Course 343-5 Lecturer Prof. Geffman
Day FRIDAY 11 Date 10/14/2016
Notes Taken By Sungho Total # of Pages 4

Submit a *Single-sided Copy* to the Undergraduate Office
NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW

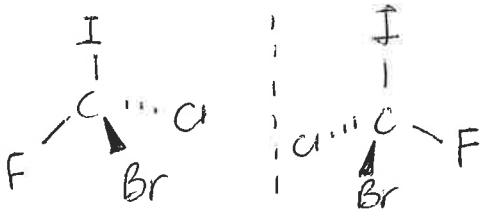
Recall: Stereochemistry

Stereoisomers: differ in spatial arrangements of atoms (not in bonding)

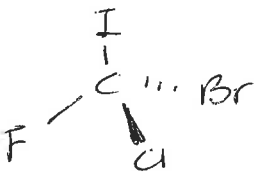
Enantiomers - mirror-image structures that are not superimposable

Same - no ~~isomer~~ enantiomer
achiral or non-chiral

Contrast:



not superimposable!
Pair of enantiomers



A molecule that has an enantiomer is "chiral"

Trends: ① Most molecules that are chiral contains at least one carbon that has 4 different bonding partners (chiral center; stereogenic center; asymmetric center)
(But there are exceptions.)

Course _____ Lecturer _____
Day _____ Date _____
Notes Taken By _____ Total # of Pages _____

Submit a *Single-sided Copy* to the Undergraduate Office
NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW

② Some molecules lacking asymmetric carbon centers are chiral.

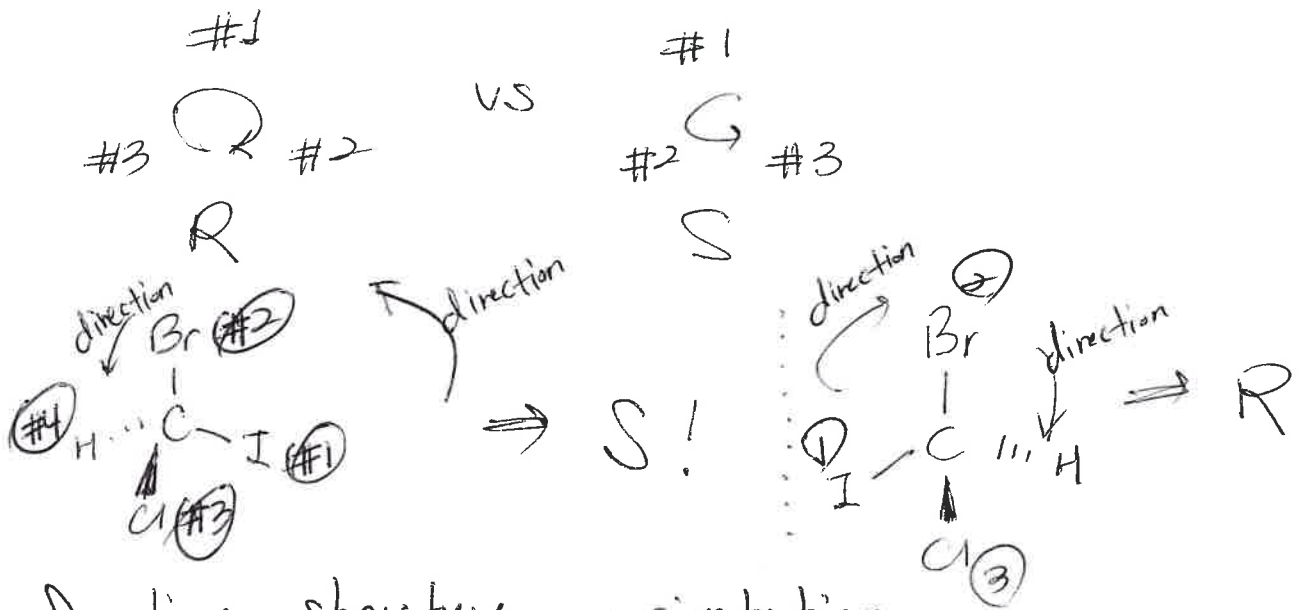
Chiral centers are designated R vs S
Assign R vs S based on substituent priority.

Procedure

1) Assign Priority to the four substituents on the central carbon

2) View down bond to lowest priority substituent (from carbon side)

Observe



Sometimes, structure reorientation is necessary...

