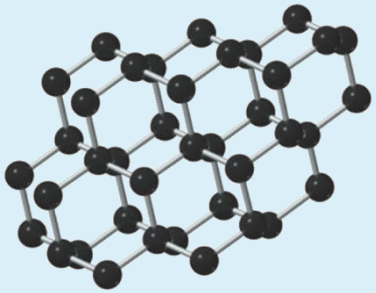
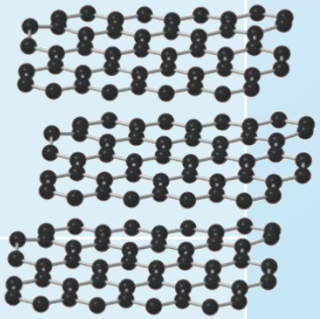
Aromatic Compounds Nomenclature

Dr. Sapna Gupta

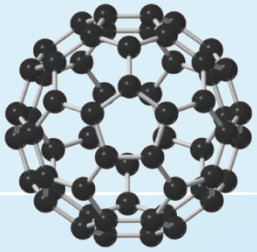
The Four Allotropes of Carbon

Amorphous	Diamond	Graphite
Small particles of graphite; charcoal, soot, coal, carbon black.	•Lattice of tetrahedral C's. •One giant molecule. •Sigma bonds, 1.54 Å. •Electrical insulator.	•Planar layered structure. •Layer of fused benzene rings, bonds: 1.415 Å. •Only van der Waals forces between layers. •Conducts electrical current parallel to layers.

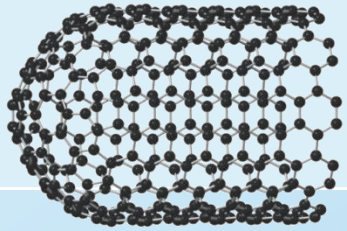




Fullerenes:
5- and 6-membered rings arranged to form a "soccer ball" structure.
Nanotubes: half of a C_{60} sphere fused to a cylinder of fused aromatic rings.

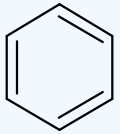


buckyball (C_{60})



