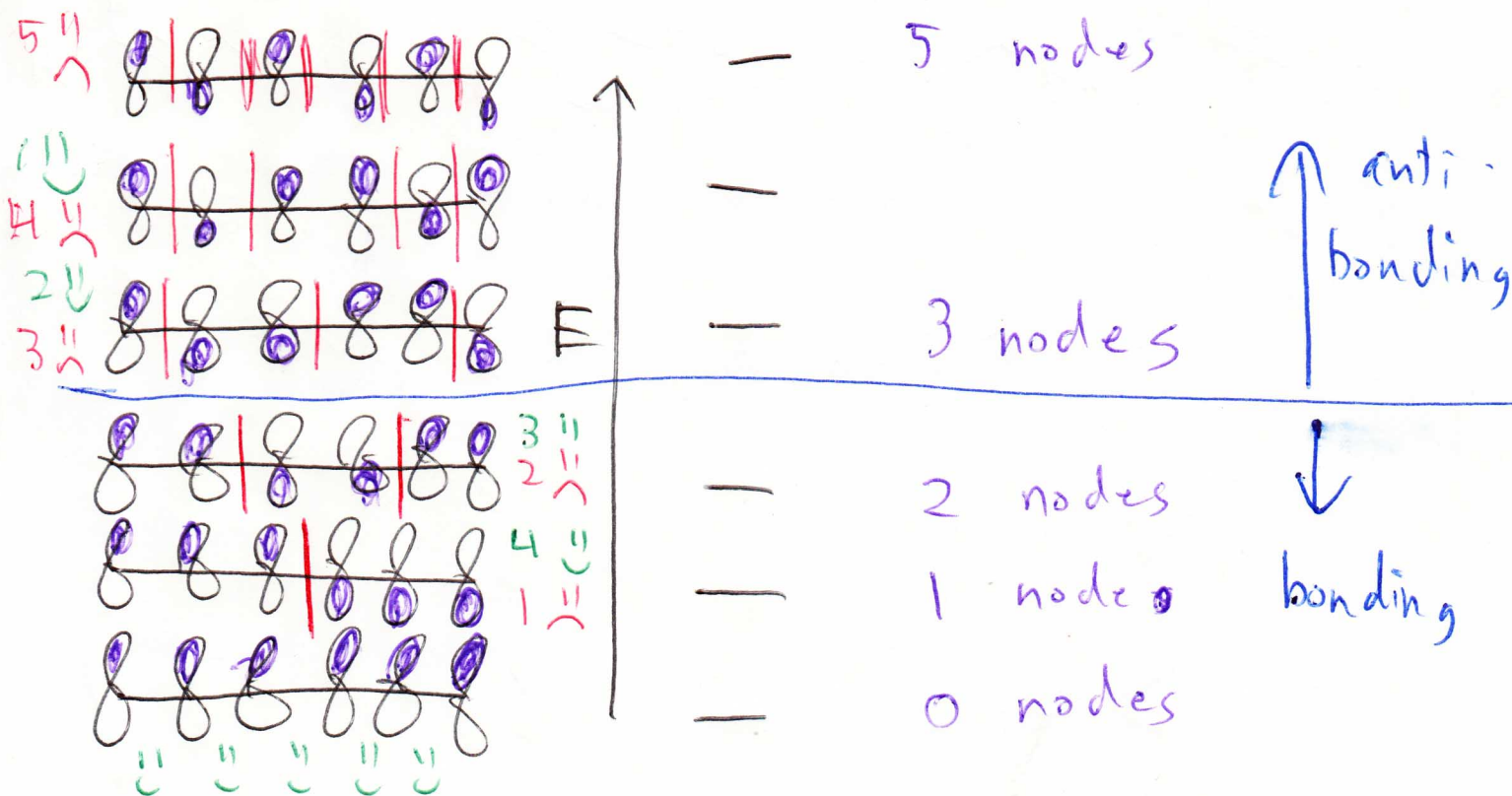


Frontier orbital theory

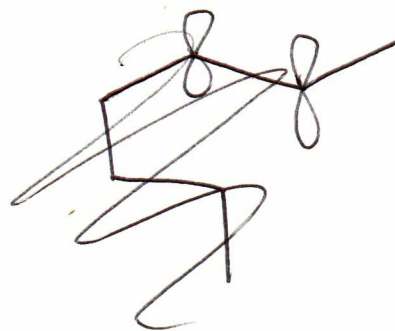
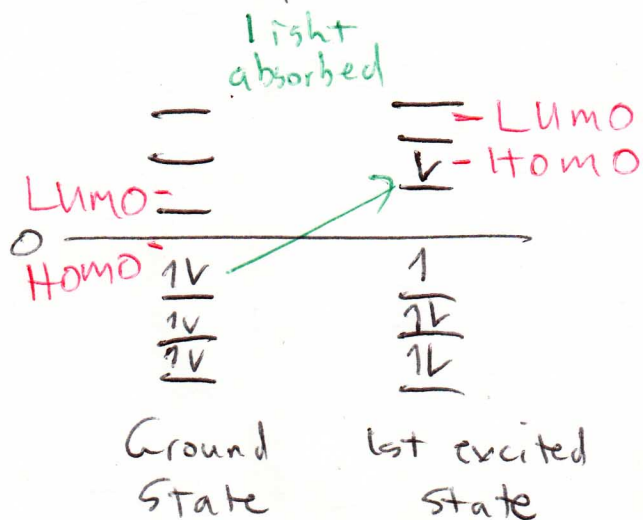
Frontier orbital theory describes reactions between π systems in much the same way as valence electrons in atomic systems; specifically, that reactions occur between the electrons in the highest occupied molecular orbital of one system (HOMO) and the lowest unoccupied molecular orbital (LUMO) of another system.

\rightarrow 6-orbital π -system

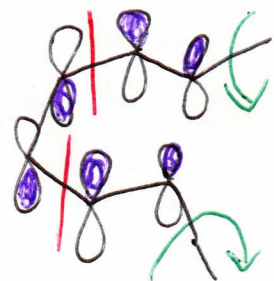


Ground vs excited states

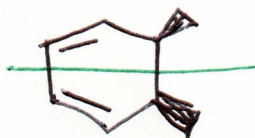
