

CH2070 General Reactions

Free Radical Halogenation of Alkanes



Alcohols + HX

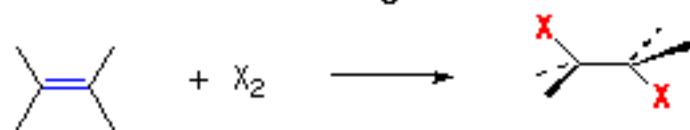
Know Mechanism



Rearrangements are possible

General Reactions of Alkenes

Addition of Halogen

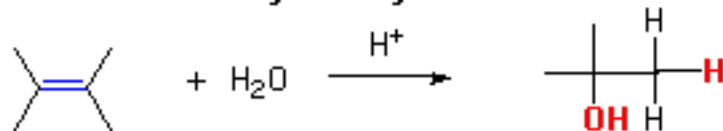


X = Cl, Br

anti addition

Know Mechanism

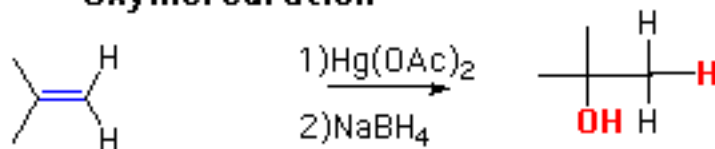
Acid Catalysed Hydration



Markovnikov Addition

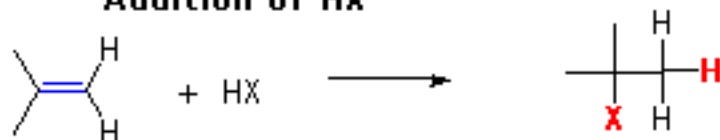
Know Mechanism

Oxymercuration



Markovnikov Addition

Addition of HX

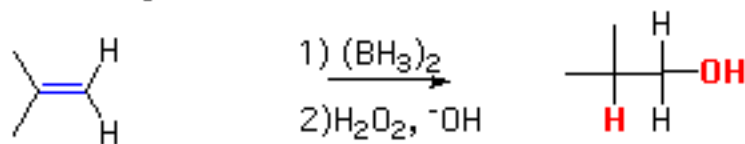


X = Cl, Br, I

Markovnikov Addition

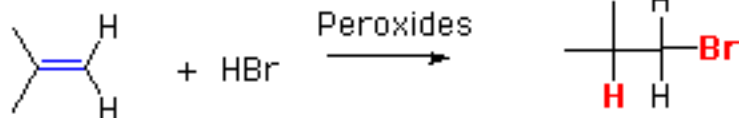
Know Mechanism

Hydroboration - Oxidation



anti-Markovnikov Addition

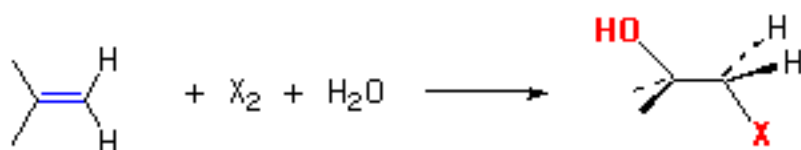
Free Radical Addition



Know Mechanism

anti-Markovnikov Addition

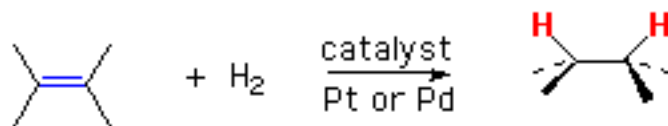
Halohydrin Formation



Know Mechanism

anti addition

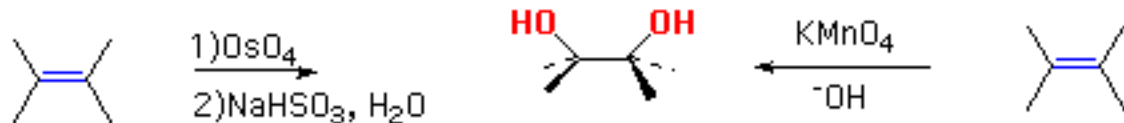
Hydrogenation



Know Mechanism

Syn or cis addition

Glycol Formation



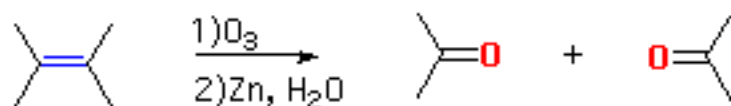
Syn or cis addition

Epoxide Formation

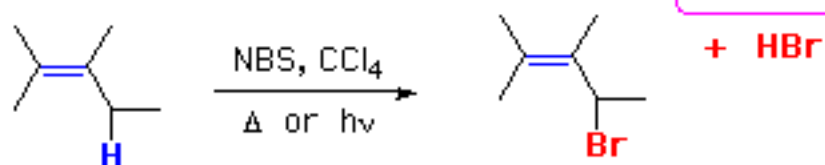


Know Mechanism

Ozonolysis

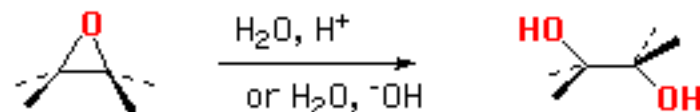
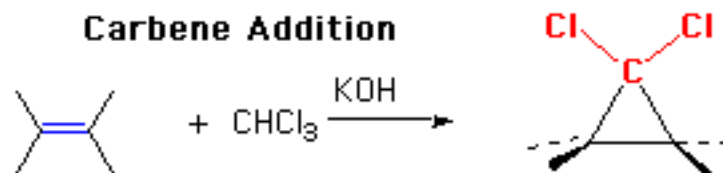


