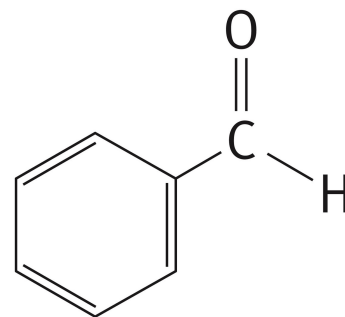


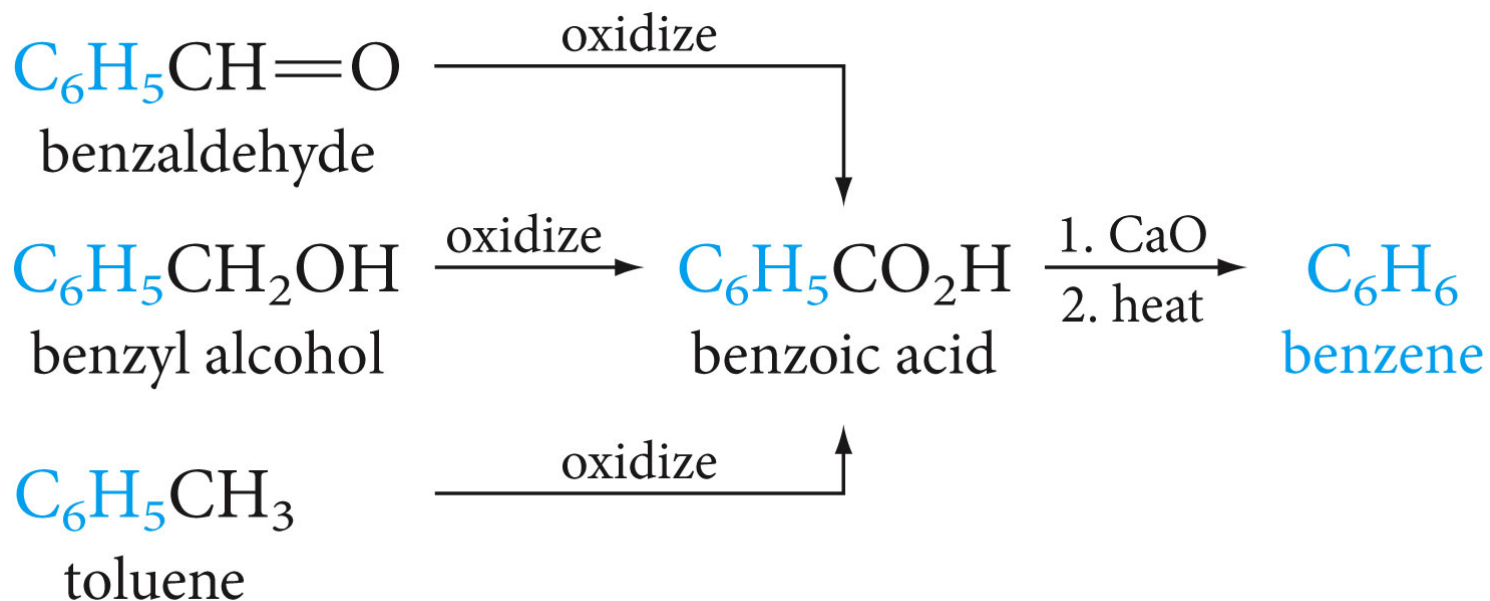
Chapter 4: Aromatic Compounds



benzaldehyde

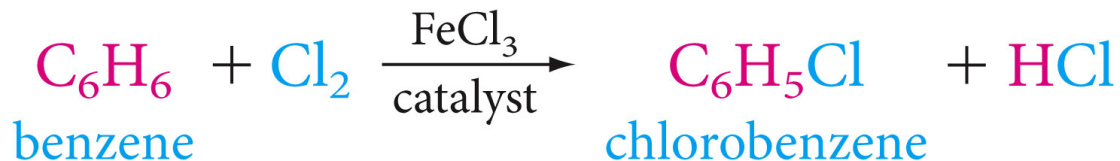
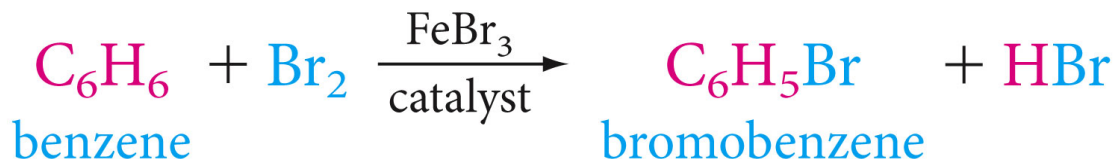
Bitter almonds are the source of the aromatic compound benzaldehyde

