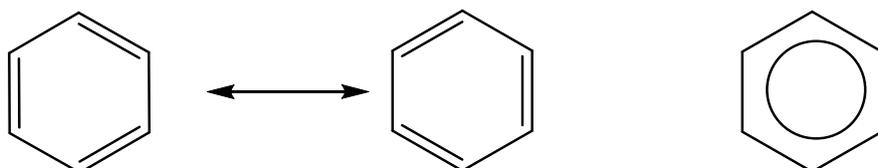


### Aromatic compounds

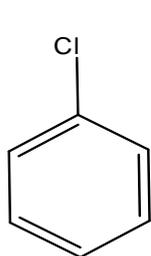
Benzene has a high degree of unsaturation but is unreactive. It does not undergo the usual addition reaction of alkenes and alkynes. It does react under more vigorous conditions (heat or catalysts) to form products of substitution. This difference in chemical reactivity is due to the structure of benzene.



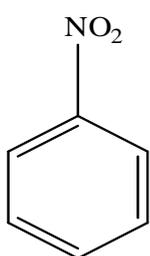
Benzene

### Naming Aromatic Compounds :

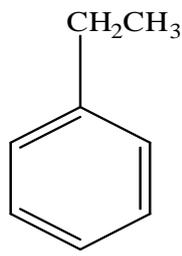
When one group is attached to benzene, the compound is named by placing the name of the group as prefix to the benzene.



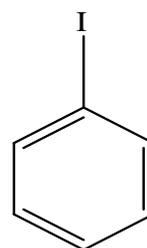
chlorobenzene



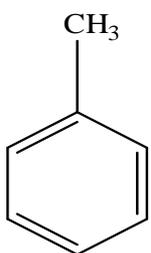
Nitrobenzene



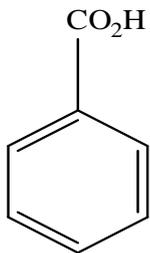
Ethylbenzene



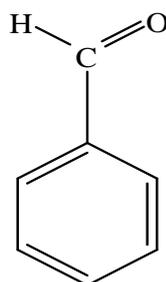
Iodobenzene



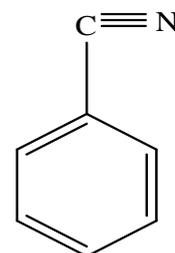
Toluene



Benzoic acid



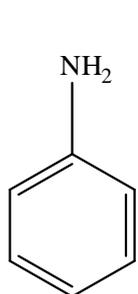
Benzaldehyde



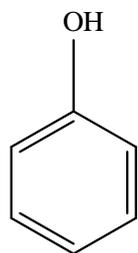
Benzonitrile

## Chemistry - College of Dental - Lec -9

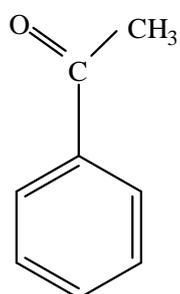
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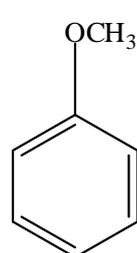
Aniline