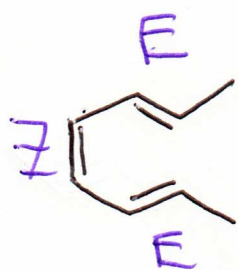
Ground state - When electrons are in their lowest energy electron configuration



Ground State HOMO



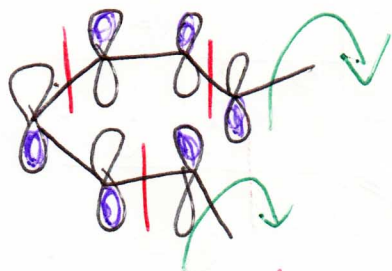
Disrotatory bond formation



meso
 \Downarrow
 optically inactive

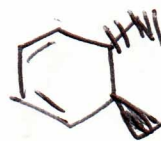
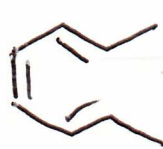
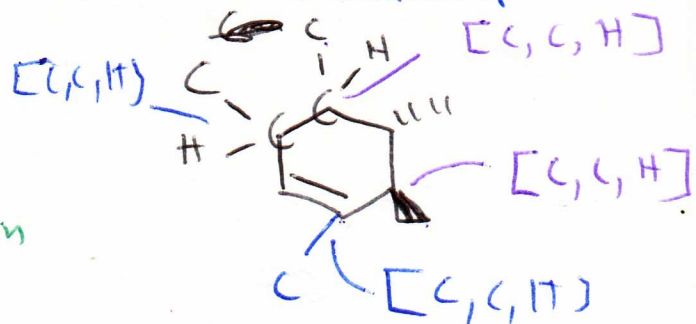
(2E,4Z,6E)-octa-2,4,6-triene

Photochemistry - Chemistry involving light as a critical component of the rxn mechanism.



1st excited state HOMO

Conrotatory bond formation



optically active

Exam Friday 3/16/12