



# *Alkene Preparation Reactions*

## ➤ **Alkyne reductions**

- Syn orientation
- Anti orientation

## ➤ **Elimination reactions**

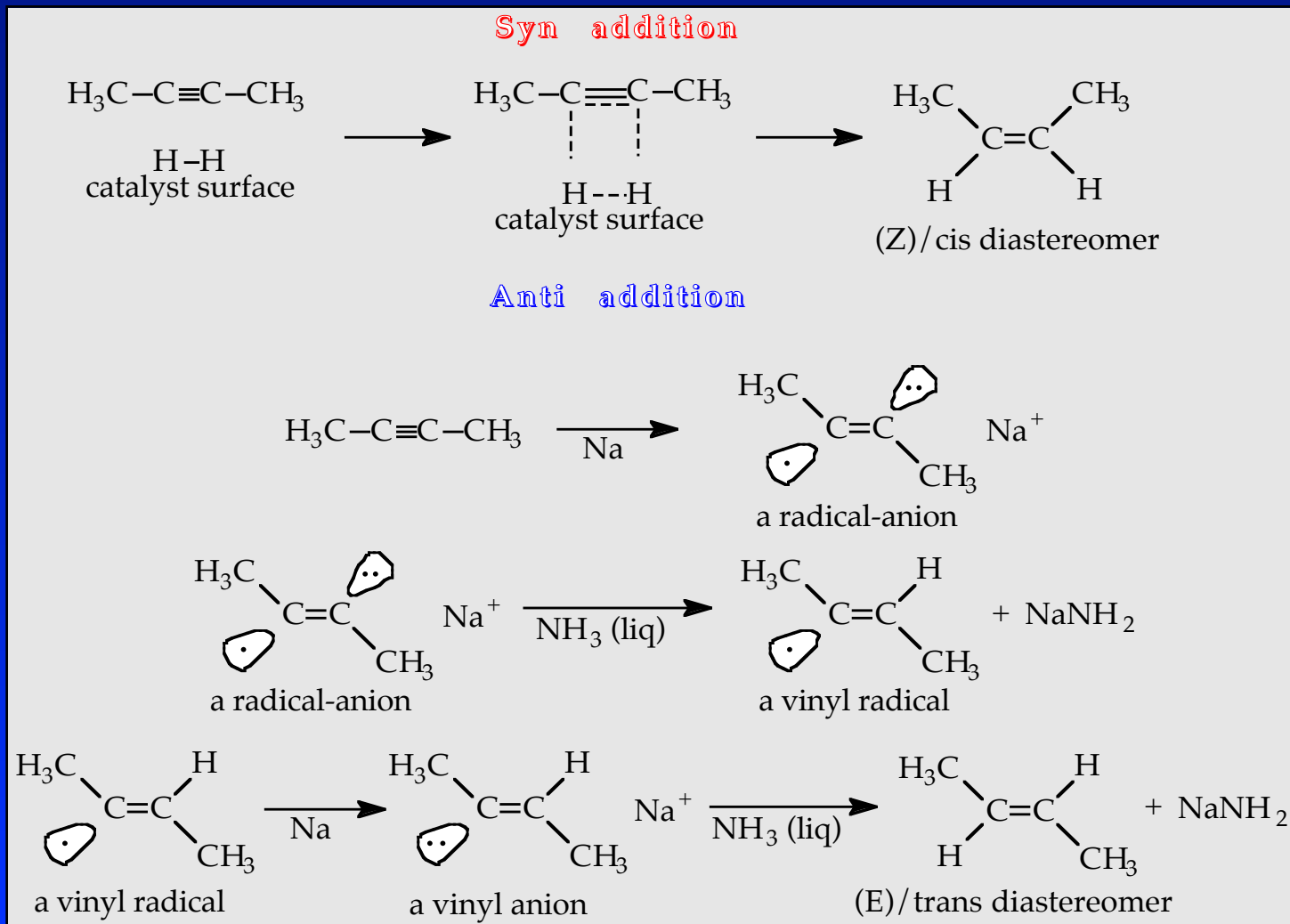
- Alcohol dehydration
- Alkyl halide dehydrohalogenation
- Vicinal dihalide dehalogenation



