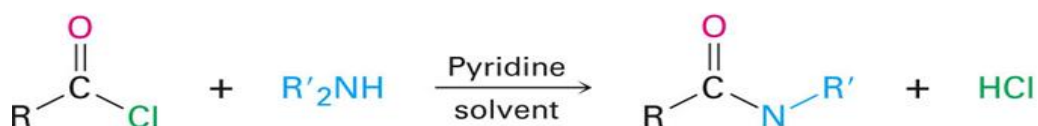
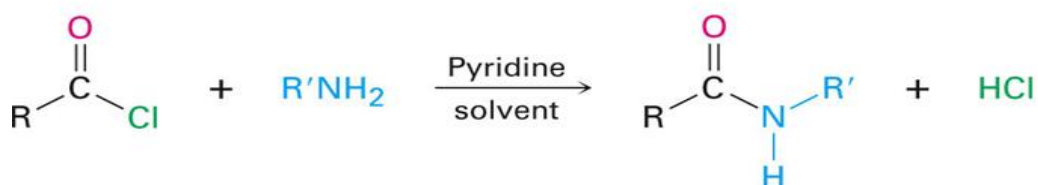
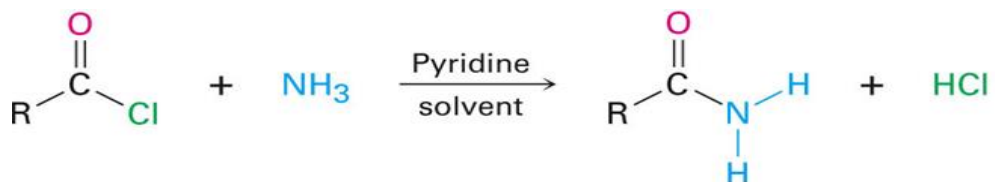


## Reactions of Amines :

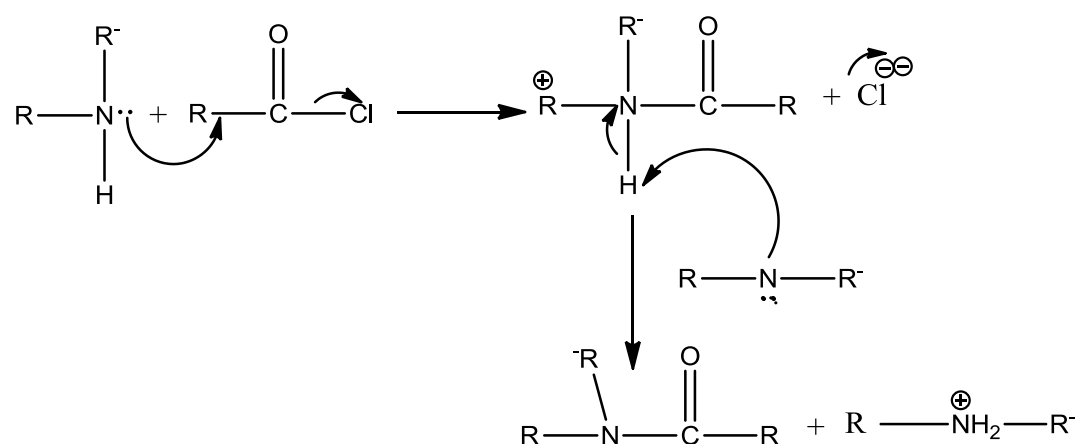
\*Alkylation and acylation have already been presented



**NOT:**

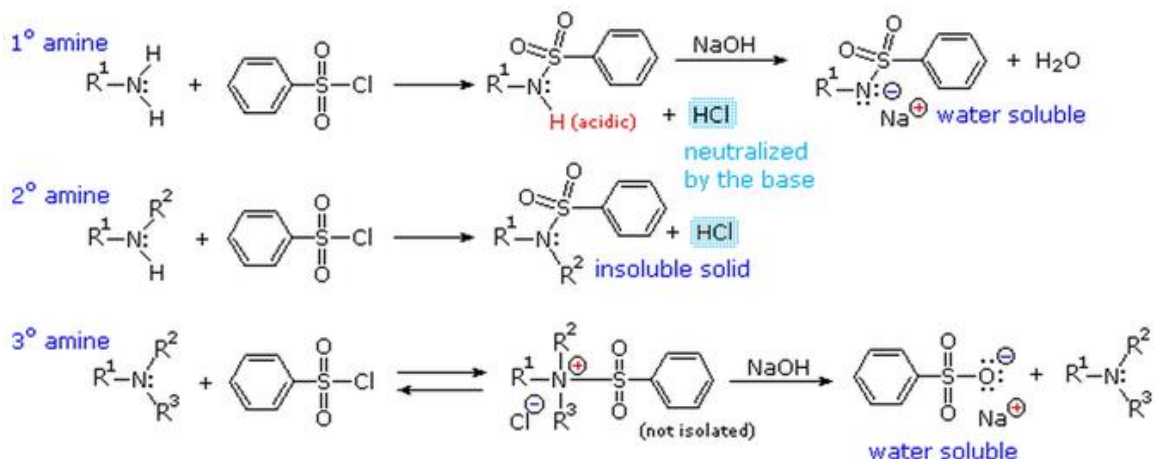
- Tertiary amine has no hydrogen and as such it does not in acylation .

