

K.T.S.P. Mandal's

Hutatma Rajguru Mahavidyalaya, Rajgurunagar,
Tal. Khed Dist. Pune

Class: S. Y. B. Sc, Paper-II course-302
Sem.-III (First term)

Name of Paper: Inorganic and organic Chemistry

According to the new revised syllabus of Savitribai

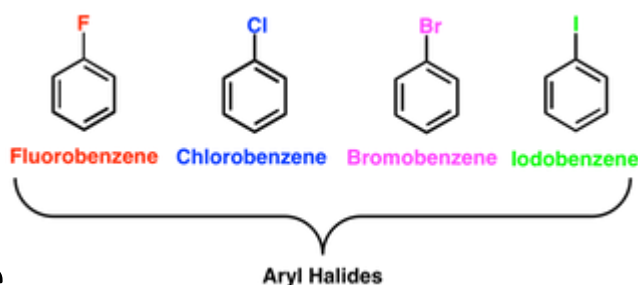
Phule University from June 2020

Name of Teacher: Prof. Kolekar S.S.

Topic-Alkyl and Aryl halides

Aryl halide

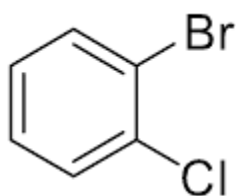
When halogen atom is directly attached to the aromatic ring like benzene or hydrogen atom from side chain is replaced by halogen atom, The aryl halide also called as haloarene



Aryl halide

Arylalkylhalides

When more than one halogen atoms present in aryl halide the position of the halogen atom in the aromatic ring like benzene shown by ortho , para , meta prefixes

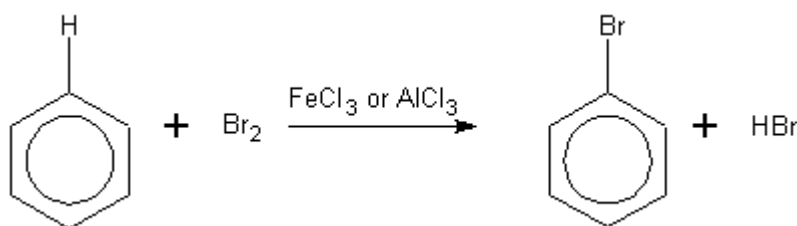


1-Bromo2-Chlorobenzene

Preparation of aryl halides

By halogenation of aromatic ring like benzene

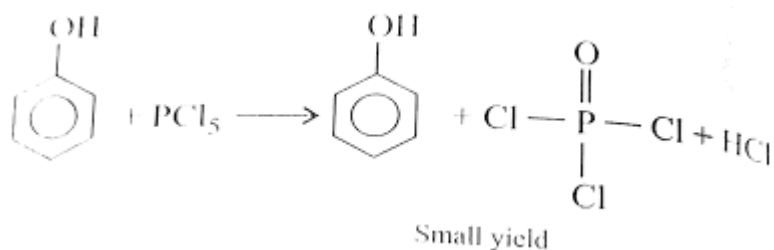
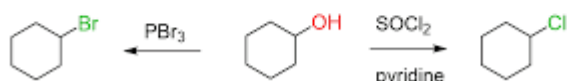
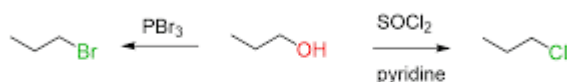
- The benzene is allowed to react with halogen like Cl_2 or Br_2 in the presence of the Lewis acid as catalyst like AlCl_3 , FeCl_3 , FeBr_3 gives the aryl halide