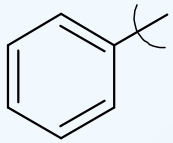
carbon nanotube

Nomenclature of Benzene



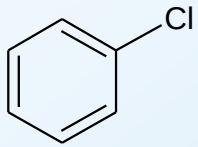
Benzene
Arene

φH

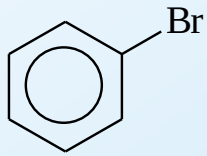


Phenyl (Ph)
Aryl

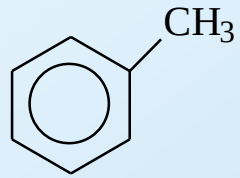
φ~



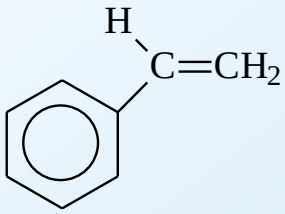
Chlorobenzene
Phenylchloride



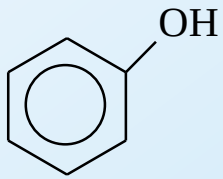
Bromobenzene
Phenylbromide



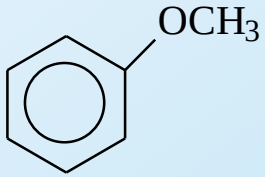
Methylbenzene
Toluene



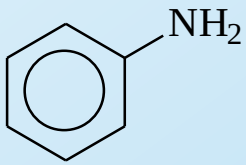
Vinylbenzene
Phenylethene
Styrene



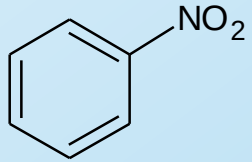
Phenol
Hydroxybenzene
Phenylalcohol



Methoxybenzene
Anisole
Methyl phenyl ether

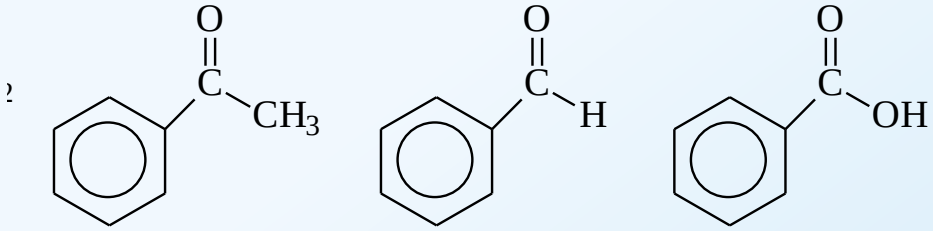


Aniline
Aminobenzene

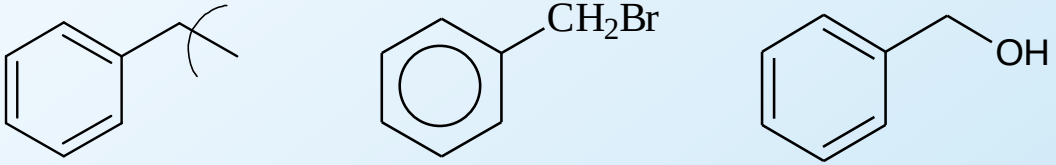


Nitrobenzene

Nomenclature of Benzene Contd…



acetophenone benzaldehyde benzoic acid



Benzyl
$PhCH_2$~

benzyl bromide

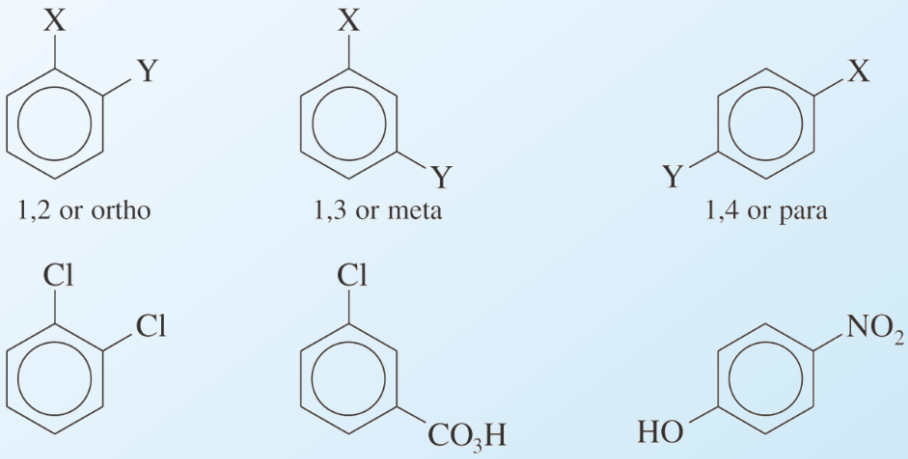
Benzyl alcohol
$PhCH_2OH$

Phenyl and Benzyl

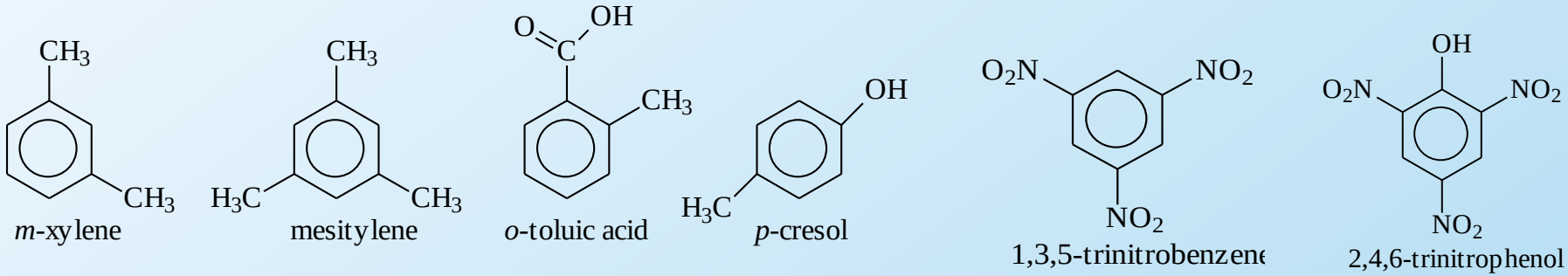
Phenyl indicates the benzene ring attachment. The benzyl group has an additional carbon.