Allylic Bromination



Know Mechanism

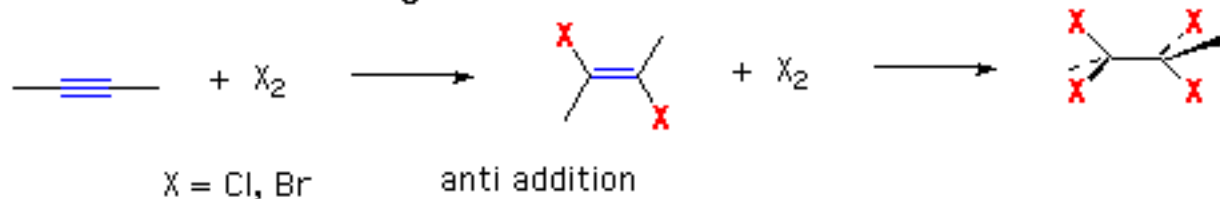
Carbene Addition



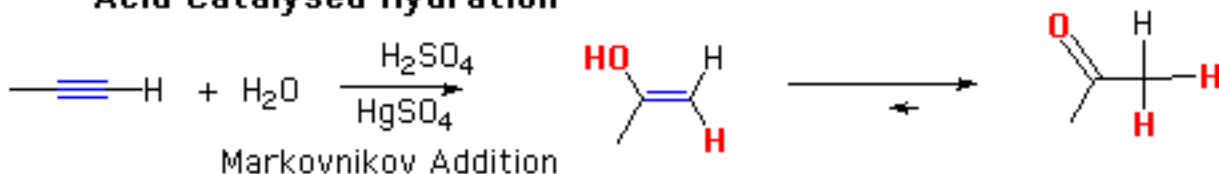
Know Mechanisms

General Reactions of Alkynes

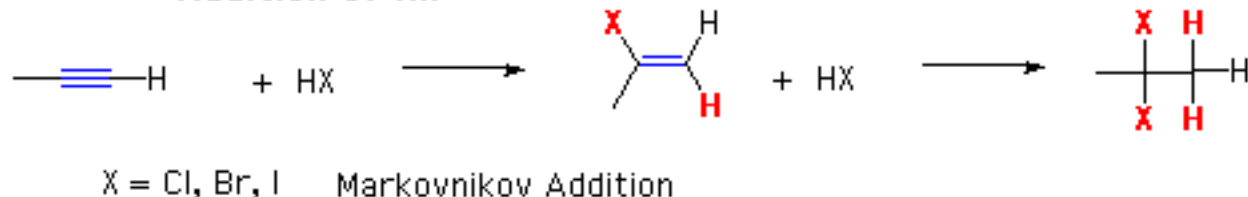
Addition of Halogen



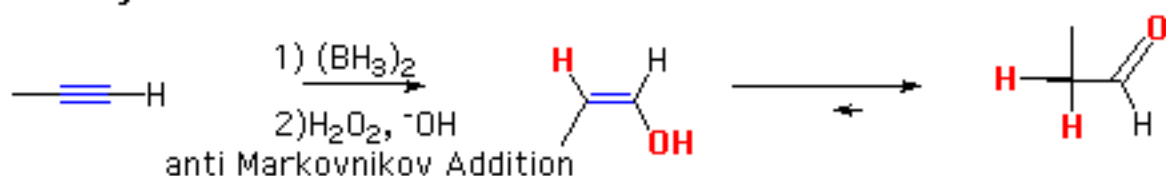
Acid Catalysed Hydration



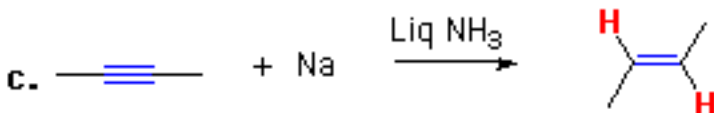
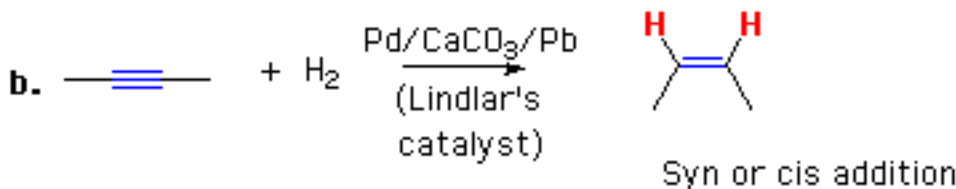
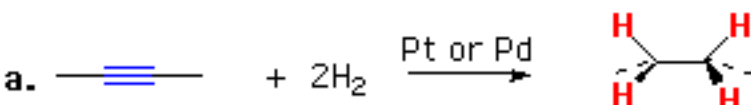
Addition of HX



Hydroboration - Oxidation



Hydrogenation

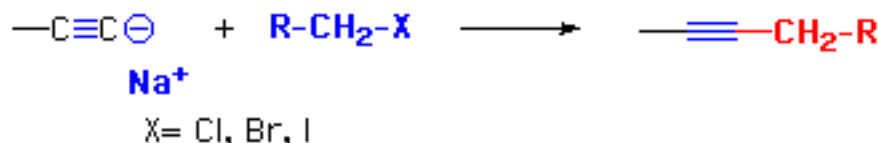


Anti or trans addition

Acetylide Anion Formation



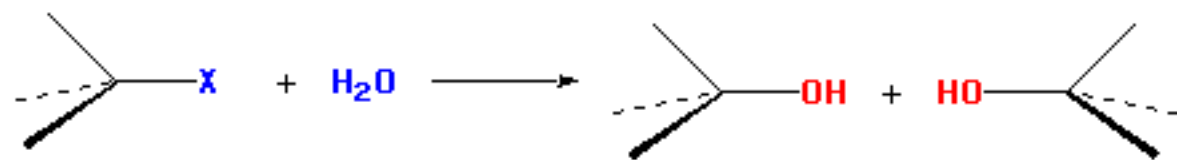
Reaction of Acetylide Anions with 1° Alkyl Halides