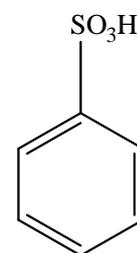
Phenol



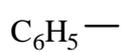
Acetophenone



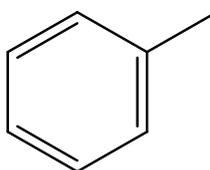
Anisole



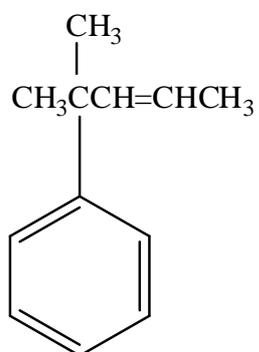
Benzenesulfonic acid



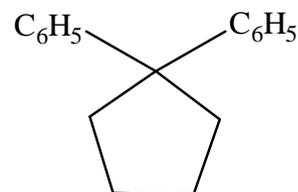
or



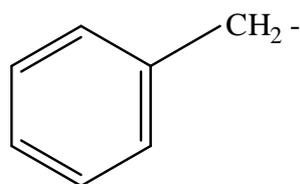
Phenyl group



4- Methyl - 4- phenyl-2-pentane

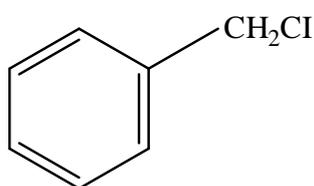


1,1- Diphenylcyclopentane

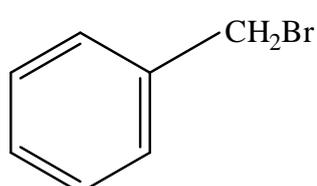


Benzyl group

For example

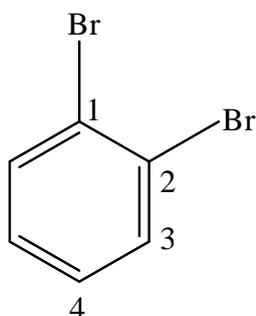


Benzyl chloride

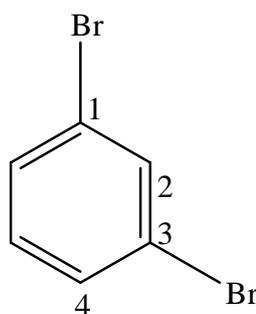


Benzyl bromide

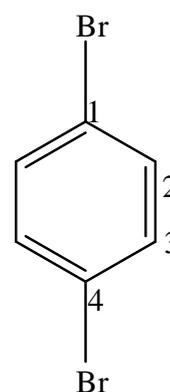
If two groups are attached to the benzene ring, the name must not only tell what groups are present, but also where they are located. We can differentiate the three possible isomers of a disubstituted benzene in two ways.



O - Dibromobenzene  
1,2 - Dibromobenzene

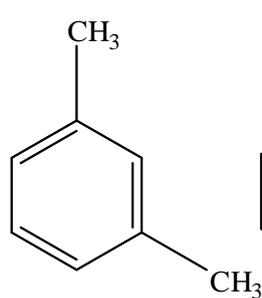


m - Dibromobenzene  
1,3 - Dibromobenzene

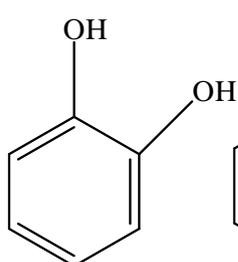


p- Dibromobenzene  
1,4 - Dibromobenzene

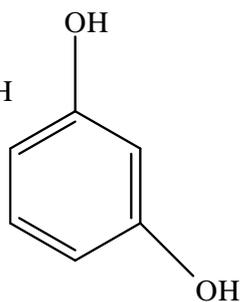
Several disubstituted benzenes have been given names that, give no indication of the kind of groups attached to the ring.



