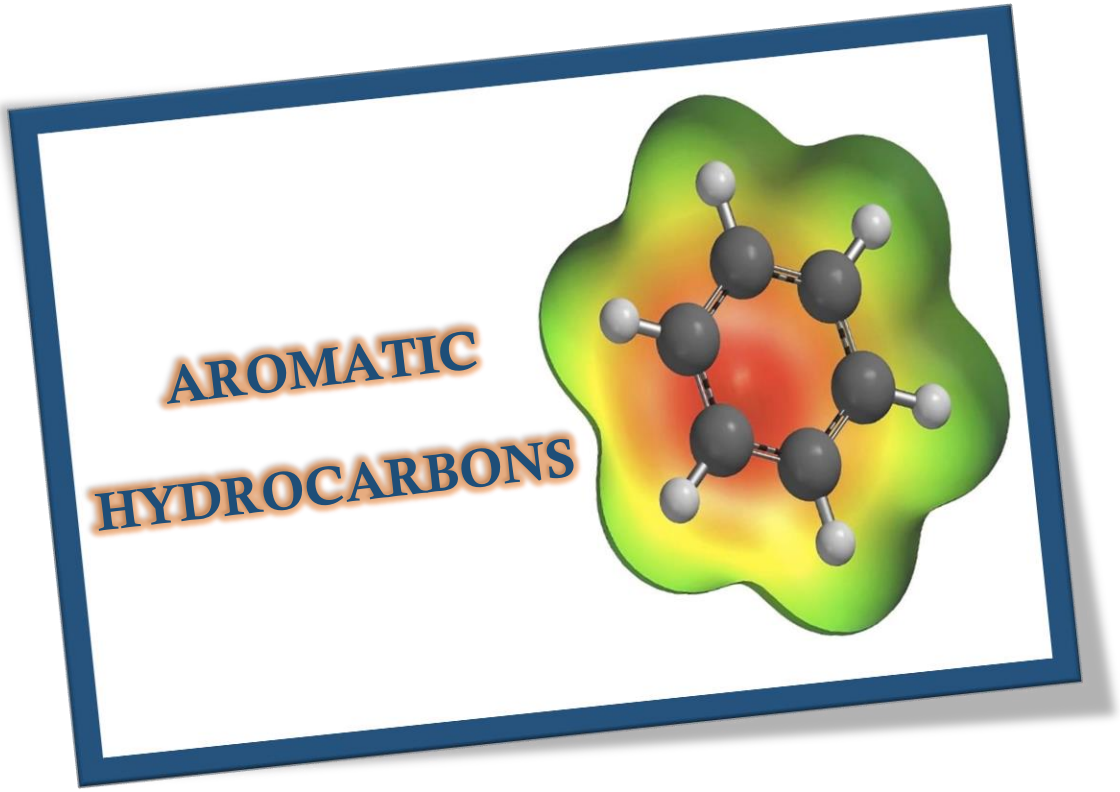
Al-Mustaqbal University College

Department of Radiology Techniques

First Stage

General Chemistry

Ninth Lecture



Asst. Lec.

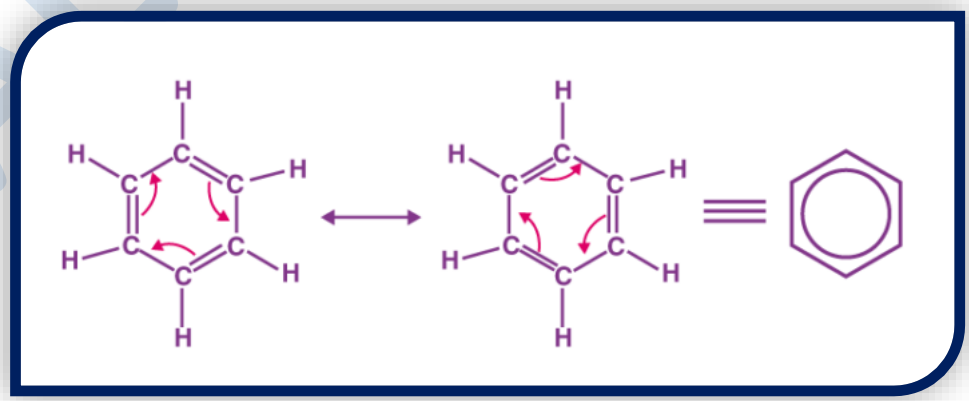
Alaa Salman Al-Labban

AROMATIC HYDROCARBONS

Aromatic Hydrocarbons:

are *unsaturated hydrocarbons* compounds that contain a benzene ring structure. The simplest aromatic compound is benzene (C_6H_6) and it is of great commercial importance.

Benzene C_6H_6: is the simplest aromatic compound and it is of great commercial importance. The formula C_6H_6 seems to indicate that benzene has a high degree of unsaturation. despite the seeming low level of saturation, benzene is rather unreactive. This is due to ***the resonance*** structure formed from the alternating double bond structure of the aromatic ring.