Sources of Benzene



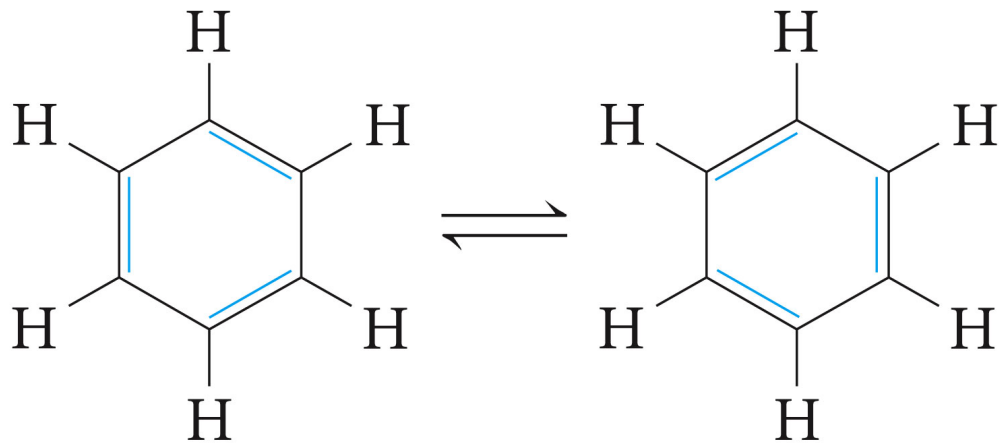
Some Facts About Benzene

Reacts mainly by substitution

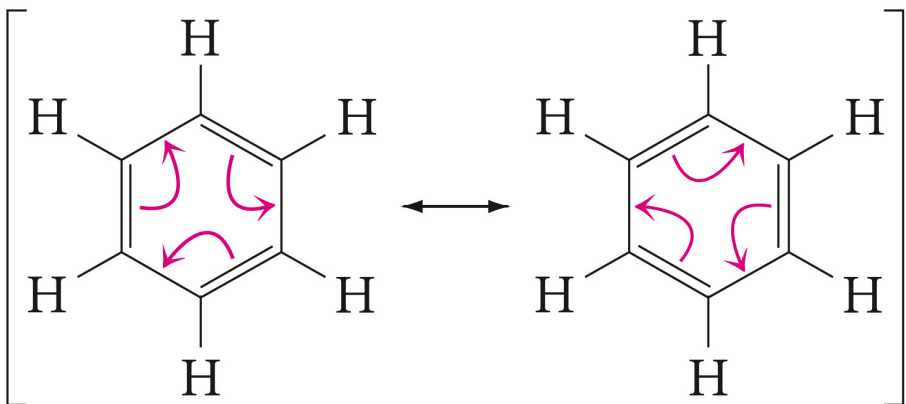




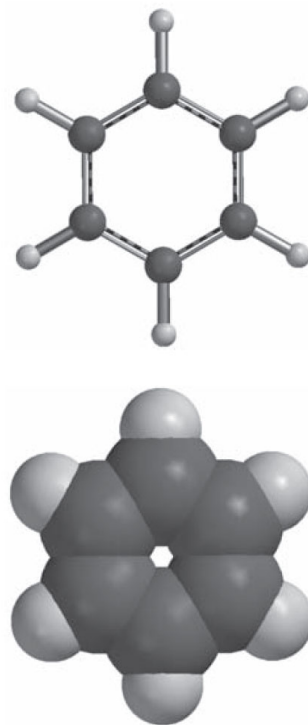
Friedrich August Kekulé



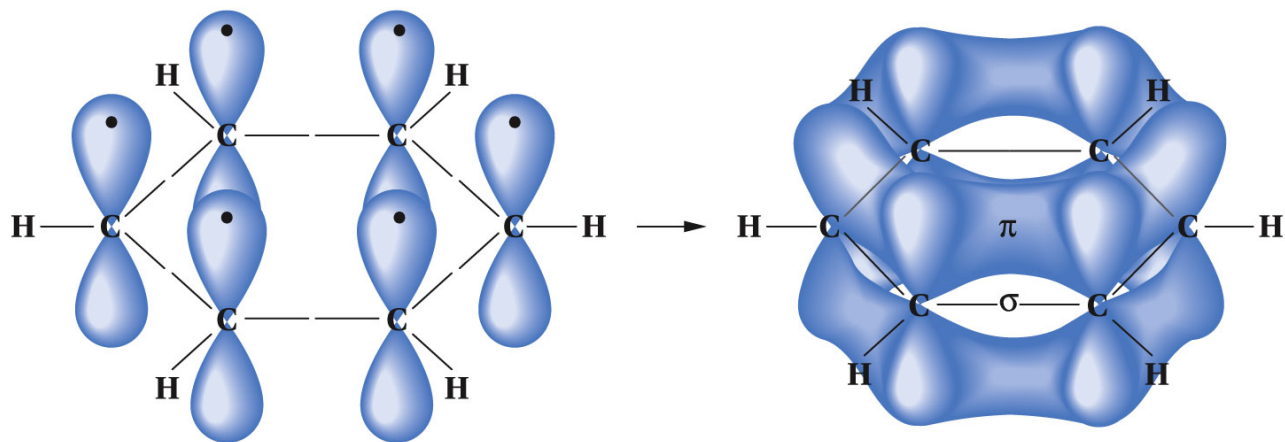
the Kekulé structures for benzene



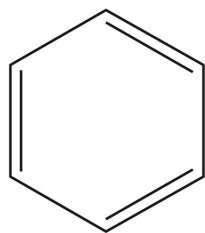
Benzene is a resonance hybrid of these two contributing structures.



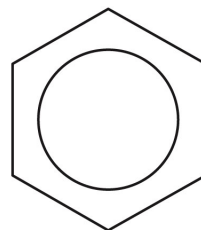
The Orbital Model for Benzene



Symbols for Benzene



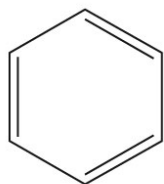
Kekulé



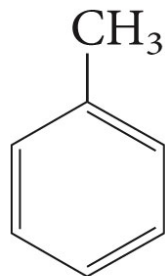
delocalized pi cloud

Nomenclature of Aromatic Compounds

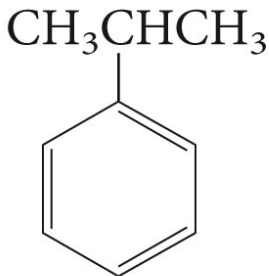
Monosubstituted benzenes with common names