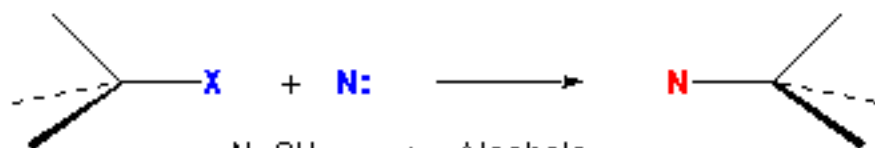
Nucleophilic Substitution

S_N1 Reaction

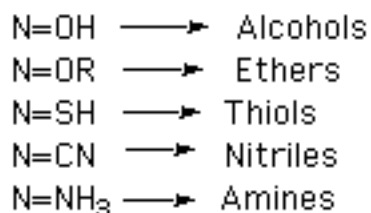
Know Mechanism



S_N2 Reaction

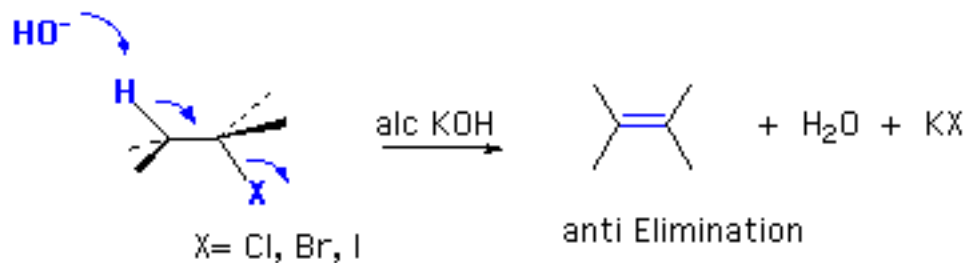


Know Mechanism



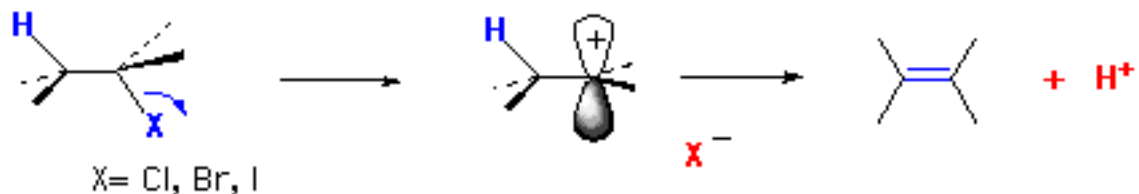
Elimination Reactions

E2 Elimination Reactions



Know Mechanism

E1 Elimination Reactions

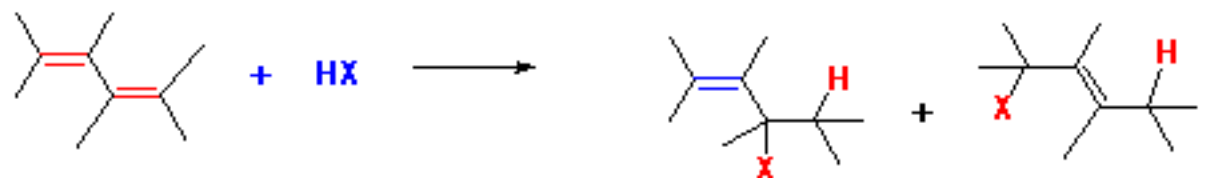


Know Mechanism

Reactions of Dienes

Addition of HX

Know Mechanism



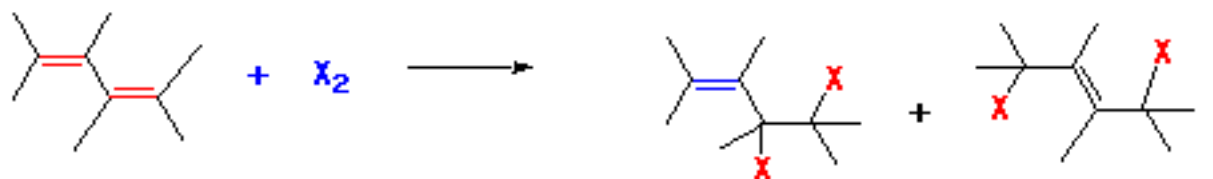
X = Cl, Br, I

1,2-Addition

1,4-Addition

H adds to the end of the diene system with most hydrogens

Addition of X₂

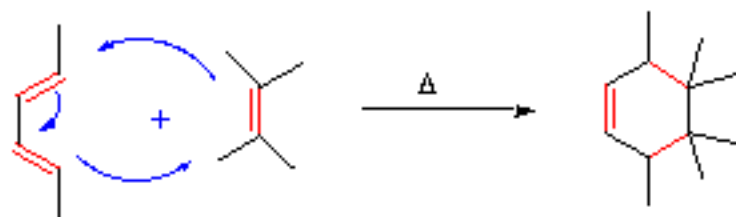


