

# *Alkyne Reactions*

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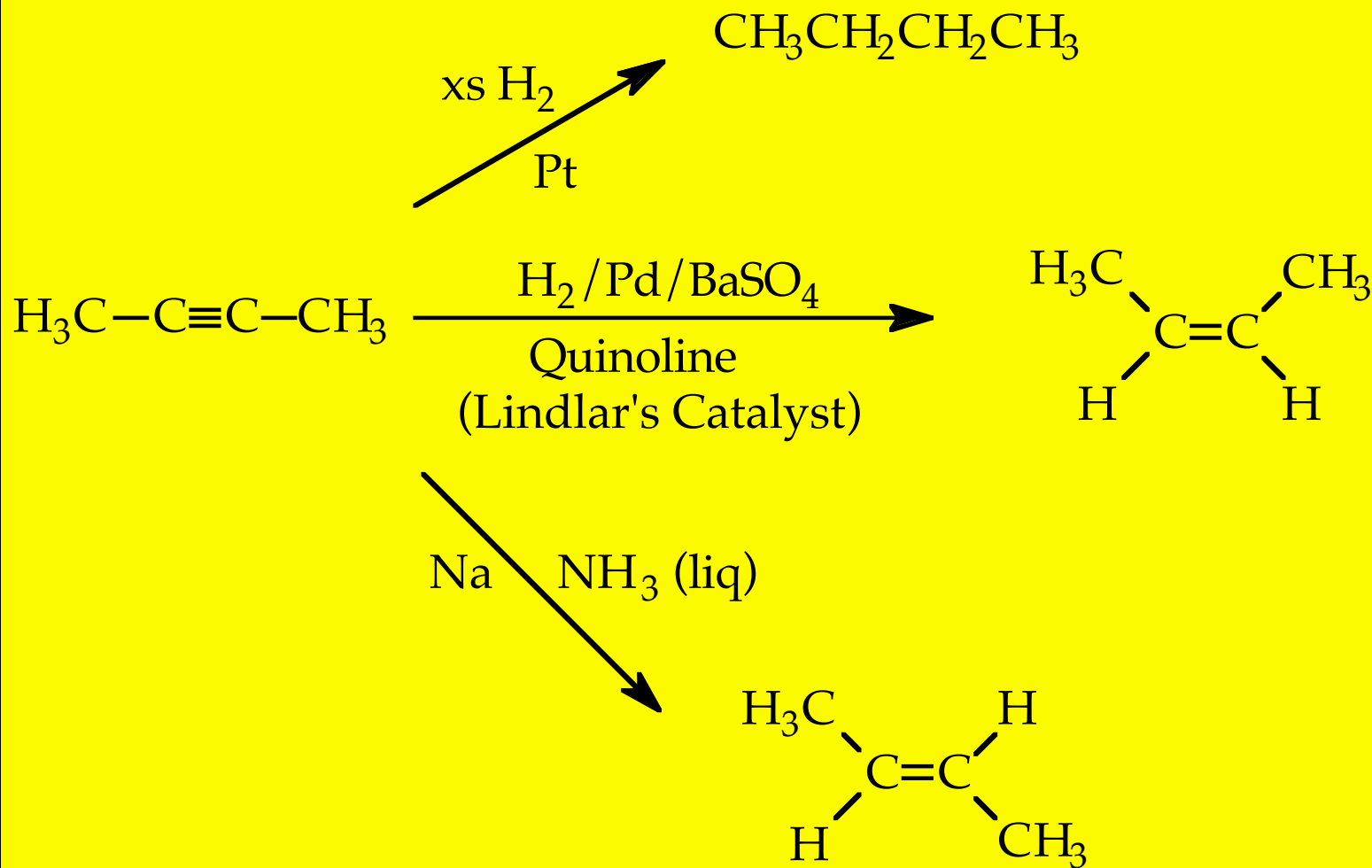
- \* Addition
- \* Substitution
- \* Diels-Alder
- \* Cleavage