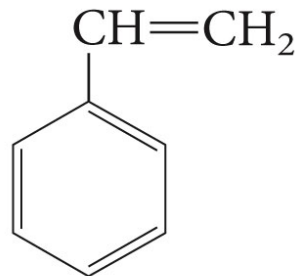
benzene



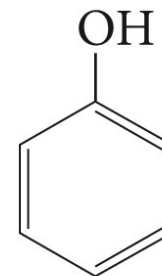
toluene



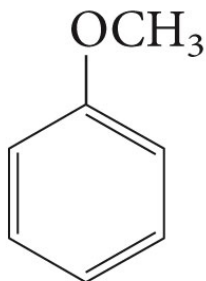
cumene



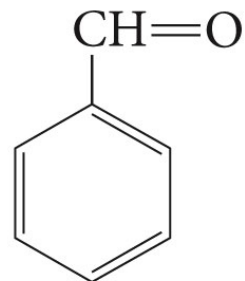
styrene



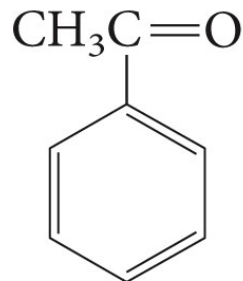
phenol



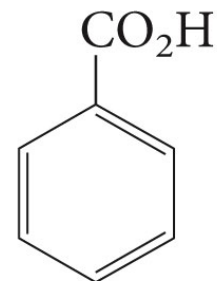
anisole



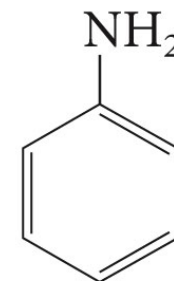
benzaldehyde



acetophenone

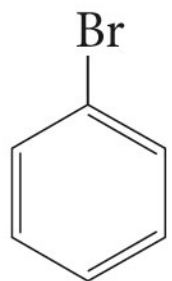


benzoic acid

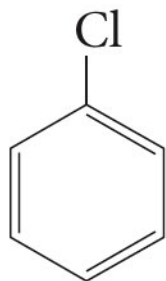


aniline

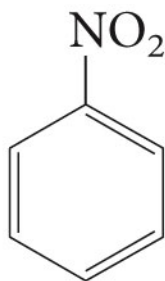
Monosubstituted benzenes that do not have common names



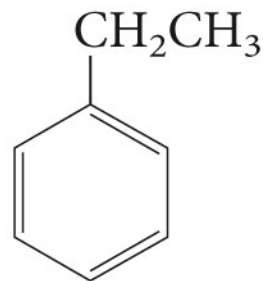
bromobenzene



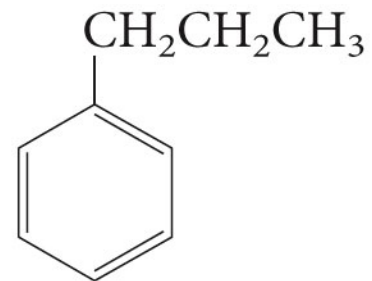
chlorobenzene



nitrobenzene

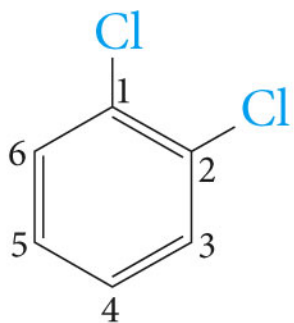
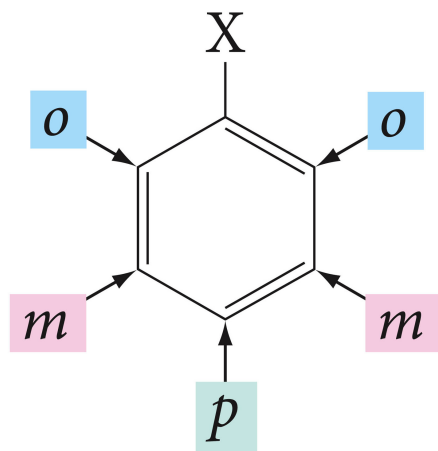


ethylbenzene

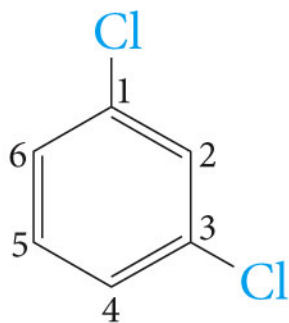


propylbenzene

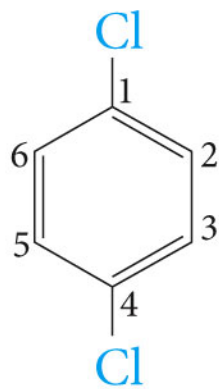
When two substituents are present, we use prefixes *ortho-*, *meta-*, and *para-*, usually abbreviated as o-, m-, and p-, respectively.



