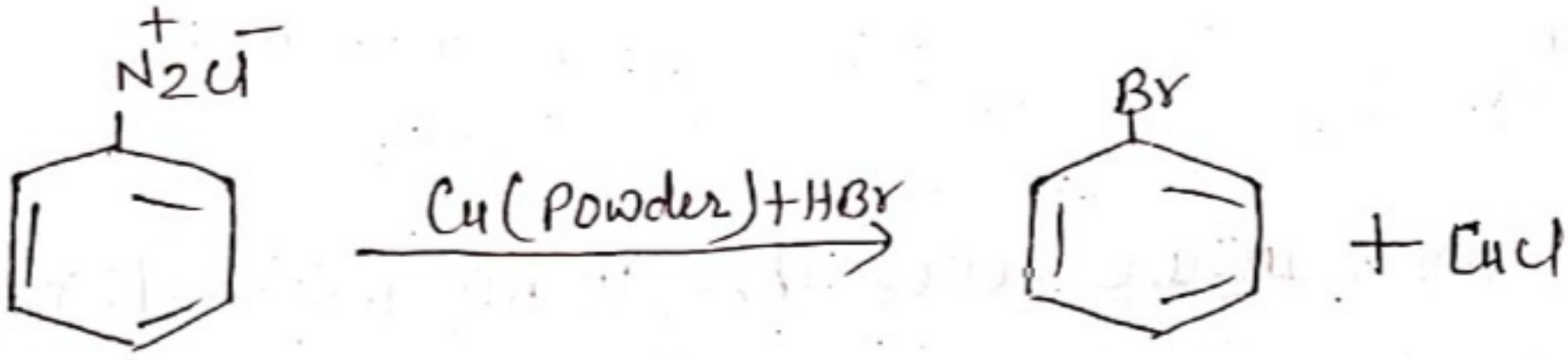
2. From Toluene



3. By Sandmayer's Reaction



4. By Gattermann Reaction



* Haloarene can not be prepared from phenol because the carbon - oxygen bond in phenols is difficult to break being stronger than a single bond.

PHYSICAL PROPERTIES

* Alkyl halides are colourless when pure.

* Alkyl bromide and Alkyl iodide develop colour when exposed to light.

Melting Point & Boiling Point

* Boiling point $\propto$ molar mass

ie; Higher the molar mass, higher will be boiling point of molecules.

For example

Boiling point of R-I is higher than that of R-Br and Boiling point of R-Br is higher than that of R-Cl.

ie; For the same alkyl group, the boiling point of alkyl halide decreases in the order.

$$R-I > R-Br > R-Cl > R-F$$

* For isomeric alkyl halide boiling point decreases with increase in branching.

eg; $H_3C - CH_2 - CH_2 - CH_2 - Br$

b.p = 375 K

$H_3C - CH_2 - \underset{\underset{Br}{|}}{CH} - CH_3$

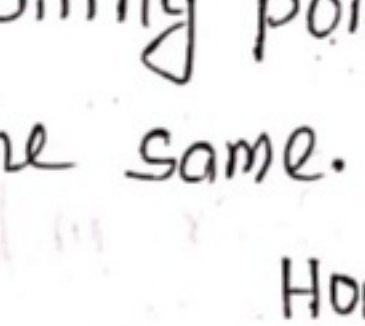
b.p = 364 K

$H_3C - \overset{\overset{CH_3}{|}}{\underset{\underset{Br}{|}}{C}} - CH_3$

b.p = 346 K

Boiling point of isomeric dihaloarenes are very nearly the same.

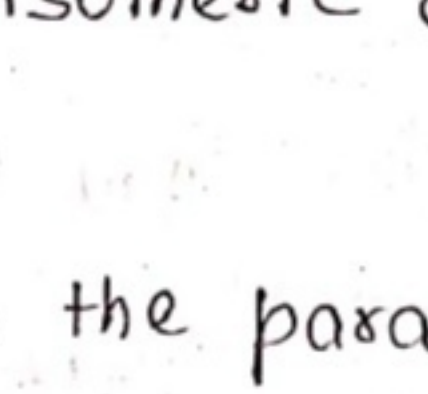
However, the para-isomers are high melting as compared to their ortho and meta isomers. It is due to symmetry of para-isomers that fits in crystal lattice better as compared to ortho and meta isomers.



ortho-Dichlorobenzene

B.P 453 K

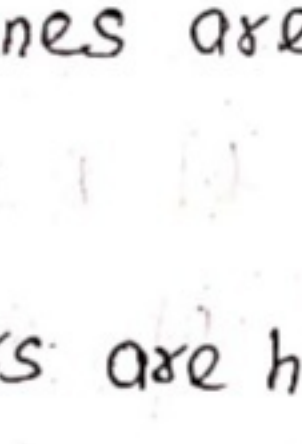
M.P 256 K



meta-Dichlorobenzene

446 K

249 K



para-Dichlorobenzene

448 K

323 K

Continued..