# *Alkenes via Alkyne Reduction*

- **Syn reduction of Alkynes to Alkenes**
  - **Catalytic Hydrogenation using a poisoned catalyst**
- **Anti reduction of Alkynes to Alkenes**
  - **Dissolving Metal reduction**

# Alkenes via Alkyne Reduction



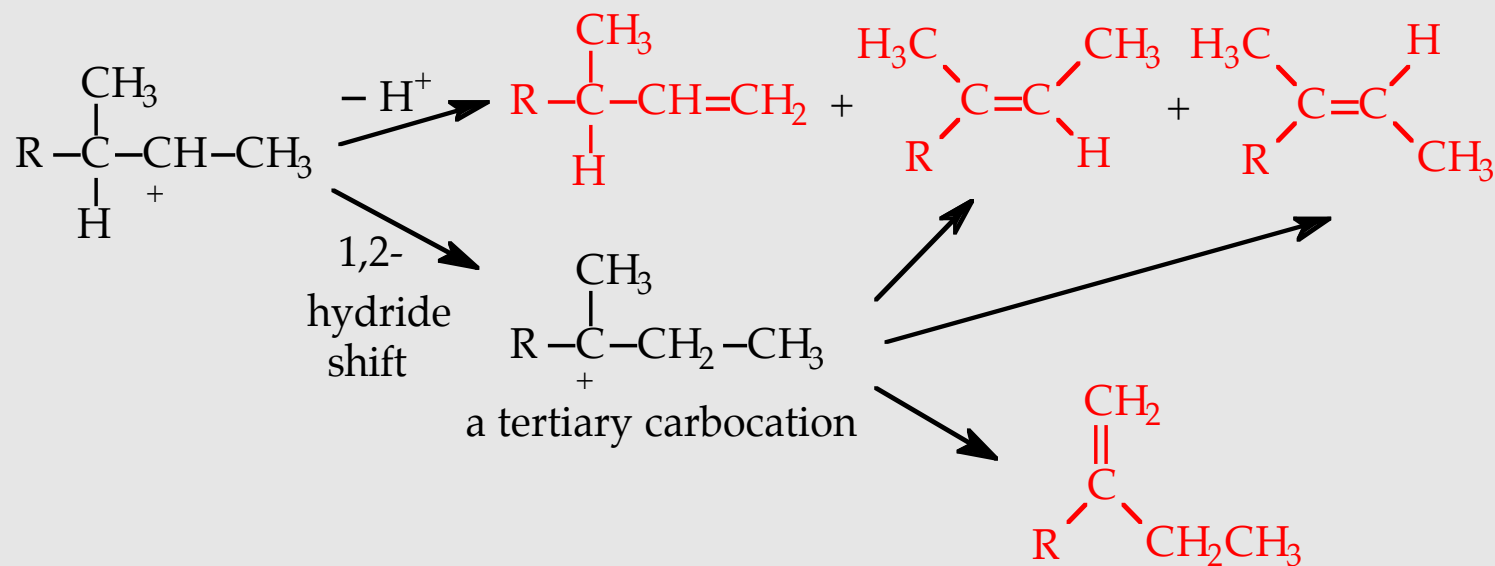
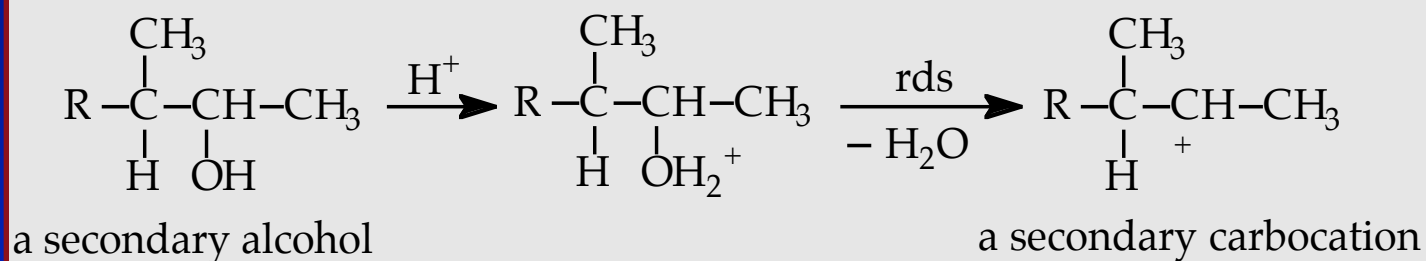