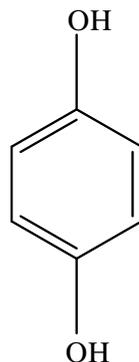
m-Xylene



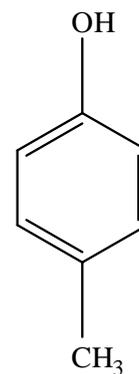
Catechol



Resorcinol



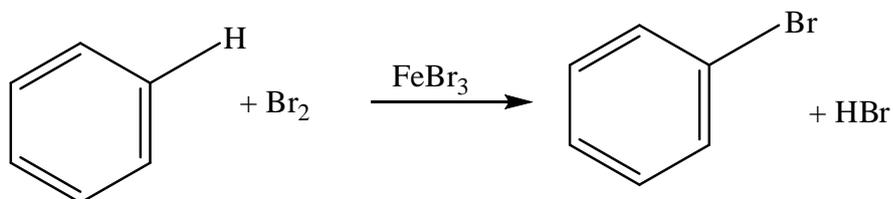
Hydroquinone



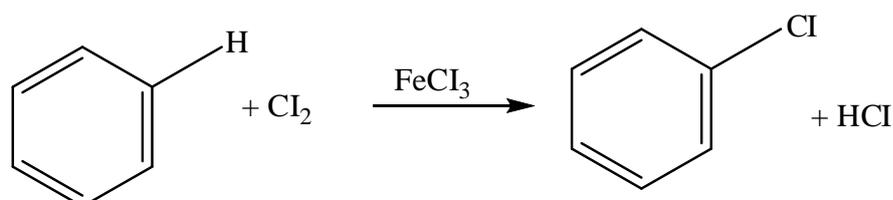
p - Cresol

### Substitution Reactions of Aromatic Compounds :

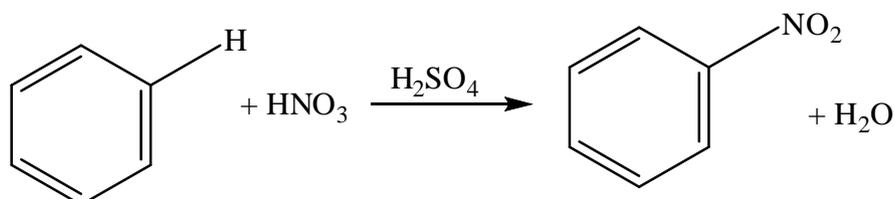
#### *Bromination*



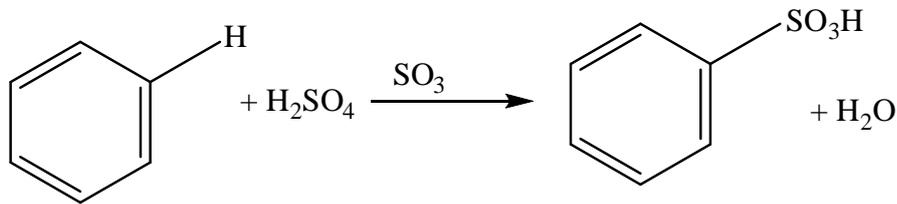
#### *Chlorination*



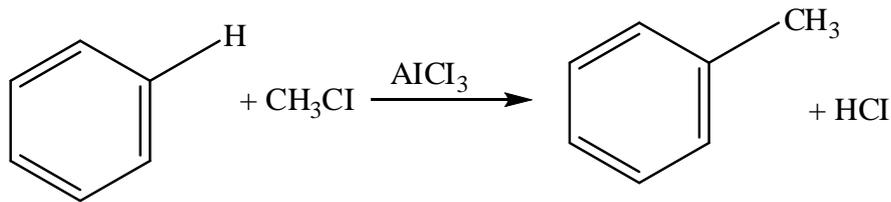
#### *Nitration*



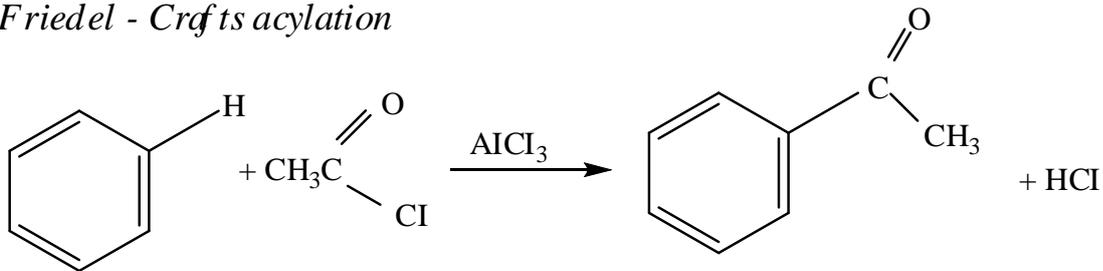
*Sulfonation*



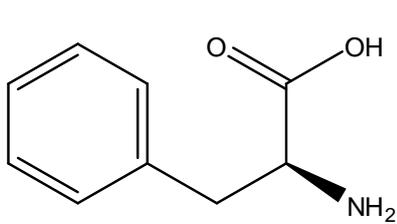
*Friedel - Crafts alkylation*



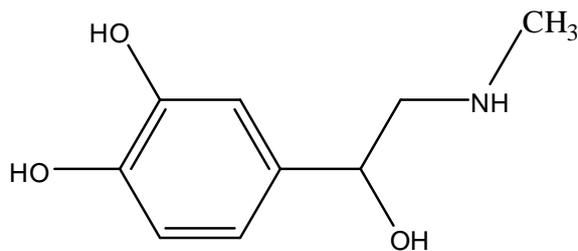
*Friedel - Crafts acylation*



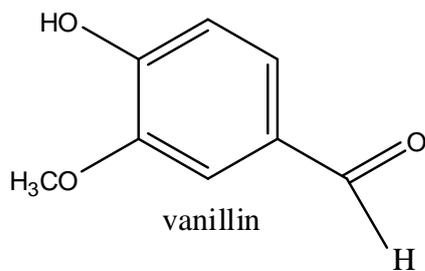
**Aromatic Compounds in Nature :**



Phenylalanine



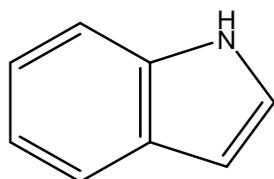
Epinephrine



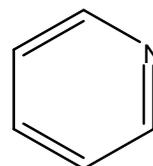
vanillin

### Aromatic Heterocyclic Compounds :

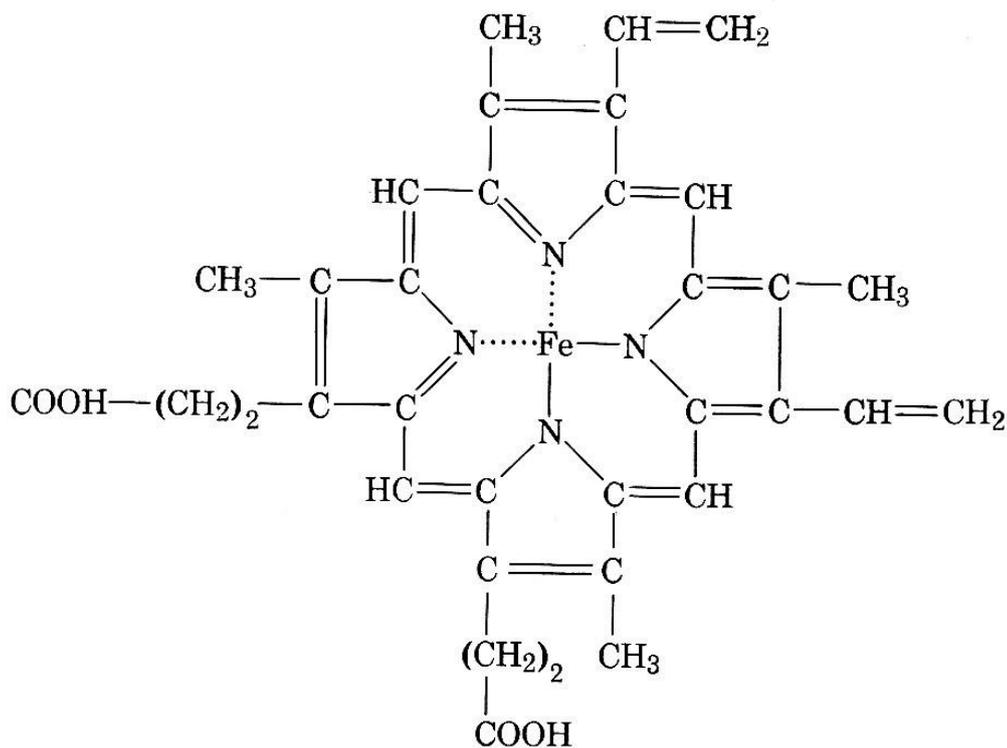
Unlike benzene, they contain at least one element other than carbon or hydrogen, usually nitrogen. These compounds, called aromatic heterocyclic compounds, contain a ring ( or rings) in which one or more of the atoms of the ring are elements other than carbon. The other elements are called heteroatom's.



Indole



Pyridine



Heme