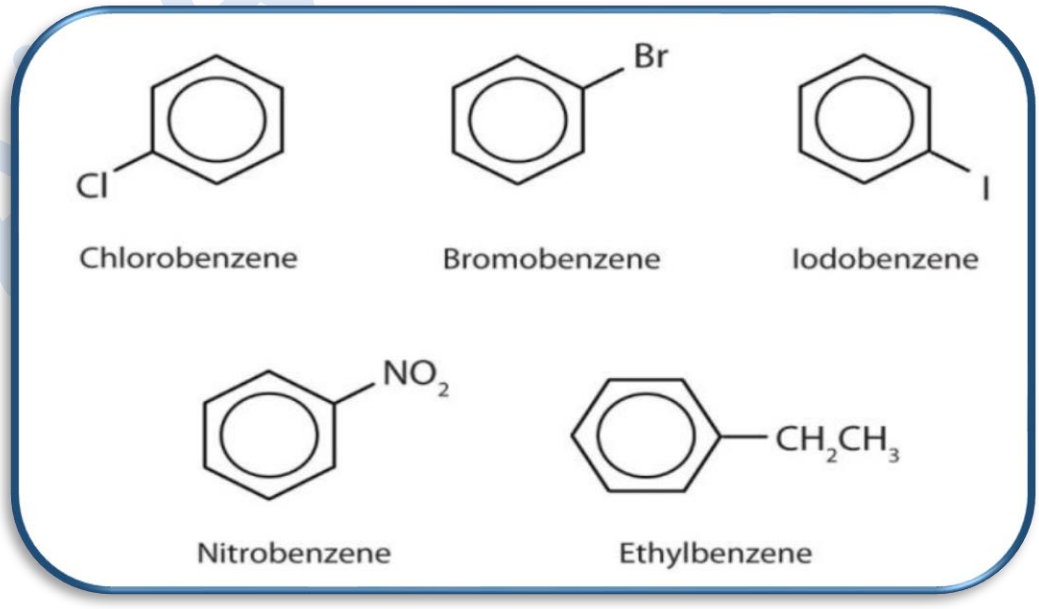


Properties of Aromatic Compounds

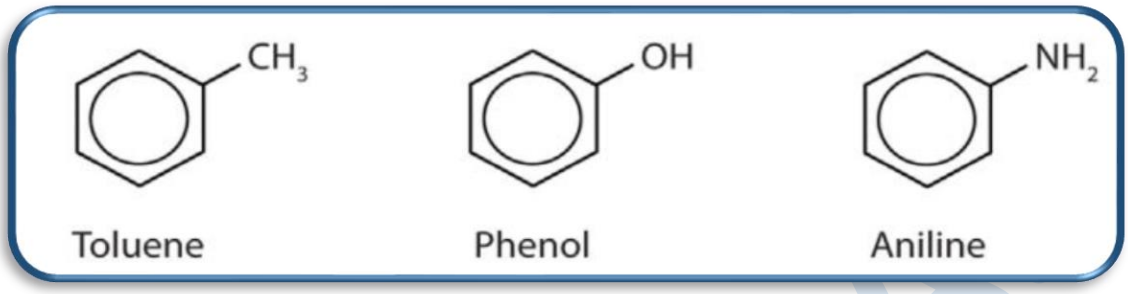
1. Insoluble in water.
2. Good solvents for nonpolar material.
3. Less dense than water.
4. Volatile.
5. Colorless, flammable liquid (burns with a sooty flame due to incomplete combustion).
6. Several aromatic hydrocarbons are toxic.

Nomenclature

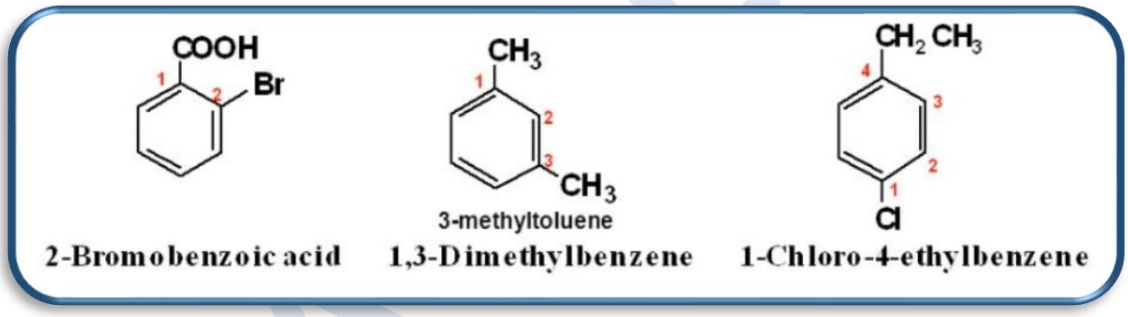
In the International Union of Pure and Applied Chemistry (IUPAC) system, aromatic hydrocarbons are named as derivatives of benzene.