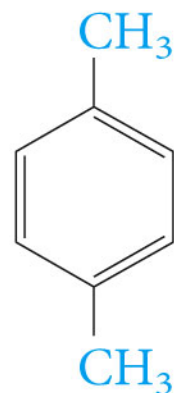
ortho-dichlorobenzene



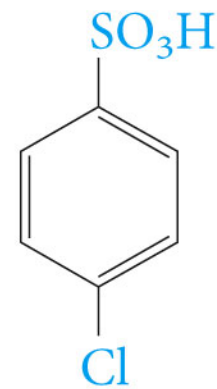
meta-dichlorobenzene



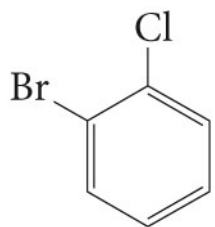
para-dichlorobenzene



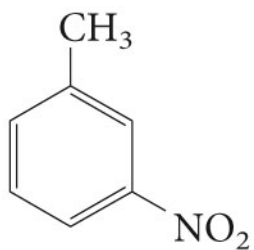
para-xylene**



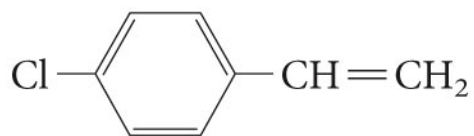
para-chlorobenzenesulfonic acid



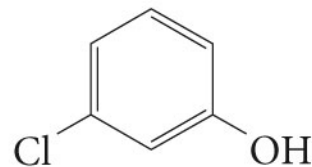
o-bromochlorobenzene
(note alphabetical order)



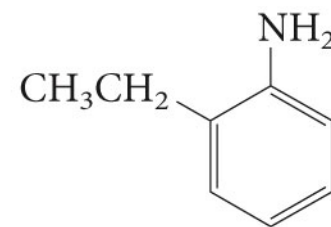
m-nitrotoluene



p-chlorostyrene

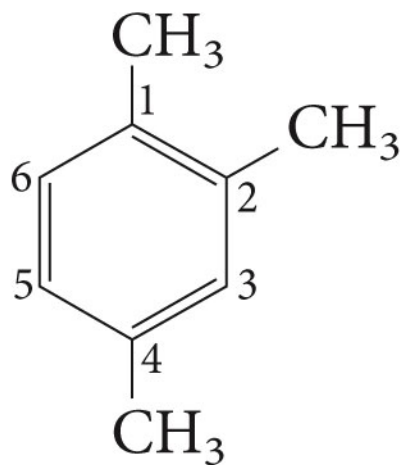


m-chlorophenol

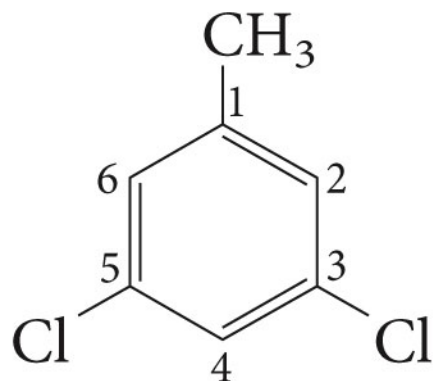


o-ethylaniline

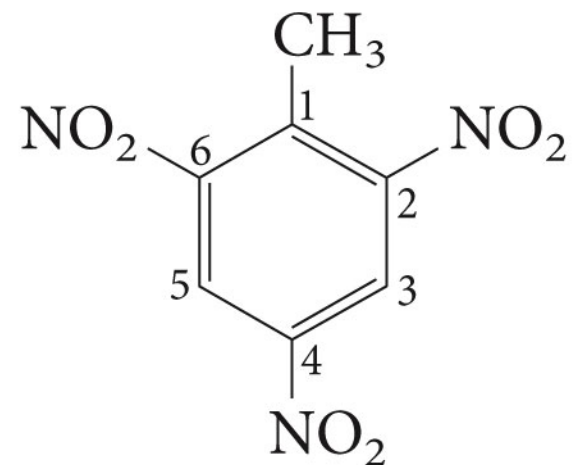
For more than two substituents, their positions are designated by numbering the ring.



1,2,4-tri-
methylbenzene

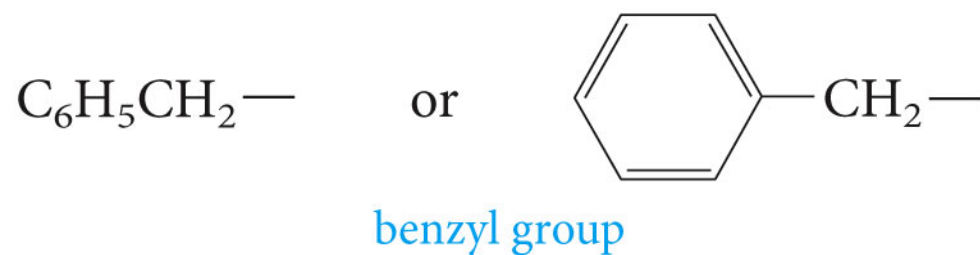
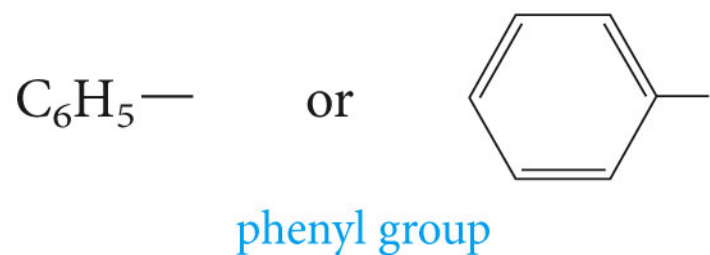