# *Addition Reactions of Alkynes*

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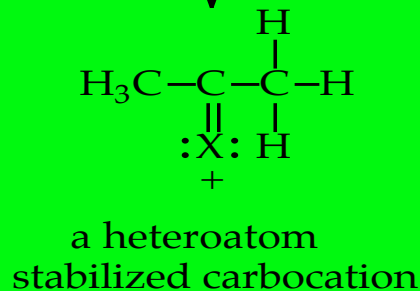
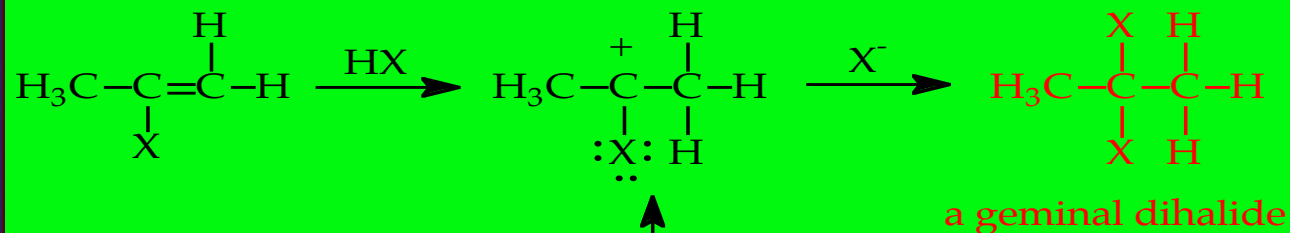
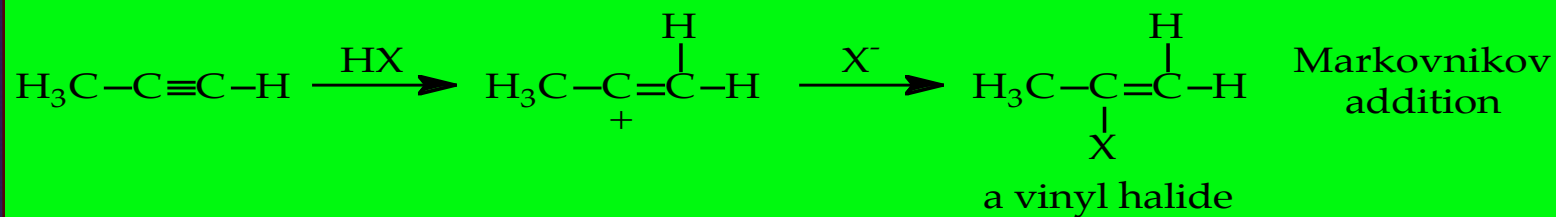
- **Reduction to Alkanes**
- **Reduction to Alkenes**
  - **Syn addition via poisoned catalysts**
  - **Anti addition via alkali metal/liquid ammonia**
- **Hydrogen halide addition**
- **Hydration - Ketone/Aldehyde formation via tautomerization**
- **Halogenation**

# ALKYNE REDUCTIONS



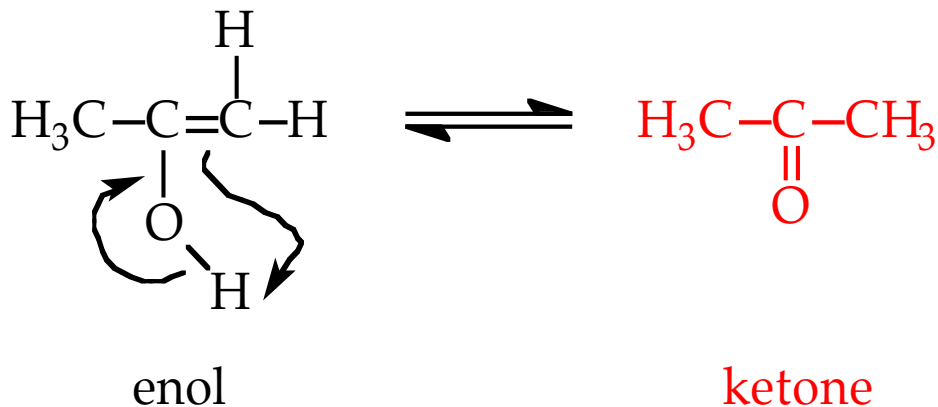
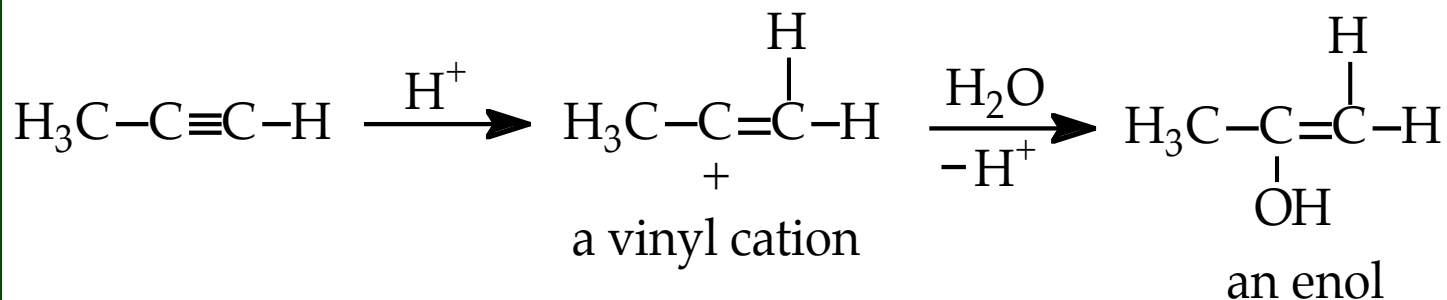
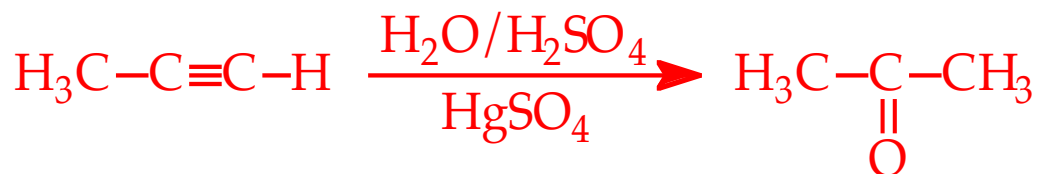
# HYDROGEN HALIDE ADDITION TO ALKYNES

