Review quiz answers

2 stereocenters = 4 stereoisomers

1,2-dimethylcyclopentane

Same (i.e. superimposable)
Both have plane of symmetry
= meso - achiral, but has stereocenters
- only need to draw 3 stereoisomers

Chiral molecule w/o asymmetric carbon

\[ \text{CH}_3 \quad \text{C} \quad \text{C} \quad \text{C} \quad \text{H} \]

\[ \text{CH}_3 \quad \text{CH}_3 \quad \text{CH}_3 \]

don't need to worry about assigning \( R \) or \( S \) for double bonds

Make a model

To see that these are enantiomers
& are not superimposable, so not meso
Conformational stereoisomers are enantiomers but can't be isolated to rotate rapidly at room temp.

Chiral center: Mirror anti has plane of symmetry = achiral.

Amines

\[ \text{H} - \text{N} \cdots \text{CH}_3 \leftrightarrow [\text{H} - \text{N} \cdots \text{CH}_3]^{\pm} \leftrightarrow \text{H} - \text{N} \cdots \text{CH}_3 \]

Chiral because lone pairs as a group:
- but rapidly invert at room temp, so can't be isolated as R or S (R & S can't be separated)
- means they can't be optically active.

\[ \text{H} - \text{P} \cdots \text{CH}_3 \]
- don't invert at room temp, can have R & S separated, are optically active.
Resolution of Enantiomers

Recall: \( \text{CH}_3\text{NH}_2 + \text{CH}_3\text{C}^+\text{O}^-\text{H}^- \rightarrow \text{CH}_3\text{NH}_3^+\text{O}^-\text{C}^-\text{CH}_3^- \)

\[ \text{salt} \]

- \( \text{Ph} = \text{phenyl} \)

\begin{align*}
\text{Ph} & \text{H} \quad \text{R} \\
\text{Ph} & \text{H} \quad \text{S} \\
\text{CH}_3 & \\
\text{H}_2\text{N}^- & \\
\end{align*}

50:50 racemic enantiomers

\[ \text{drawn out} \]

- optical isomers can be separated by crystallization

\[ \text{NaOH} \rightarrow \text{H}_2\text{O} \]

\[ \text{extract to separate} \]

- salt will stay in \( \text{H}_2\text{O} \)
- amine will extract into ether

\[ \text{amine} \rightarrow \text{salt} \]

\[ \text{latein ccr extract} \]

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