X = Cl, Br

1,2-Addition

1,4-Addition

Diels-Alder Reaction



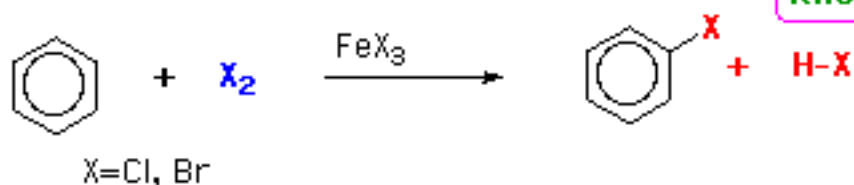
Always makes a cyclohexene

Diene

Dienophile
(Alkene)

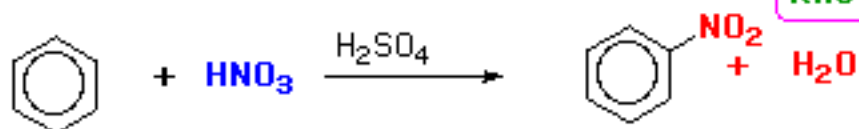
Electrophilic Aromatic Substitution Reactions

1. Halogenation



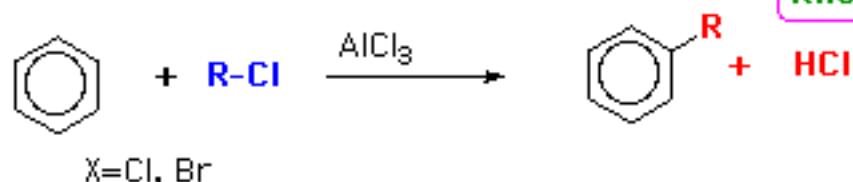
Know Mechanism

2. Nitration



Know Mechanism

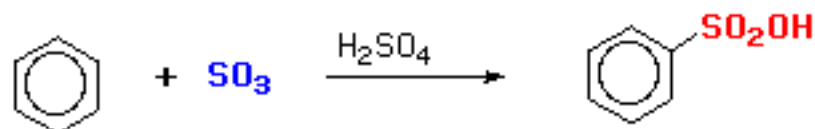
3. Alkylation



Know Mechanism

Involves carbocations - rearrangements possible

4. Sulfonation



Know Mechanism

Activating o,p Directors

$-OH$, $-O-R$, $-NH_2$, $-CH_3$ (alkyl)



Deactivating m Directors

$-NO_2$, $-SO_2OH$, $-CN$

