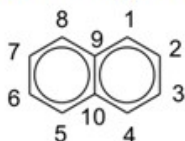
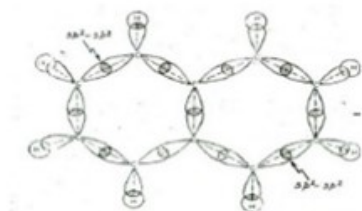


Naphthalene

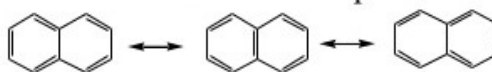
Position Number in Naphthalene



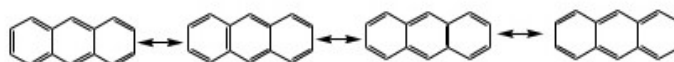
Molecular orbital structure of naphthalene



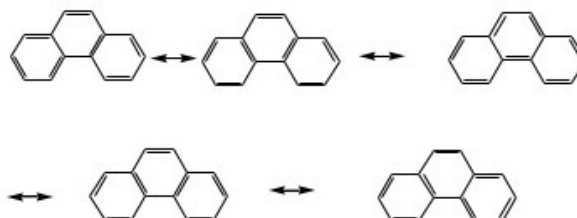
Resonance Forms of Naphthalene



Resonance Forms of Anthracene



Resonance Forms of Phenanthrene



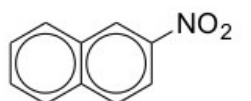
Molecular Formula: C₁₀H₈

Synonyms: naphthalene, Naphthalin, Naphthene, Camphor tar

Nomenclature of Naphthalene:

Mono substituted:

α- 1-
β- 2-



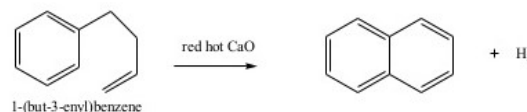
2-nitronaphthalene
β-nitronaphthalene

Molecular Weight: 128.17 g/mol

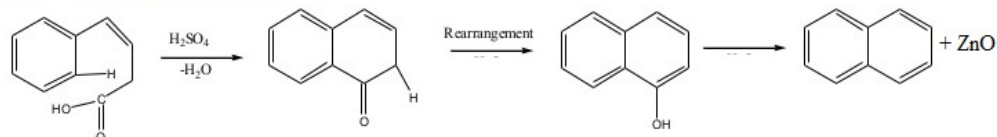
Preparation of Naphthalene:

1. From petroleum: extracton with copper at 680°C.

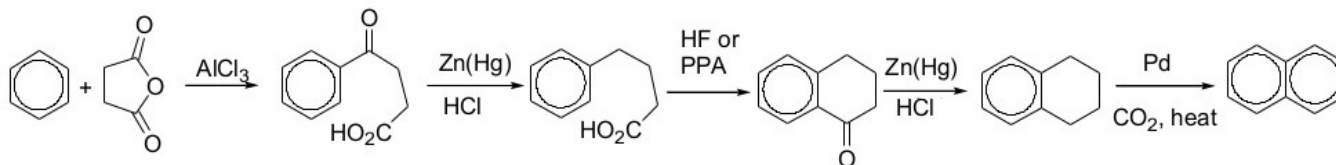
2. From 4-phenyl -1-butene: 4-phenyl -1-butene is passed over red hot calcium oxide to form naphthalene



3. Synthesis of Naphthalene from 4-Phenyl-3-Butenoic acid

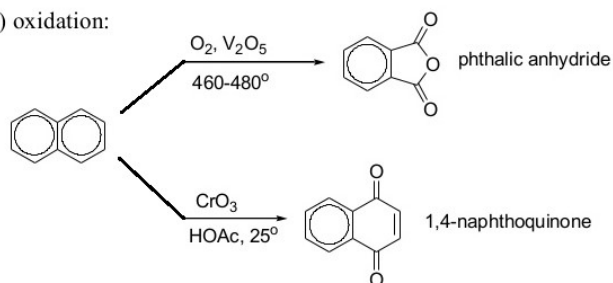


4. Haworth Synthesis of naphthalene

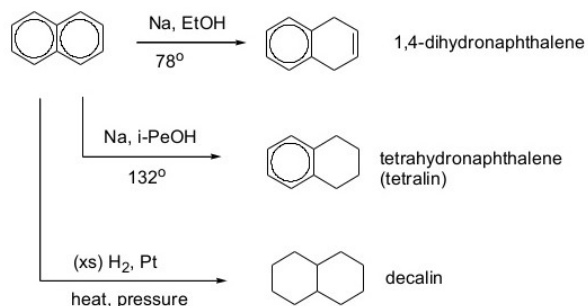


Chemical Reactions of Naphthalene:

1) oxidation:



2. Reduction:



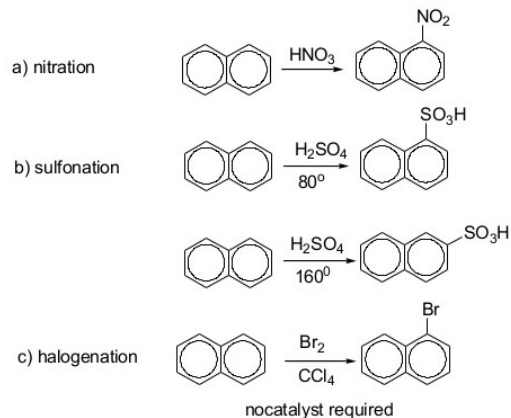
3. Electrophilic Aromatic Substitution:

Fries rule: The **most stable** arrangement of a polynuclear compound is that form which has the maximum number of rings in the **benzenoid condition**.

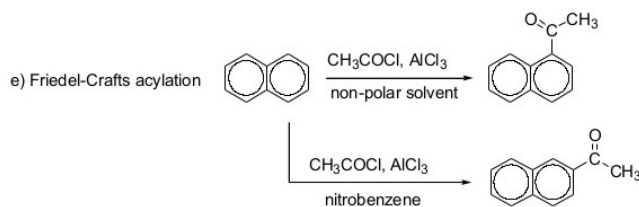
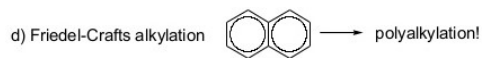
1-Substitution versus 2-substitution

Number of resonance structures

Aromatic sextet is retained (benzene has large R. E.)



Carbocation and T.S. resulting from attack at the 1-position are much more stable than those resulting from attack at the 2-position. Therefore, 1-substitution will be preferred.



Medicinal Uses: Naphthalene is a white, volatile, solid polycyclic hydrocarbon with a strong mothball odor. Naphthalene is obtained from either coal tar or petroleum distillation and is primarily used to manufacture phthalic anhydride, but is also used in moth repellents. Exposure to naphthalene is associated with hemolytic anemia, damage to the liver and neurological system, cataracts and retinal hemorrhage. Naphthalene is reasonably anticipated to be a human carcinogen and may be associated with an increased risk of developing laryngeal and colorectal cancer.