**\*mechanism**



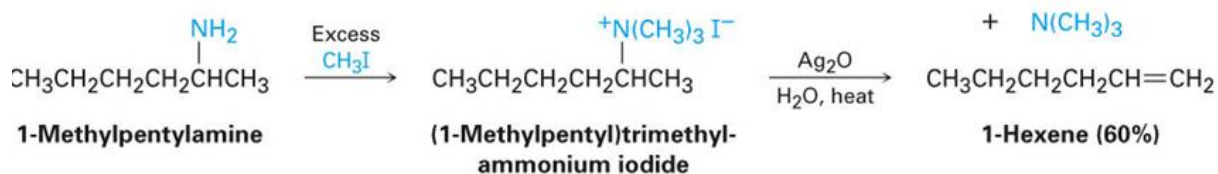
## \*ArSO<sub>2</sub>Cl (Hinsberges reagent)

-Reaction with Hinsberges reagent is used for the separation of three classes of amines .



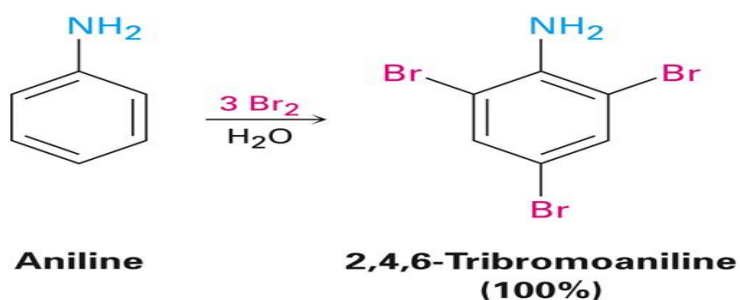
## \*Hofmann Elimination

Converts amines into alkenes, NH<sub>2</sub><sup>-</sup> is very a poor leaving group so it converted to an alkylammonium ion, which is a good leaving group



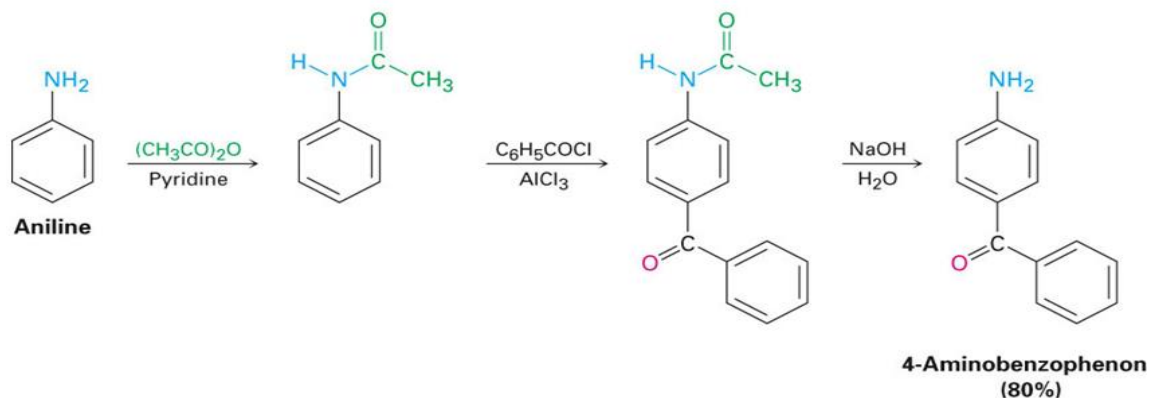
## \*Reactions of Arylamines

Amino substituents are strongly activating, ortho- and para-directing groups in electrophilic aromatic substitution reactions, Reactions are controlled by conversion to amide