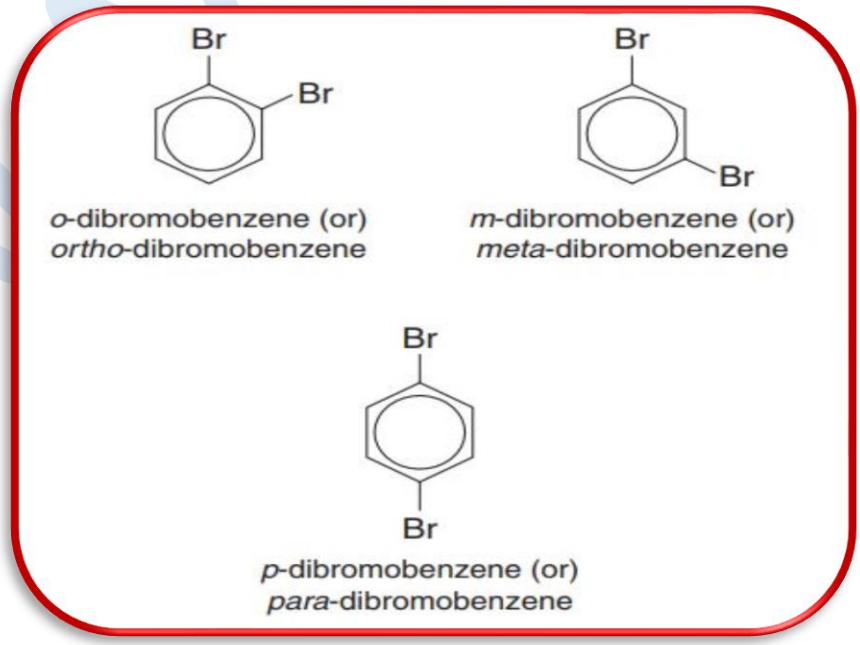


Although some compounds are referred to exclusively by IUPAC names, some are more frequently denoted by common names.



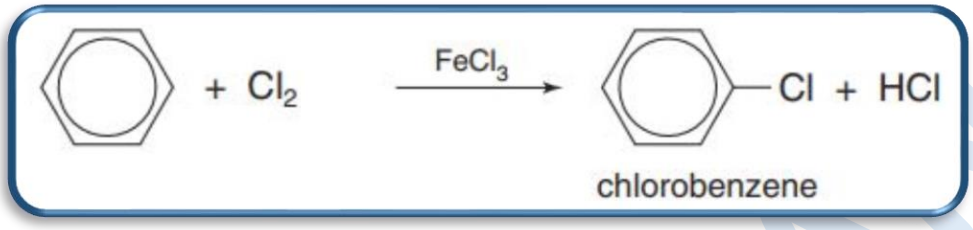
Where two groups are attached to benzene, the ring is numbered to give the lower numbers to substituents.



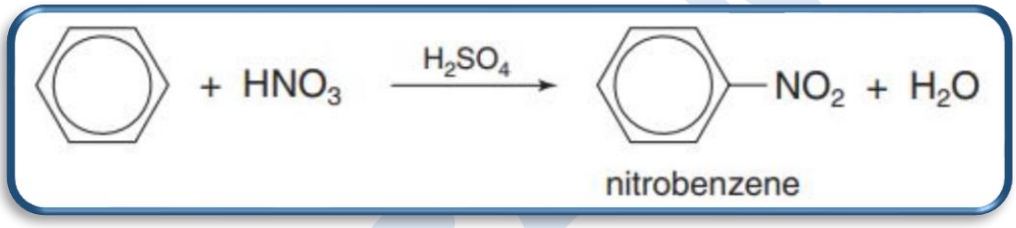


Reactions of Aromatic Hydrocarbons

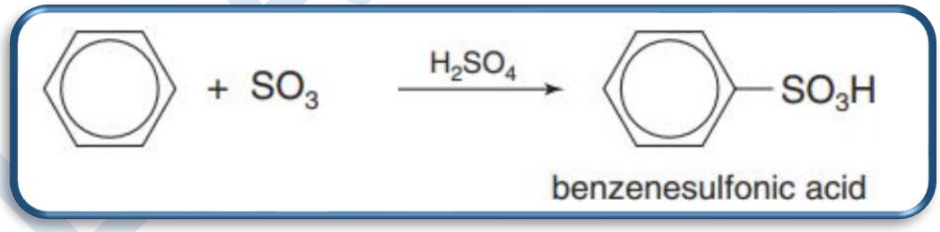
1. Halogenation:



2. Nitration:



3. Sulfonation:



4. Alkylation: