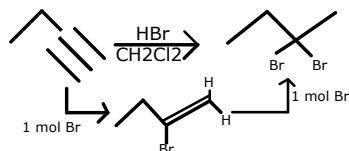


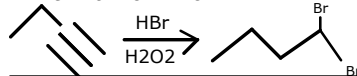
ALKYNE REACTIONS

HX Addition X=Halogen

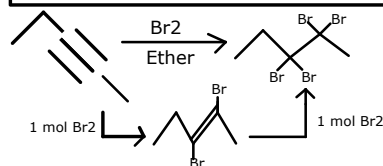
Markovnikov:



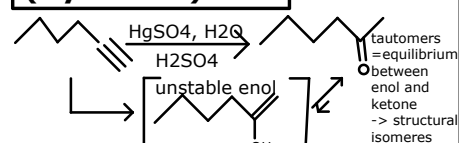
Anti Markovnikov:



Halogenation, Addition of X₂

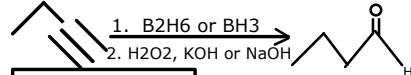


Oxymercuration (Hydration)



Hydroboration (Hydration)

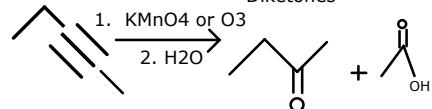
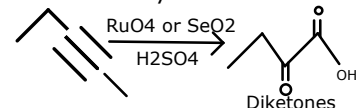
Markovnikov:



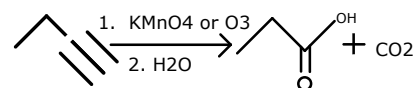
Oxidations

Antimarkovnikov:

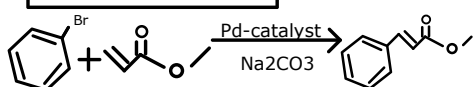
Internal Alkynes:



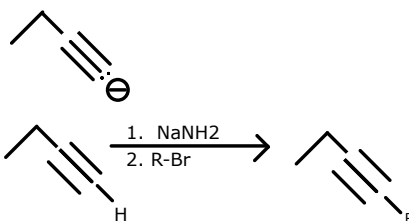
Terminal Alkynes:



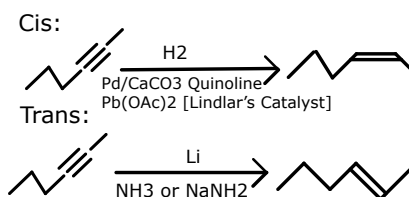
Heck Reaction



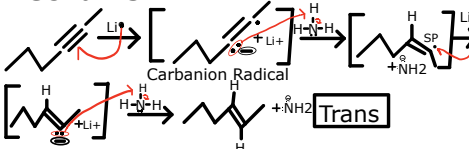
Acetylide Ion



Reductions



Mechanism:



Reagent Guide

Alkynes:

- **HBr/CH₂Cl₂** = Markovnikov addition of bromine (2 Br)
- **HBr/H₂O₂** = Antimarkovnikov addition of Br (2 Br)
- **Br₂/Ether** = Addition of 4 Br (2 on each side of triple bond)
- **HgSO₄, H₂O/H₂SO₄** = ketone formation
- **1. B₂H₆ or BH₃/2. H₂O₂, KOH or NaOH** = Aldehyde formation
- **RuO₄ or SeO₂/H₂SO₄** = diketone formation
- **Internal Alkynes**
1. KMnO₄ or O₃/2. H₂O = 2 carboxylic acids (cleavage rxn)
- **Terminal Alkynes**
1. KMnO₄ or O₃/2. H₂O = Carboxylic Acid & CO₂ (cleavage rxn)
- **Heck RXN** = see example
- **Terminal Alkyne**
1. NaNH₂/2. R-Br = Addition of "R." R could be CH₃, CH₂CH₃, CH₂CH₂CH₃, etc. New carbon-carbon bond formed
- **H₂/Lindlar's Catalyst** = Cis reduction
- **Li/NH₃ or NaNH₂** = trans reduction