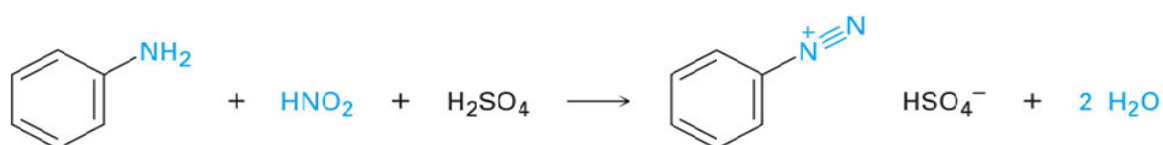
## \*Arylamines Are Not Useful for Friedel-Crafts Reactions

The amino group forms a Lewis acid–base complex with the  $\text{AlCl}_3$  catalyst, preventing further reaction. Therefore we use the corresponding amide



## \*Diazonium Salts: The Sandmeyer Reaction

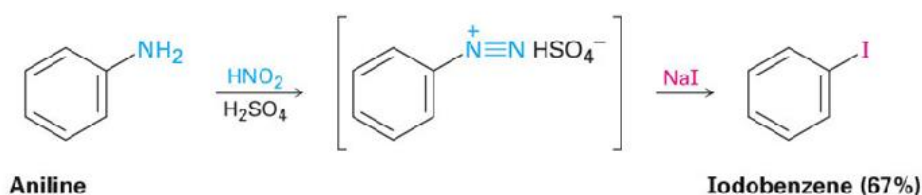
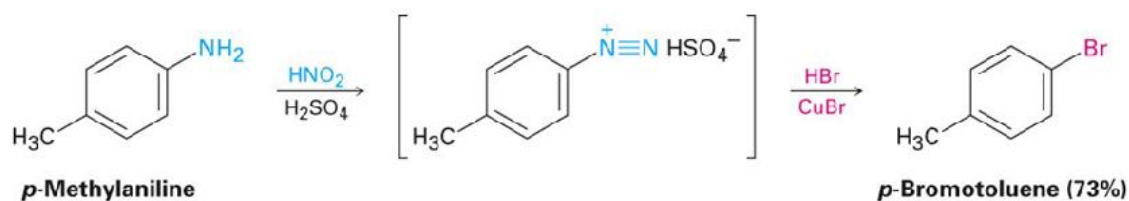
Primary arylamines react with  $\text{HNO}_2$ , yielding stable arenediazonium salts



## \*Uses of Arenediazonium Salts

### \*Preparation of Aryl Halides

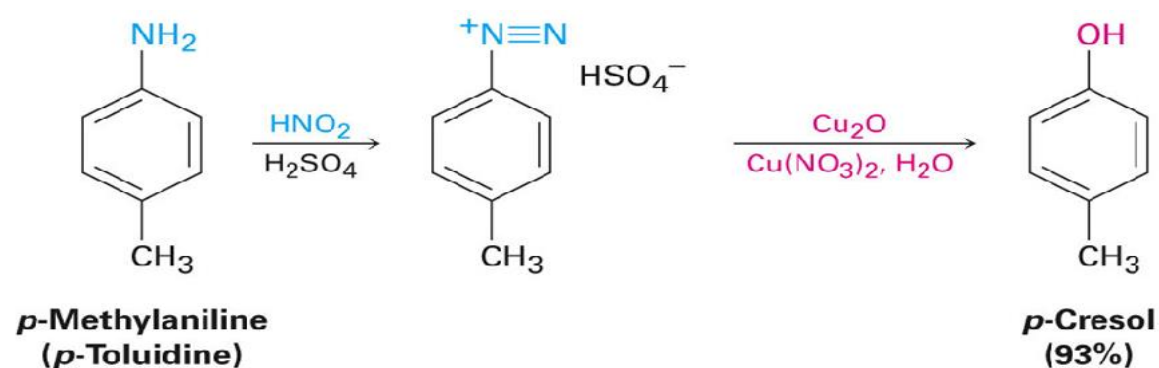
The  $\text{N}_2$  group can be replaced by a nucleophile