From phenol

The Phenol is allowed to react with PCl_3 , PCl_5 , SOCl_2 gives chlorobenzene

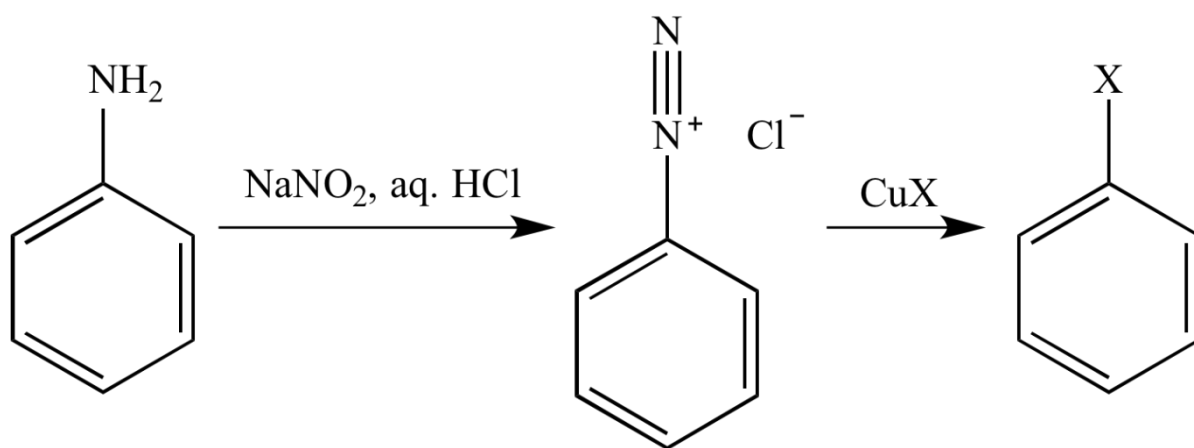
1° and 2° alcohols can be converted to alkyl halides with SOCl_2 and PBr_3



The reaction of HX with phenol does not possible directly to give the product aryl halide

Sandmeyer reaction –

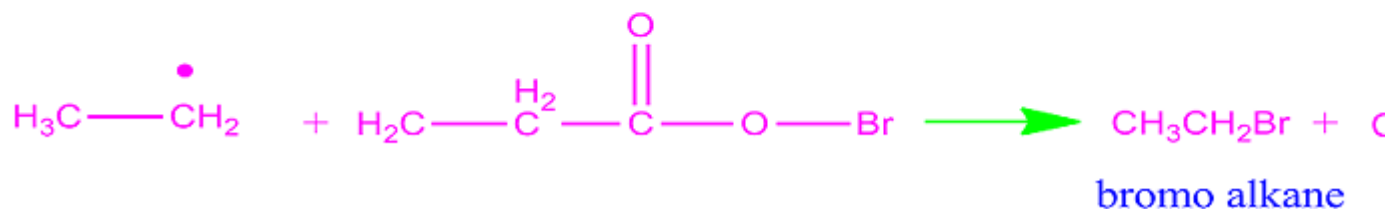
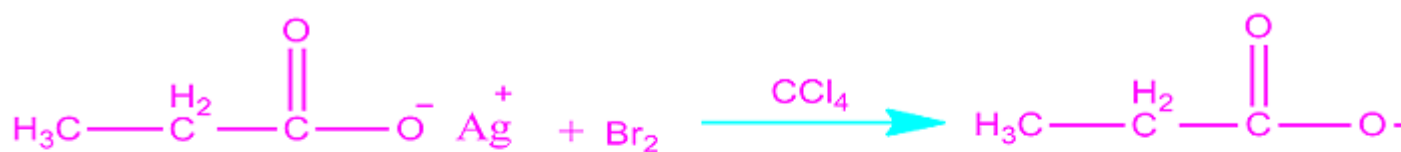
The aniline is allow to react with NaNO_2 and HCl at 0°C , it undergoes diazotization reaction gives the diazonium salt which is warmed with cuprous halide like CuCl gives aryl halide. Known as Sandmeyer reaction



If cuprous halide like CuCl in the presence of HCl or HBr is used and decomposition of diazonium salt is take place to gives aryl halide. Known as Sandmeyer -Gattermann reaction