3,5-dichlorotoluene

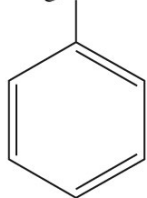


2,4,6-trinitrotoluene
(TNT)

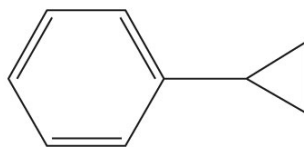
Aromatic hydrocarbons, as a class called Arenes (Ar) the aryl groups are therefore aromatic substituents.



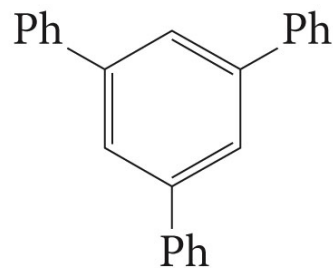
The symbol Ph is sometimes used as an abbreviation for phenyl group



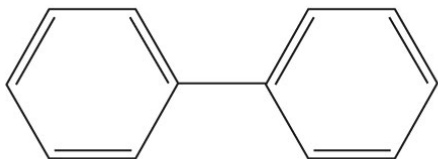
2-phenylpentane
(or 2-pentylbenzene)



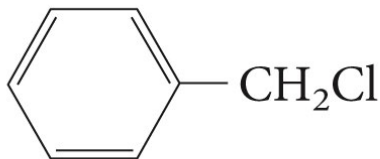
phenylcyclopropane
(or cyclopropylbenzene)



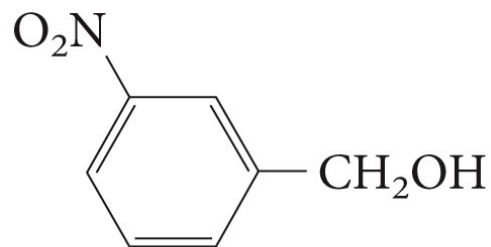
1,3,5-triphenylbenzene



biphenyl

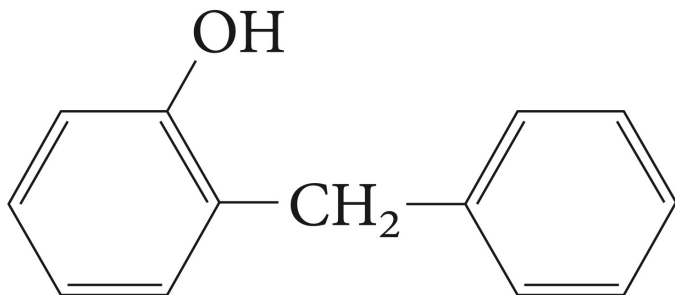
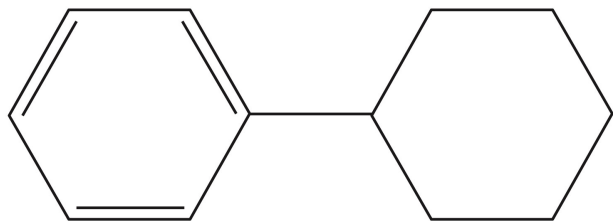