# Alcohol Elimination

➤ E-1

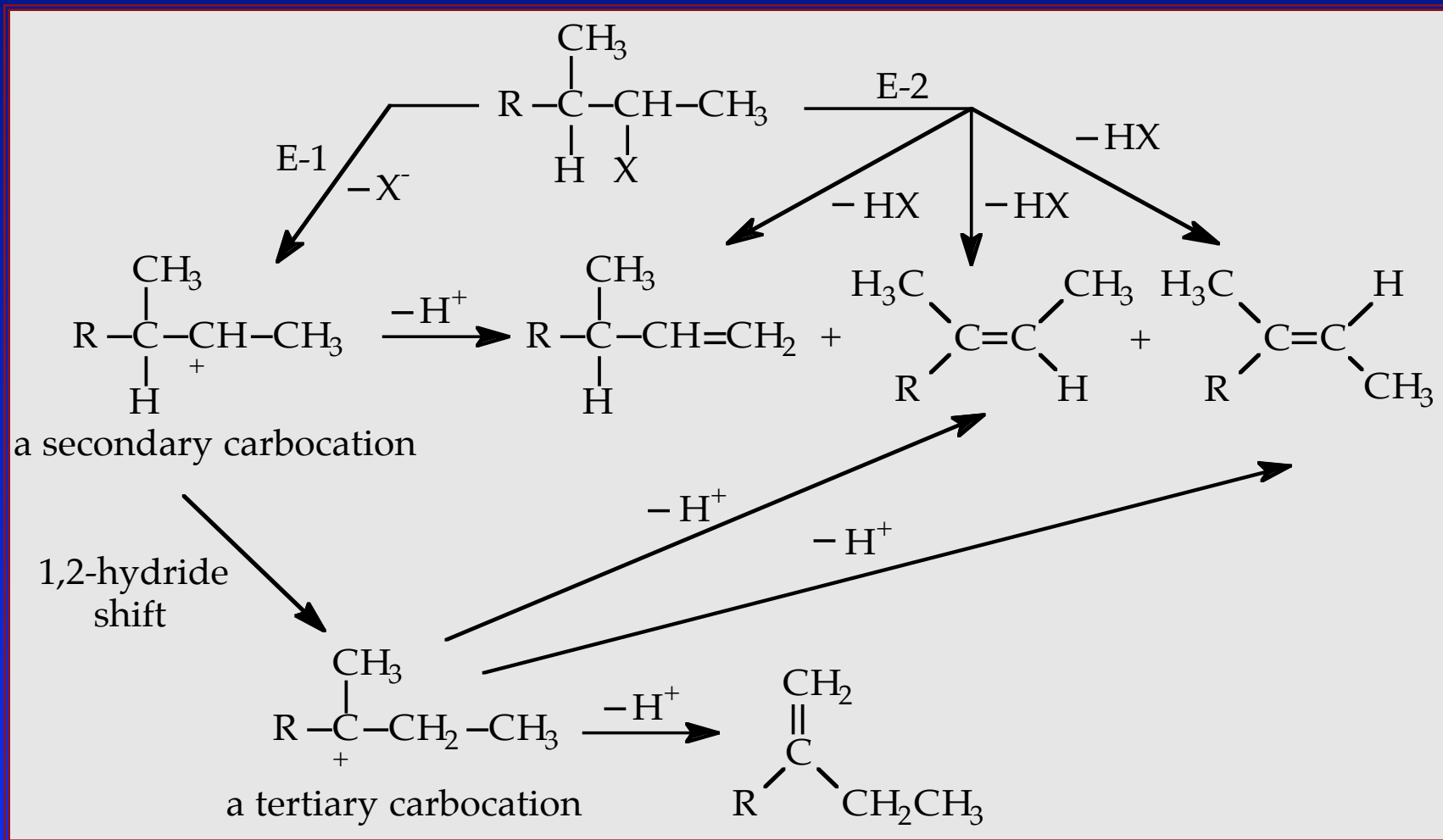
- Unimolecular kinetics
- Carbocation intermediates
- Skeletal rearrangements possible

