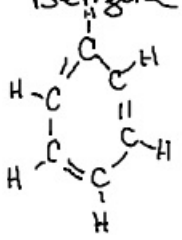
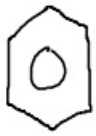
11/3/16

Benzene

C_6H_6





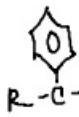
The double bonds have resonance - that means they rotate through all the possible positions.

Kekulé Structure (1872)

Linus Pauling - given credit for the discovery of the resonance.

arene - any aromatic compound (benzene based) } categories

aryl - benzene as a branch (any benzene structure) }

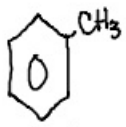


phenyl

Monosubstituted: alkyl benzenes, halogenated benzene, ----

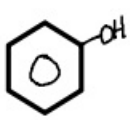
Carbon branch

Benzene structures have both IUPAC & common names.



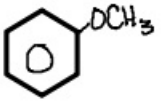
IUPAC → methylbenzene

Common → toluene

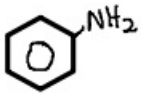


hydroxybenzene

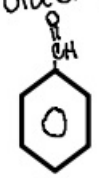
phenol



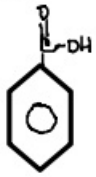
anisole



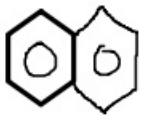
aniline



benzaldehyde



benzoic acid



naphthalene

(moth balls)

PAH polynuclear aromatic hydrocarbon

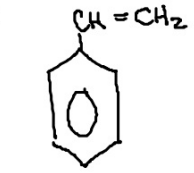
Properties of Aromatic Compounds

Physical Properties:

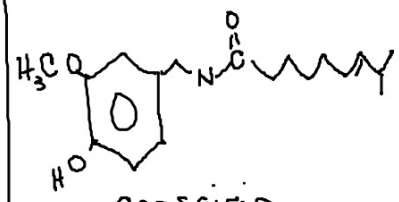
1. unique smell - sweet smell
2. Non-polar
3. insoluble in H_2O
4. liquid @ RmTemp (25°C)
5. good industrial solvent

Chemical Properties:

6. Relatively unreactive (stable)
7. Reactions tend to be substitution
8. Volatile
9. unsaturated
10. combustable
11. carcinogenic



Styrene



Capsaicin