

Homework # 8, Chem. 1410, Assigned April 6, due April 17.

1. Would you expect  $H_4$  to be more stable as a linear or cyclic structure? Justify your answer.
2. Do you expect the geometry of  $H_2O$  to change appreciably upon removal of an electron from the highest occupied molecular orbital? What about upon addition of electron to the lowest unoccupied molecular orbital? Justify your answers.

3. Solve for the Huckel energies of the  $H_2C=C\begin{matrix} \cdot CH_2 \\ \cdot CH_2 \end{matrix}$  molecule.

Do you expect this molecule to have a singlet or triplet ground state?

Compare with the Huckel results with  $H_2C=C\begin{matrix} CH \\ || \\ CH \end{matrix}$

Which molecule is more stable according to Huckel theory?

You may want to use Mathcad to solve for the energies of the Huckel Hamiltonians.