## Heteroatom stabilized carbocation intermediates



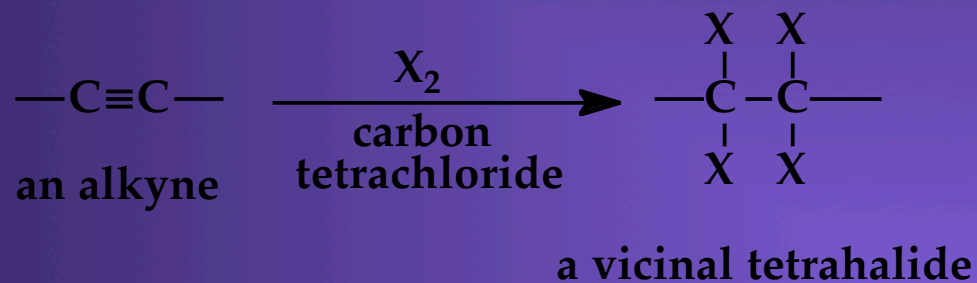
# Hydration of Alkynes

## Keto-enol tautomerization



# Halogenation of Alkynes

## Formation of Vicinal tetrahalides



# Substitution



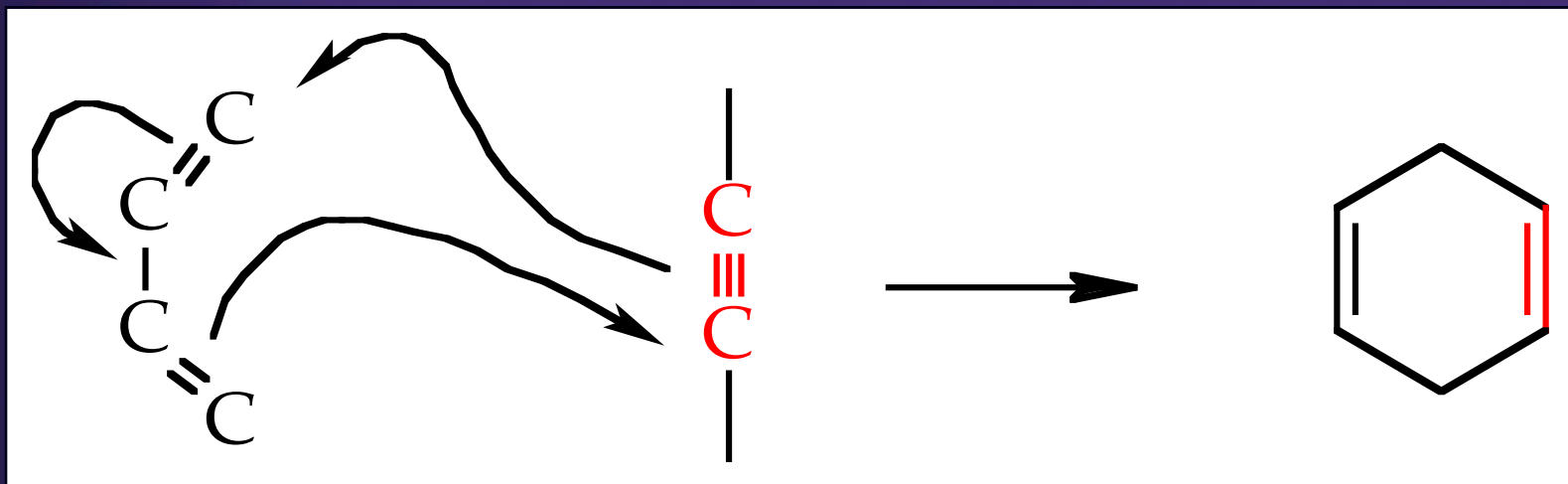
Terminal  
Alkyne



Methyl  
or  
Primary  
Alkyl  
Halide

**Alkynyl Anion Synthesis of Alkynes  
via Bimolecular Nucleophilic  
Substitution**

# Diels-Alder Reaction



- Six-membered Ring formation (4+2)
- Diene + Dienophile



# Cleavage Reactions of Alkynes