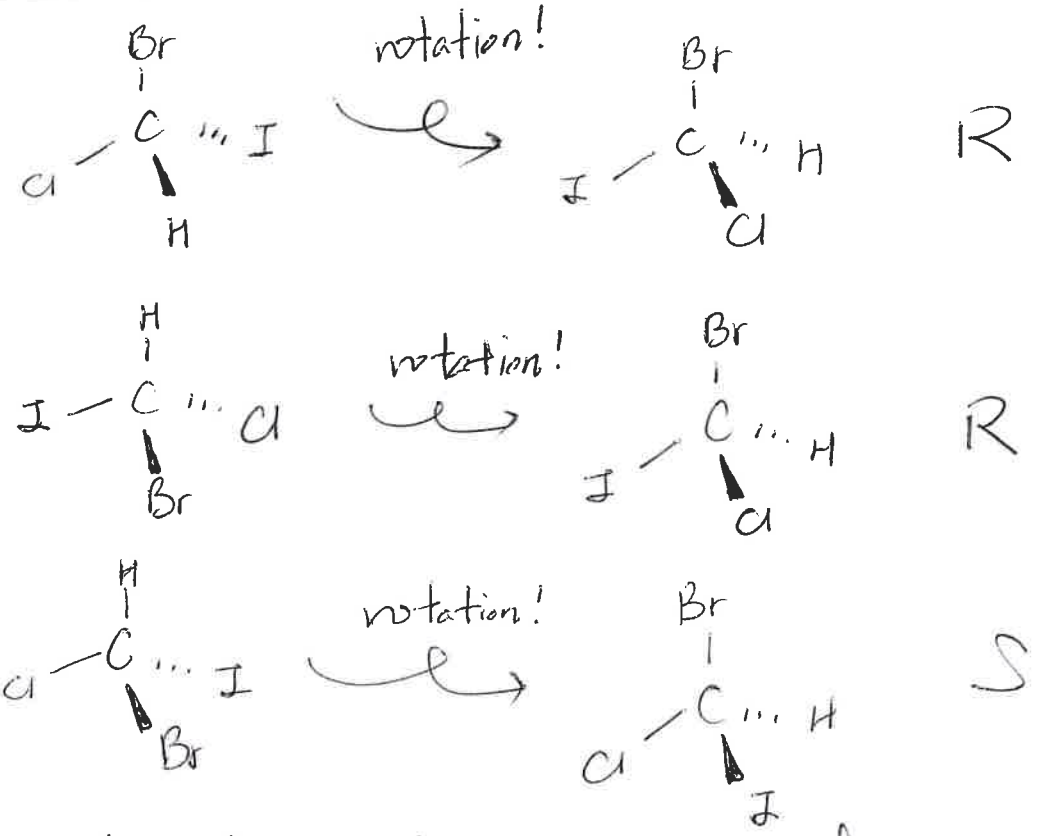
Course _____ Lecturer _____

Day _____ Date _____

Notes Taken By _____ Total # of Pages _____

Submit a *Single-sided Copy* to the Undergraduate Office

NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW



How to distinguish enantiomers from one another in terms of a physical (measurable) characteristic?

→ "optical activity"

(rotation of ~~the~~ plane-polarized ~~a~~ light as it passes through a solution containing the molecule)

→ pp. 237 - 240 for details

Specific rotation as ≠ characteristic parameter

Plane polarized light rotation: clockwise ⇒ (+) angle

counterclockwise ⇒ (−) angle

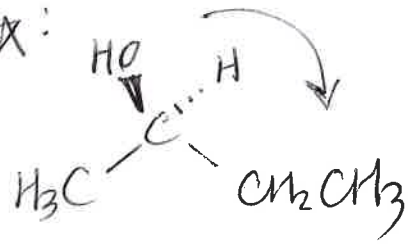
Course _____ Lecturer _____

Day _____ Date _____

Notes Taken By _____ Total # of Pages _____

Submit a *Single-sided Copy* to the Undergraduate Office

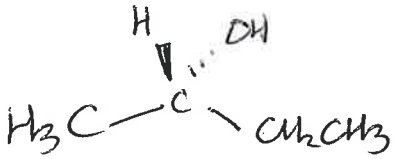
NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW

Ex: 

(R)- ~~(R)-~~ 2-butanol

R

Measure: $[\alpha]_D^{20} = -13.9°$



(S)-2-butanol $[\alpha]_D^{20} = +13.9°$

∴ (S)-(+)-2-butanol

(R)-(−)-2-butanol

1:1 mixture of enantiomers

= racemic mixture

Ex: (±)-2-butanol

≡ racemic mixture