# Alkenes via Alcohol Dehydration



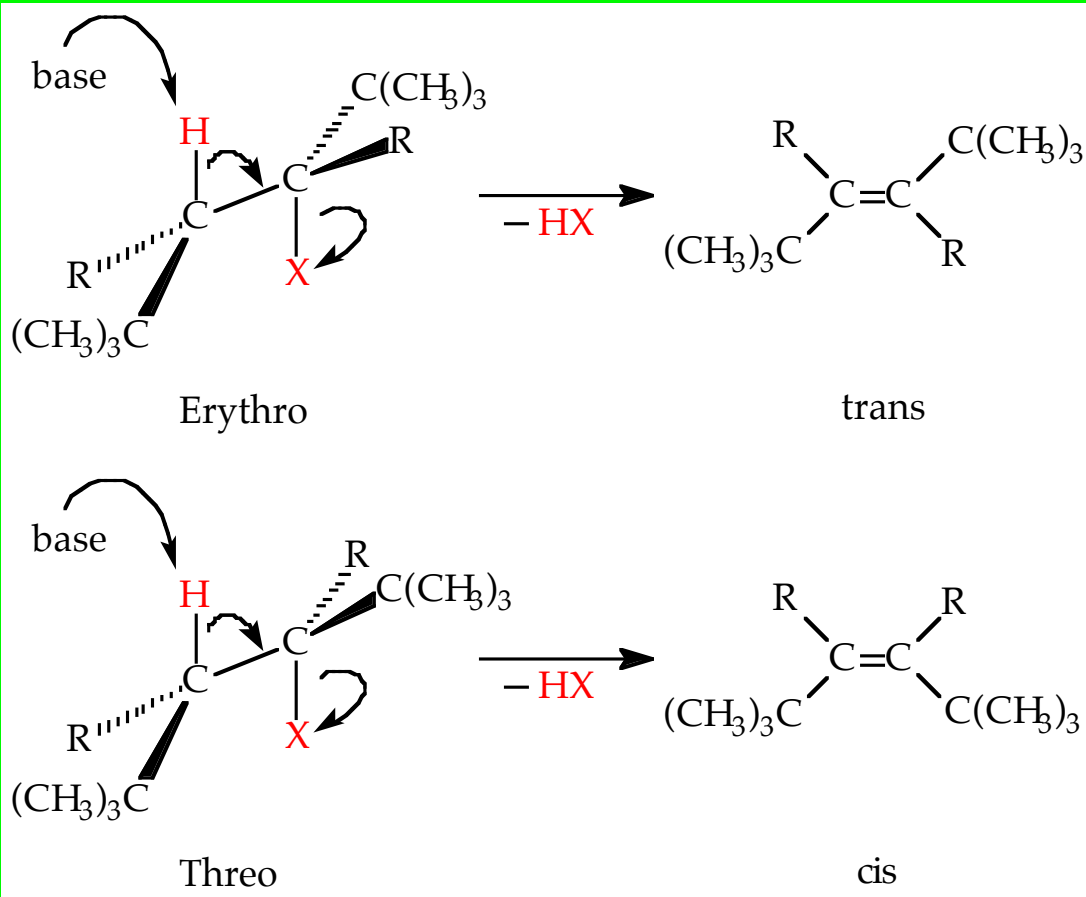
# Dehydrohalogenation of Alkyl Halides

## Unimolecular versus Bimolecular elimination



# Bimolecular Dehydrohalogenation of Alkyl Halides

## Periplanar anti-elimination





# Dehalogenation of Vicinal Dihalides

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➤ E-2

➤ Bimolecular kinetics

