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## Compounds of Carbon Containing Nitrogen: Chemical Properties of Amines

### Chemical Properties of Amines

#### Basic Character

Basicity's of amines can be compared with respect to ammonia, by comparing the availability of pair of electrons on nitrogen. Ammonia and amines, both when dissolved in water, attract a proton from water to form an ammonium or alkylammonium ion, respectively, and a hydroxide ion.

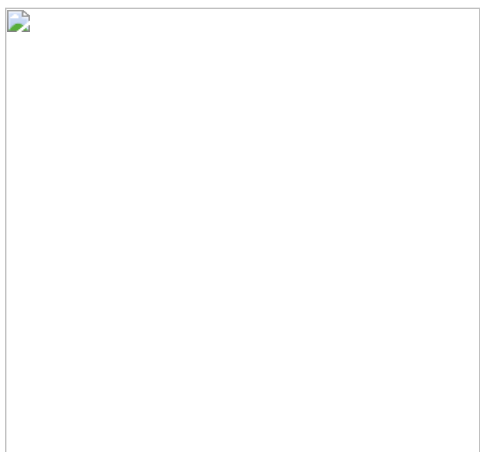


we can express the basic character of aliphatic and aromatic amines as shown below.

Aromatic amines < Ammonia < Aliphatic amines

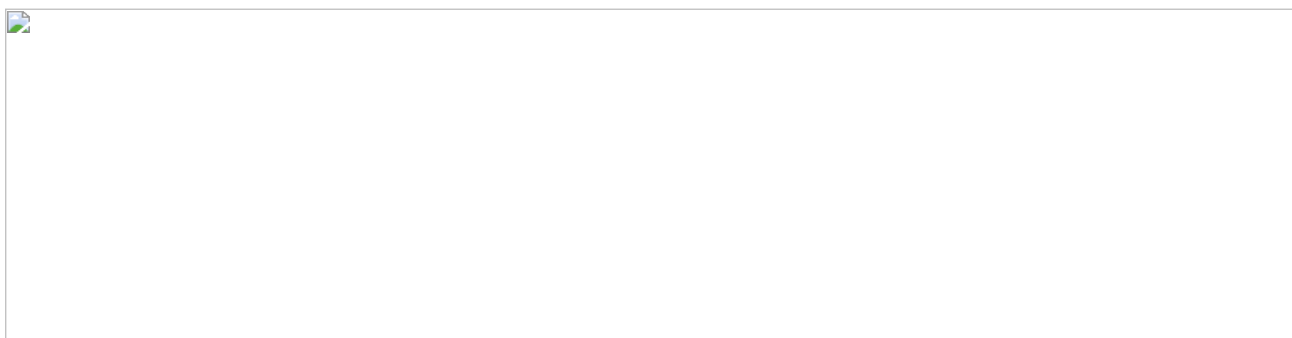
#### Alkylation

Primary amines react with alkyl halides to give secondary amines. The reaction may continue further to form a tertiary amine and a quaternary ammonium salt. For example, the reaction of Ethanamine with bromomethane proceeds as shown below.



### Acylation

Primary amines on reaction with acid chlorides or acid anhydrides give N-substituted amides.



### Carbylamines Reaction

When a primary amine is heated with chloroform in the presence of alcoholic potassium hydroxide, then the corresponding isocyanide is formed. Isocyanides are also known as carbylamines; hence this reaction is called as carbylamines reaction.



### Reaction with Nitrous Acid

Primary aromatic amines react with nitrous acid to give diazonium salts and this reaction is known as diazotization.



### Schiff's Base

Primary amines undergo condensation with aldehydes or ketones to form imines. These products are also called Schiff's bases. The reaction can be shown as follows:

