



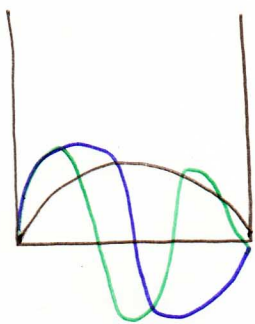
• Although the structure of benzene is represented as a series of alternating single and double bonds,

all of the C-C bonds are equal in length (in between the average length of a C-C and C=C). This is due to the fact that there is delocalization of the π electrons across all six carbons.

Aromaticity - An unusually large degree of stabilization due to complete delocalization of π electrons in a cyclic system.

Antiaromaticity - A significant destabilization of molecular structure due to cyclic conjugation.

Cyclobutadiene

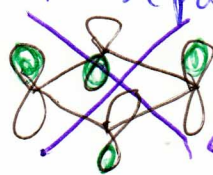
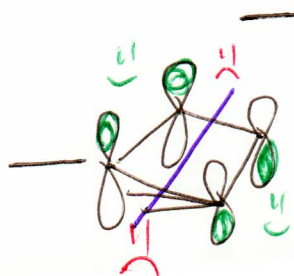
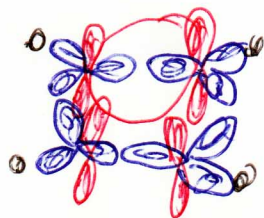


true structure

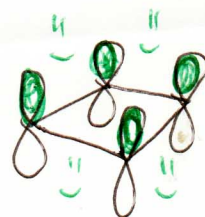
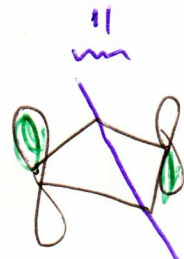


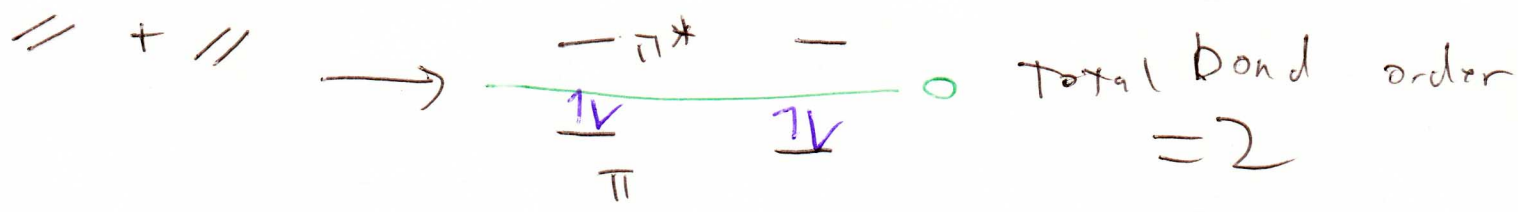
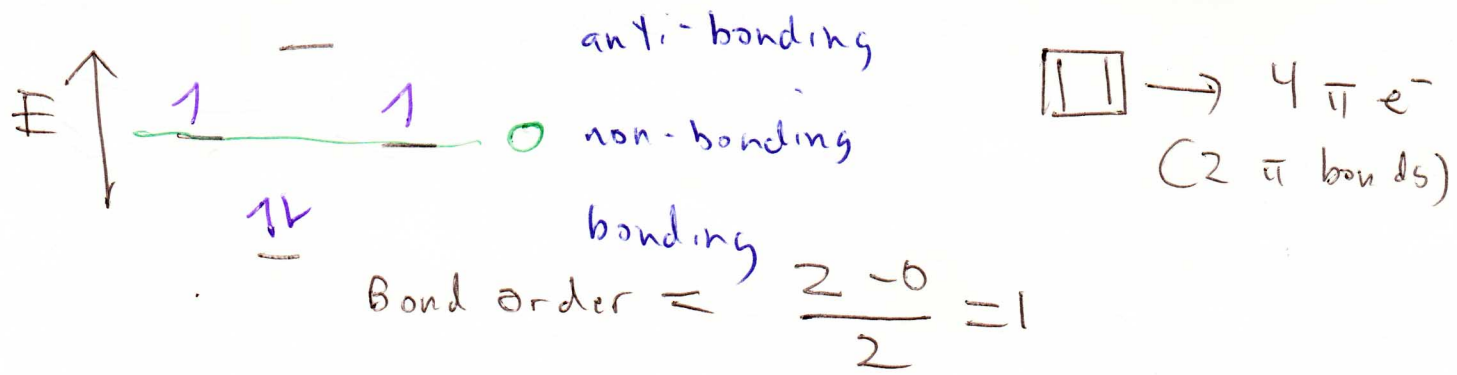
The single bonds in cyclobutadiene are unusually long and weak, due to the two π bonds attempting to separate from each other.

SMOG!



node





When two π bonds are cyclically conjugated, a set of molecular orbitals forms in which two electrons are forced into higher-energy, non-bonding orbitals. This is why the structure of cyclobutadiene is distorted, since by separating the two π bonds, the energy of the electrons in the π system is lowered.

