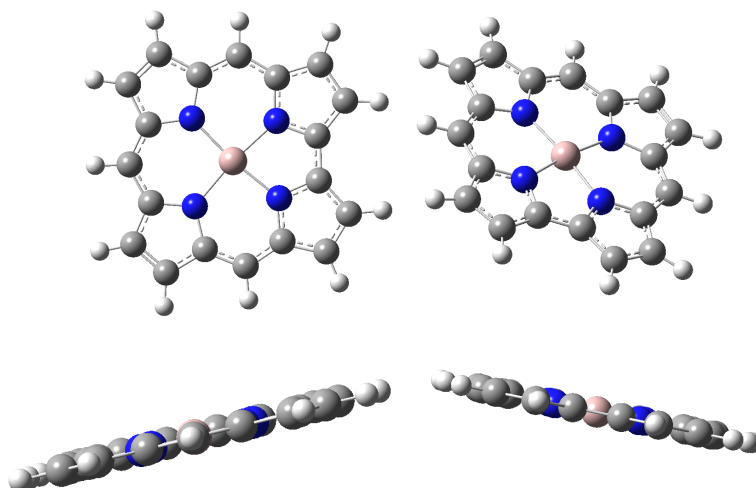
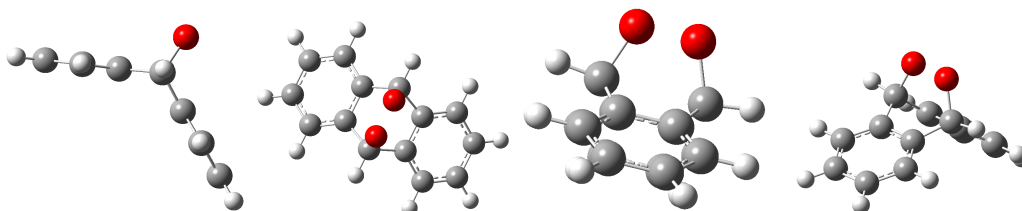


Deadline: lecture Thursday (2017-06-08)

1. (4 points) Displayed down below are two different molecules. Describe their symmetry properties. First molecule:



The second molecule:



2. (2 extra points) Presented a symmetry group in the lecture
3. (2 points) Lifetimes of excited states:
- Given is an H-atom in the 2s-state. Taking only electronic dipole transitions into account, which (radiating) lifetime would you expect without LS-coupling?
 - Argue, if LS-coupling would change the result.
 - Estimate the lifetime of the IR-vibration which absorption spectrum is shown below.

