Terms to know

Markovnikov's rule

> in **addition reactions**, the proton is added to the carbon atom with the **greatest** number of hydrogen atoms attached to it

anti-Markovnikov's rule

> in **addition reactions**, the proton is added to the carbon atom with the **lowest number** of hydrogen atoms attached to it

zaitsev's rule

> in **elimination reactions**, the major product is the **more stable** alkene with the **highly substituted** double bond

M, Anti-M and V

link text

Elimination Reactions

E1

> multistep,

E2

> single step,

Terms

Protic

> Solvents with O-H or N-H bonds and the ability to hydrogen bond

Aprotic

> Solvents that dont

Nucleophile

> A simple metal and salt, nucleus "loving", usually anions

Electrophile

> Must contain a C-LG bond, electron "loving", usually cations

Solvolysis Reaction

> the nucleophile is also the solvent

Terms (cont)

E/Z System

> 1. Prioritize the 2 groups attached to each carbon relative to one another. If the higher priority groups are **cis**, its **Z**, it their **trans**, its **E**

Terms

Vicinal

> 2 atoms or groups bonded to same carbon

Geminal

> 2 atoms or groups beonged to the same side of the carbon

syn-addition

> added to same plane or same side of compound

anti-addition

> added to different sides of compounds

Geminal vs Vicinal

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Anti vs Syn

link text

Substitution Reactions

SN1

> 2 step, RR possible, tertiary reacts fastest

SN2

> 1 step, no RR, Primary reacts fastest

Elimination and Substitution Flowchart

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Addition Reactions

Names of Reaction	Kind of Reactant	Whats on Arrow	Product structure

Addition Reactions (cont)

Catalytic Hydrog-enation	Alkene	H2 , Ni, Pt or Pd	alkane, M not applic able, syn, No RR
Addition of hydrogen halides	Alkene	H-X	M, No syn/anti, I possible
Acid Catalyzed hydration	Alkene	H2SO4 or H+, H2O	New H ar OH adde M, no syn/anti, I possible
Hydrob-oration-O-xidation	Alkene	1. B3H6, 2. H20, -OH	New H ar OH adde Anti-M, S no RR
Addition of Halogens/-haloge-nation	Alkene	X2, CH3Cl	new vicin halogens not applic able, Anti No RR
Cohalo-genation	Alkene	Br2, H2O	new halogen a OH, M of OH and Anti-M fo halogen, Anti, No R
Expoxi-dation	Alkene	RCOO-OH (peroxide)	Expodie i formed, M not applic able, Syn No RR
Ozonolysis	Alkene	1. O3, 2. H2O	2 carbony compoun nothing e applicable

M=Markovnikov's Rule
Anti-M= Anti-Markovnikov's Rule
RR=Rearrangement

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