

Notes 01/23

Wednesday, January 23, 2008
10:01 AM

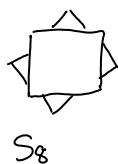
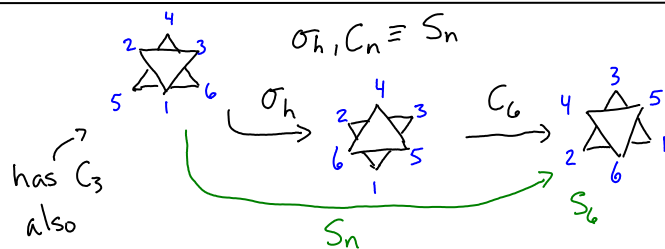


Notes 0123

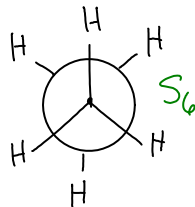
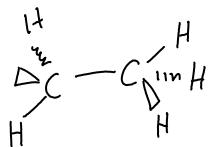
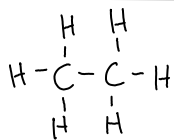
Audio recording started: 10:02 AM Wednesday, January 23, 2008

- Symmetry elements

- E: Identity
- i: inversion
- C_n : Rotation (proper)
- σ : mirror
- S_n : improper rotation



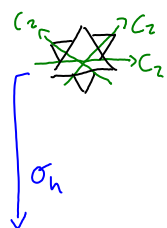
All S_n run along principle rotation axis



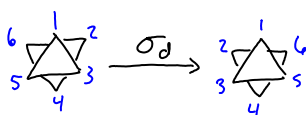
- Point group - identifies all possible symmetry elements in a molecule:

1. Determine the principle rotation axis
2. Are there any perpendicular C_2 ?
3. Are there σ_h , σ_v , σ_d ?

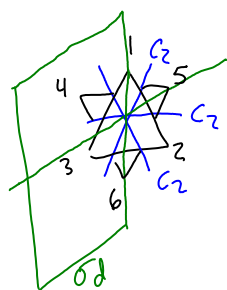
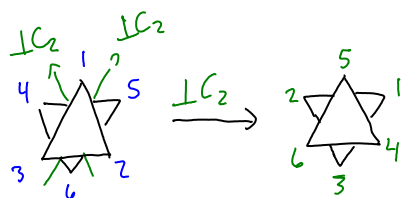
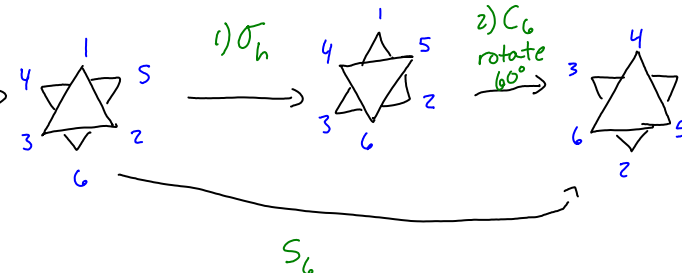
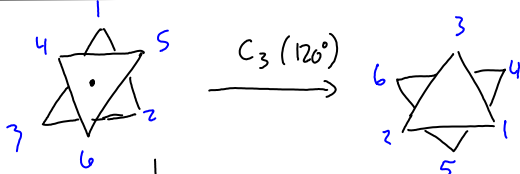
What is σ_d ... we never covered this:



C_3 is perpendicular to C_2
 C_3 along the $C_3 - \sigma_v$
 Σ_d bisects the perpendicular C_2 s.

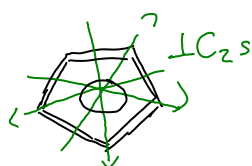


σ_d - along the principal rotation axis and bisects the perpendicular C_2 (does not contain the perpendicular C_2 axis)



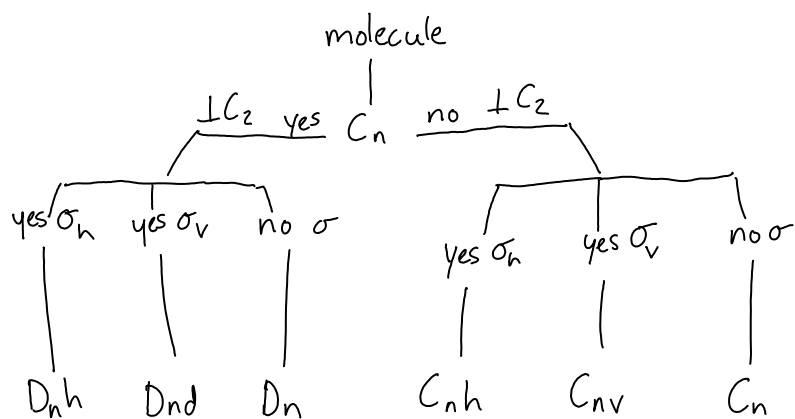


redraw
→

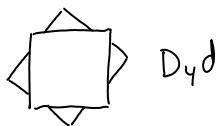


has C_5 , C_2 , σ_v , σ_h ← between rings
on axis of C_2 through Fe

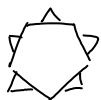
no σ_d



has C_3 , C_2 , σ_d → D_{3d} point group



D_{4d}



D_{5d}

Eclipsed forms:



C_3 , C_2 , σ_v , σ_h → D_{3h}