benzyl chloride

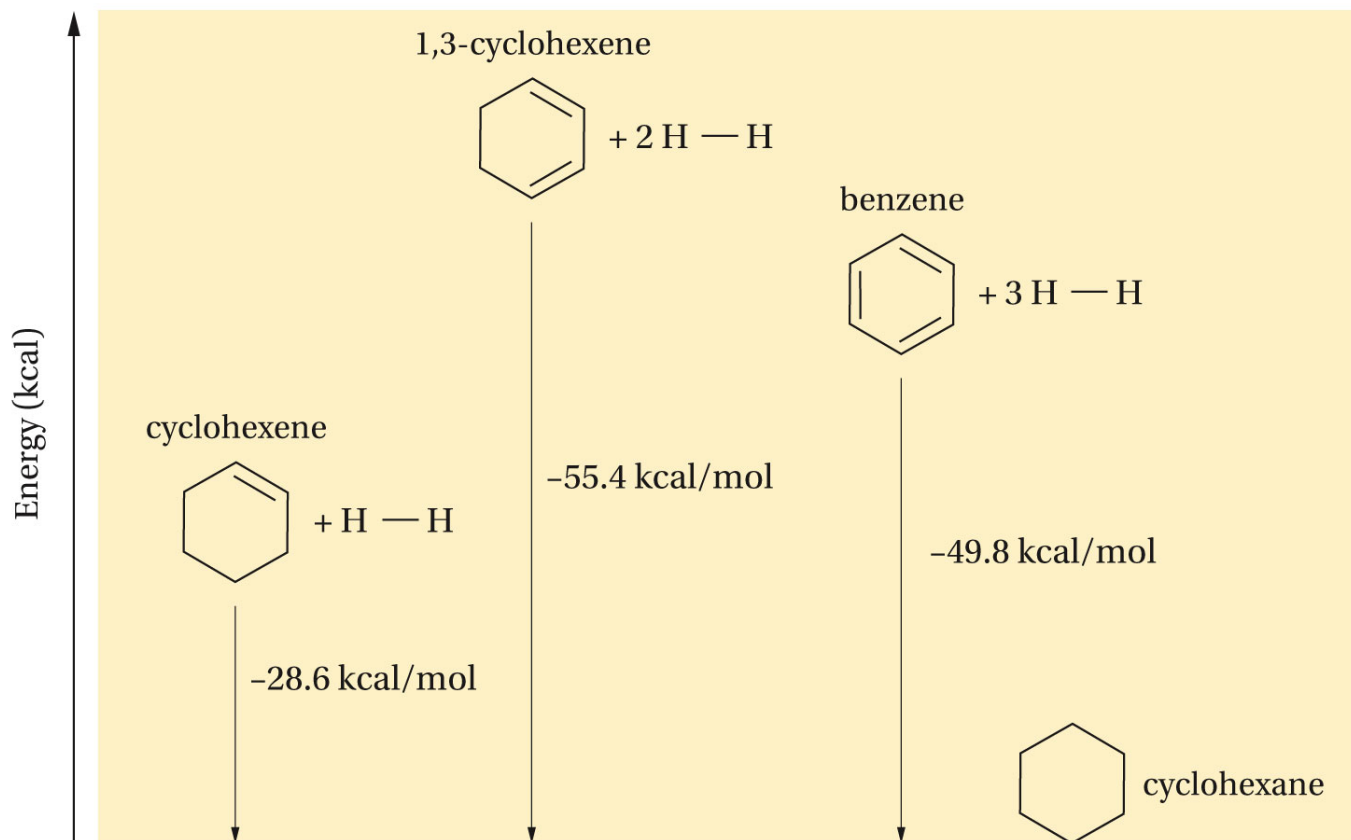
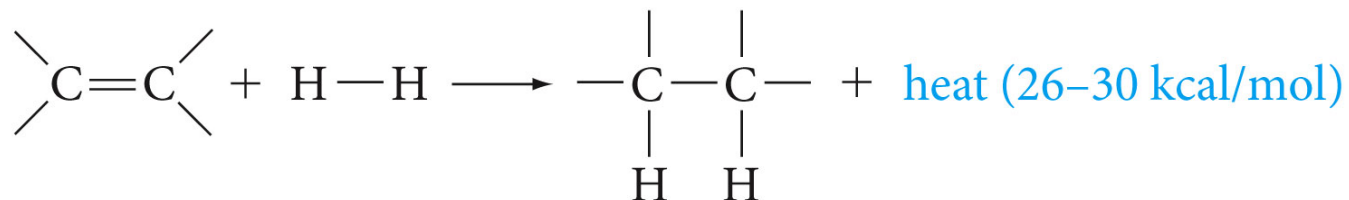


m-nitrobenzyl alcohol

Name the following structures



The Resonance Energy of Benzene



Electrophilic Aromatic Substitution