Hunsdiecker reaction –

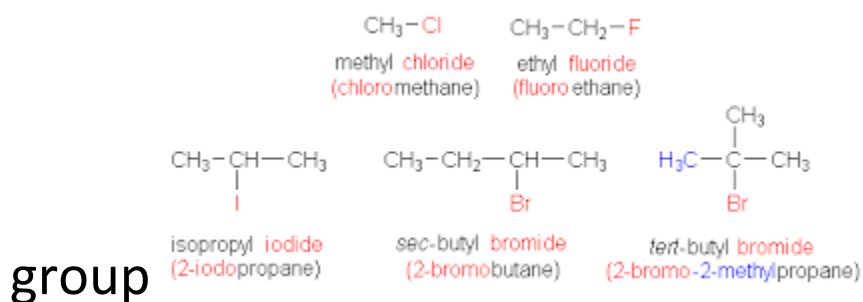
The silver salt of carboxylic acid undergoes decarboxylation when it is treated with Br₂ in CCl₄



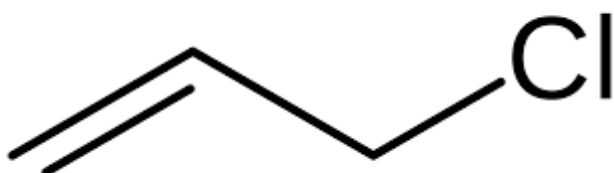
gives aryl bromide

The relative strength of carbon -halogen bond in alkyl, allyl, benzyl vinyl and aryl halides

Alkyl halides- The halogen attach to the alkyl

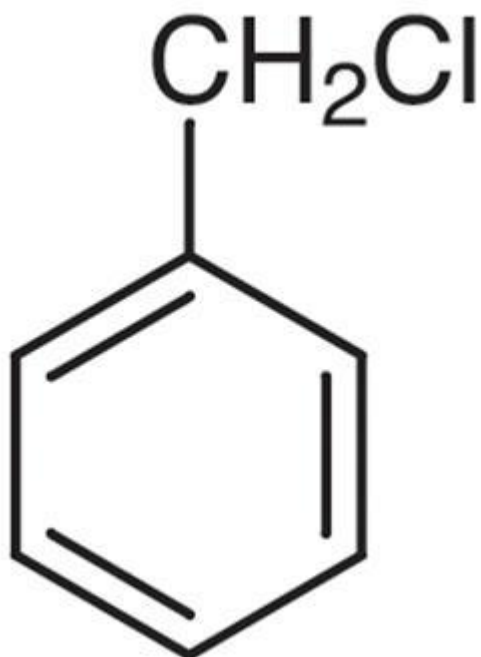


Allylic halide- The halogen atom bonded to SP^3 hybridized carbon next to carbon double bond .

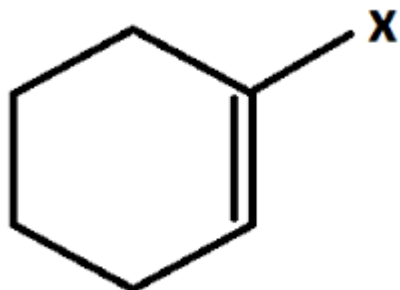


i.e. allylic carbon

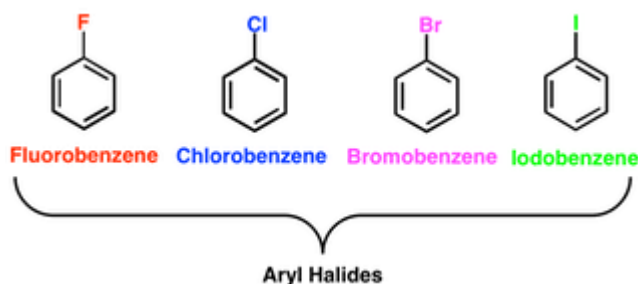
Benzylic halide- the halogen atom bonded to SP^3 hybridized carbon next to aromatic ring



Vinyl halide- The halogen atom bonded to an sp^2 hybridized carbon atom of a carbon double bond



Aryl halide – The halogen atom is bonded to sp^2



According to the new revised choice based credit system syllabus of Savitribai Phule Pune

University from June 2020 , Text book of

Inorganic and organic chemistry for S.Y. B.Sc.

course (CH-302), Sem-II Manali Publication and google images