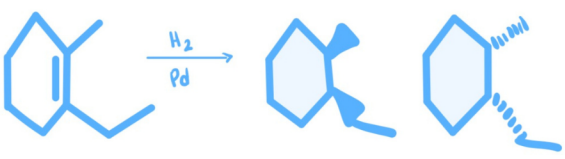
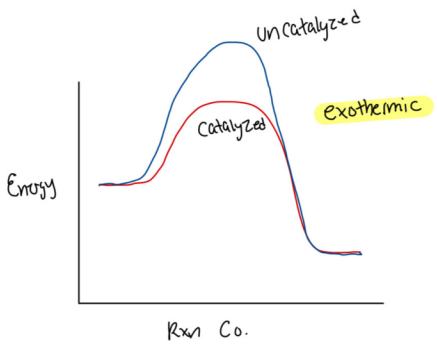
ALKENE HYDROGENATION

How to predict products



1. Change double bond to single bond
2. Add two Hydrogens via syn addition (both dashes or both wedges)
3. Product will be a racemic mixture of both wedges and dashes

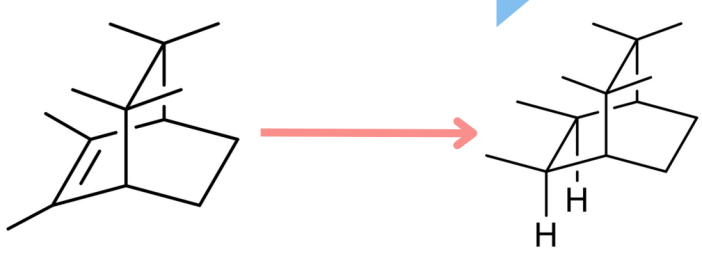


Reaction Coordinate

- Can be catalyzed (with a metal catalyst) or un catalyzed
- Proceeds faster via a metal catalyst
- A catalyst lowers the overall energy of the reaction andd increases the reaction rate

H's become axial from bottom face b/c the methyl's are equatorial and top face is strained

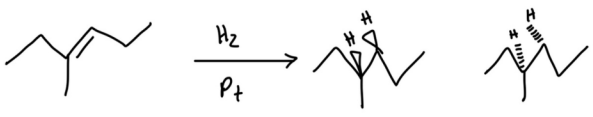
Has to attack from bottom face; top face has too much strain!



All about strain

- Syn addition due to way the double bond interacts w/ metal catalyst's surface
- Can't interact if strain is in the way
- Will attack from the face/side w/ less strain

Regioselectivity and Stereoselectivity



- Regioselective - H's attach on side with less strain
- Stereoselective - Syn addition

Reduction Reaction

↑ C-H

Reduction reactions ↑ the number of C-H bonds

Every hydrogenation is a reduction reaction

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