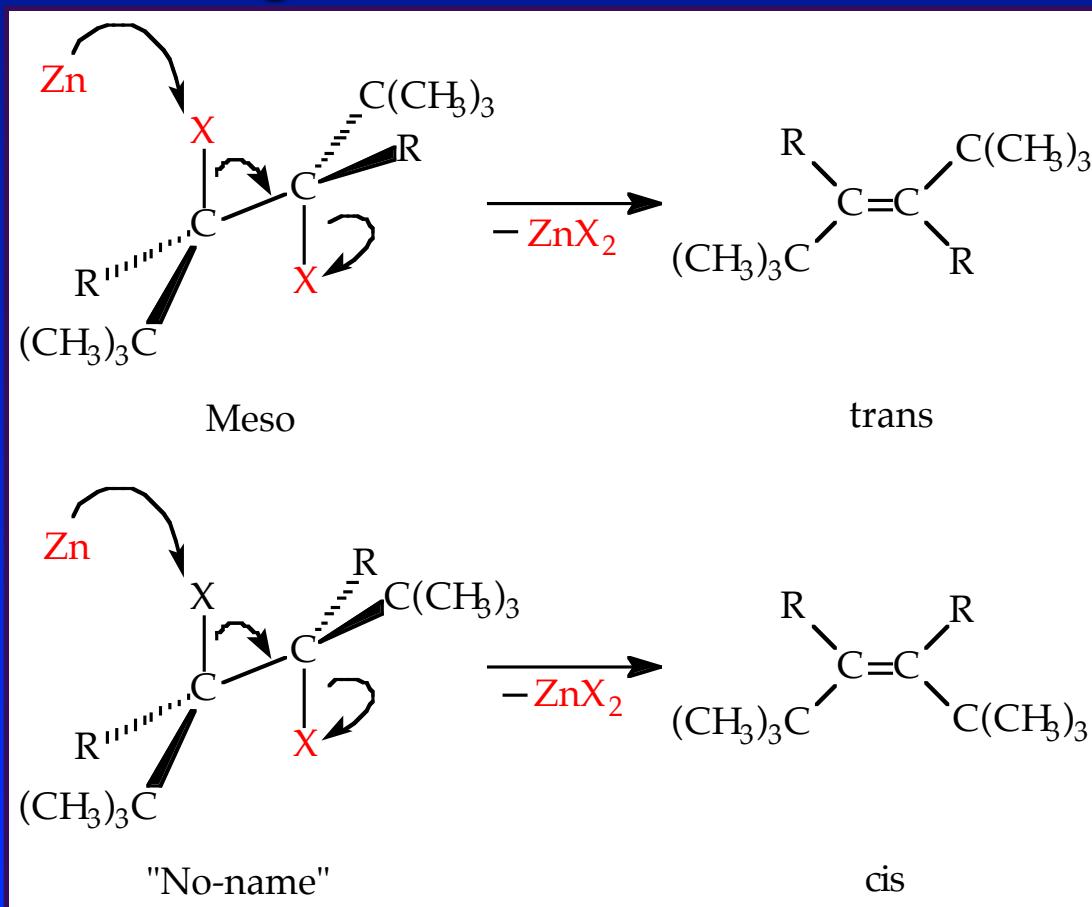
➤ Periplanar Anti-orientation

➤ No skeletal rearrangements possible



# E-2 Dehalogenation of Vicinal Dihalides

## Periplanar anti-elimination

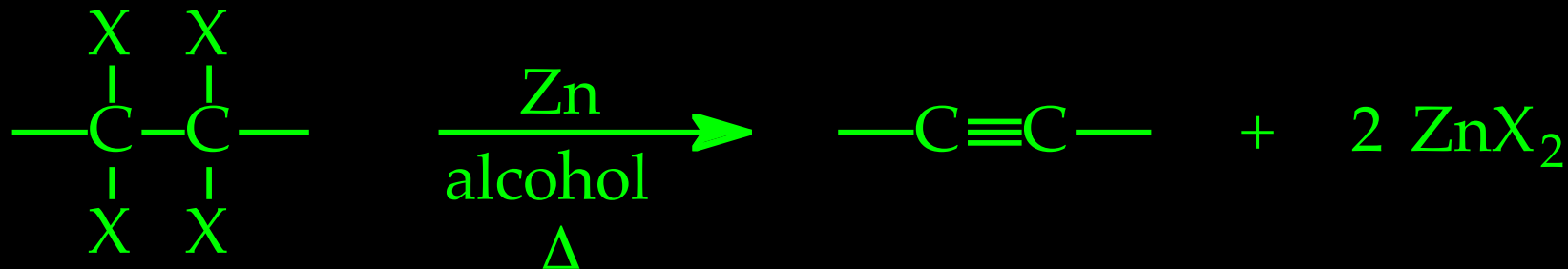




# Alkyne Preparation Reactions

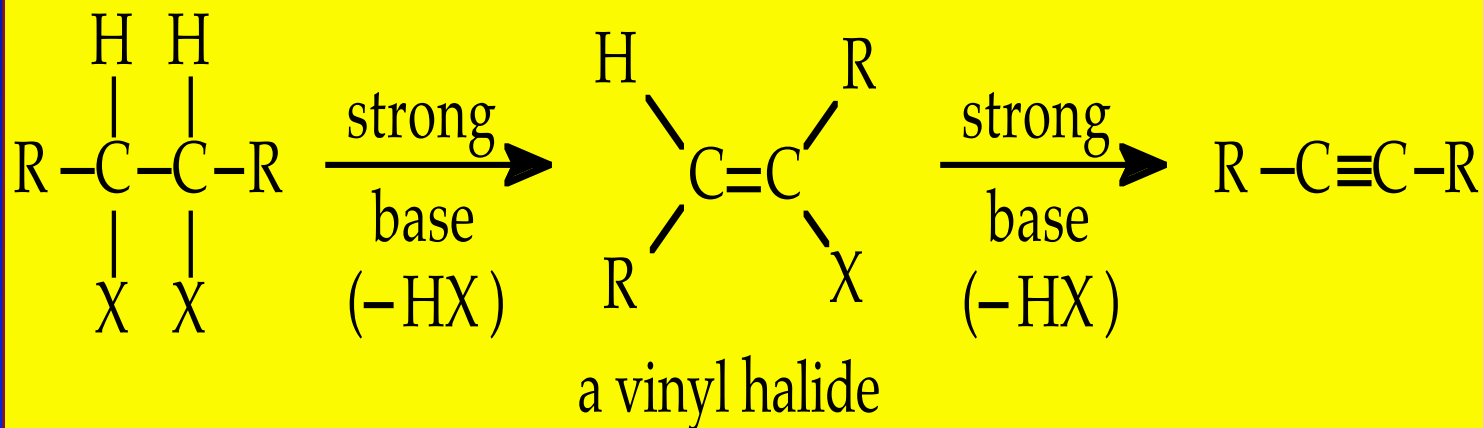
- **Elimination**
  - **Vicinal tetrahalide dehalogenation**
  - **Vicinal dihalide dehydrohalogenation**
- **Substitution**
  - **Alkynyl anion synthesis**

# Vicinal Tetrahalide Dehalogenation

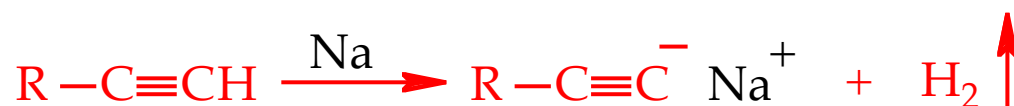


a vicinal  
tetrahalide

# Vicinal Dihalide Dehydrohalogenation



# Substitution



Terminal  
Alkyne



Methyl  
or  
Primary  
Alkyl  
Halide

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