Disubstituted Benzene Derivatives

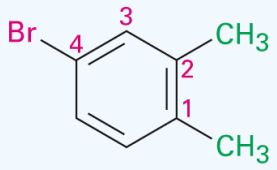
The prefixes *ortho*-, *meta*-, and *para*- are commonly used for the 1,2-, 1,3- and 1,4-positions, respectively



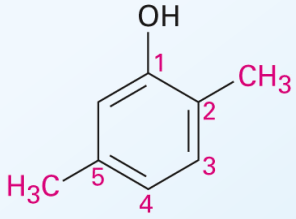
Some di and tri substituted compounds with common names.



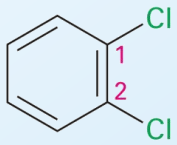
Other Examples



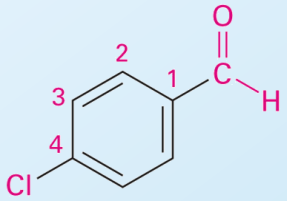
4-Bromo-1,2-dimethylbenzene



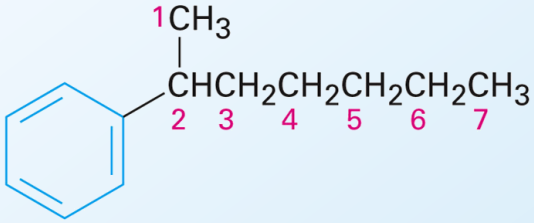
2,5-Dimethylphenol



***ortho*-Dichlorobenzene**
1,2 disubstituted



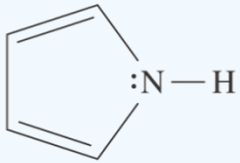
***para*-Chlorobenzaldehyde**
1,4 disubstituted



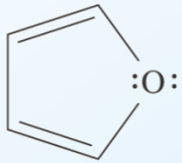
2-Phenylheptane

Other Heterocyclics and Aromatics

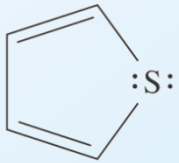
Other Heterocyclics



Pyrrole

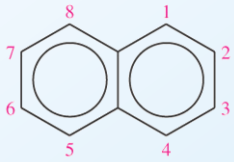


Furan

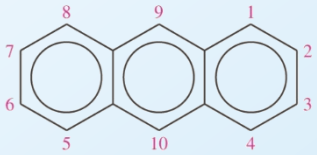


Thiophene

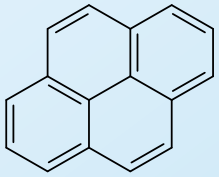
Fused Ring Hydrocarbons



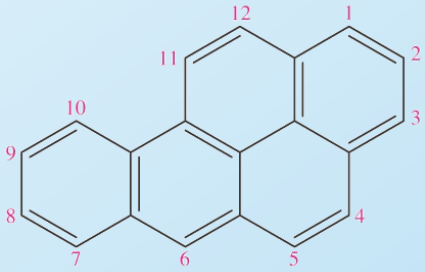
Naphthalene



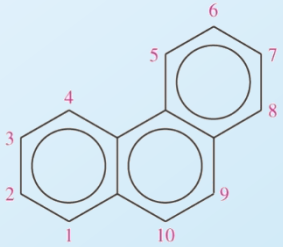
Anthracene



Pyrene



Benzo[a]pyrene



Phenanthrene

Key Concepts

- IUPAC and general names of benzene and its mono substituted derivatives.
- Nomenclature of di and tri substituted benzene.