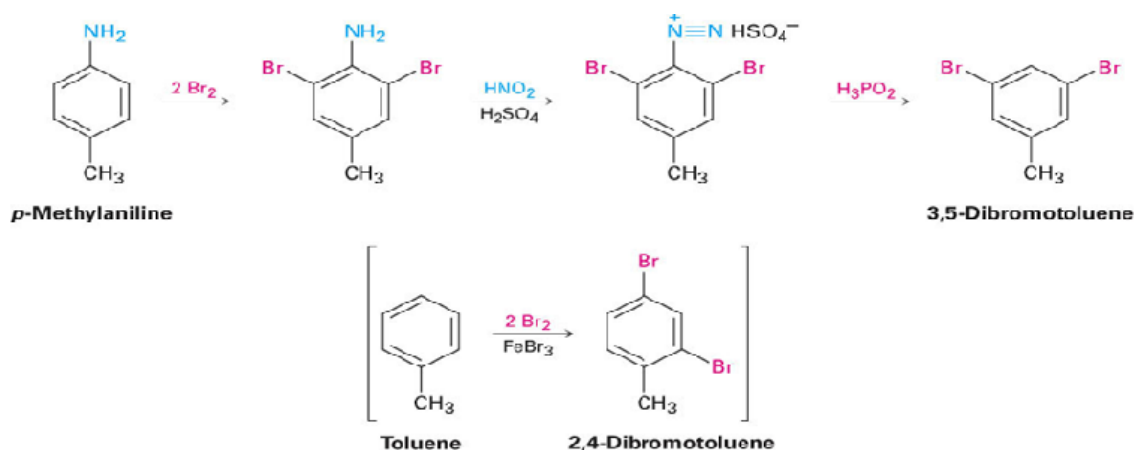
## \*Aryl Nitriles and Carboxylic Acids



## \*Formation of Phenols (ArOH)



## \*Reduction to a Hydrocarbon

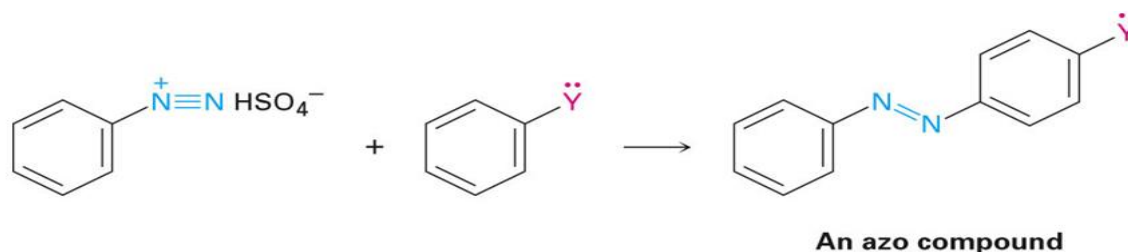


## \*Mechanism of Diazonium Replacement



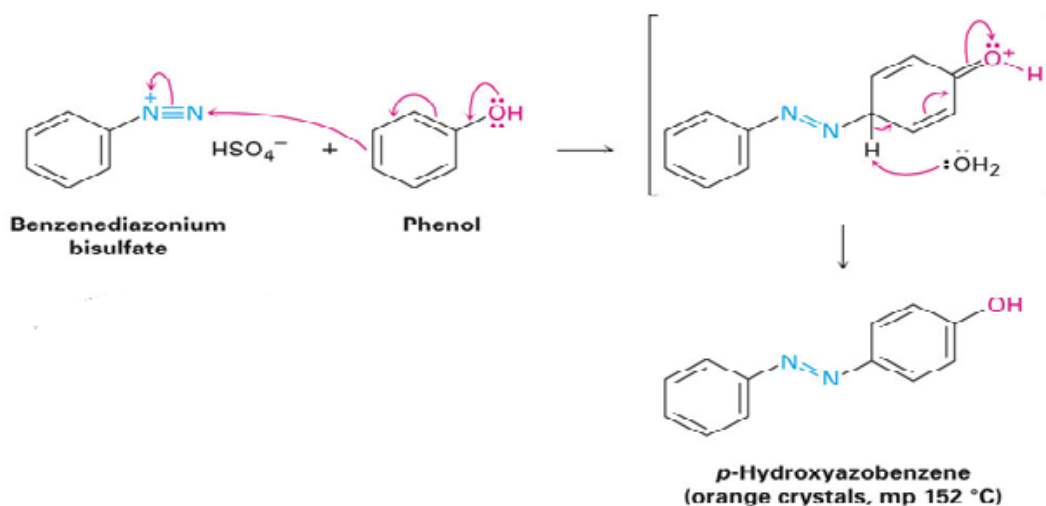
## \*Diazonium Coupling Reactions

Arenediazonium salts undergo a coupling reaction with activated aromatic rings, such as phenols and arylamines, to yield brightly colored azo compounds,  $\text{Ar}-\text{N}=\text{N}-\text{Ar}'$



where  $\text{Y} = -\text{OH}$  or  $-\text{NR}_2$

## \*How Diazonium Coupling Occurs



## \*Azo Dyes

Azo-coupled products have extended  $\pi$  conjugation that lead to low energy electronic transitions that occur in visible light (dyes)

