



Present

The Deep-Fried World of Organic Chemistry (Part 3)

1997 Cerebellum Corporation • 800-VCR-REVU

I. More Electrophilic Addition Reactions

A. The First Four Electrophilic Addition Reactions

1. Addition of HX to an Alkene
2. Hydration Reaction
3. Halogen Addition Reaction
 - a. bromonium ion intermediate
 - b. syn addition
 - c. anti addition
4. Halohydrin Formation Reaction

B. The Next Six New and Exciting Electrophilic Addition Reactions

5. Oxymercuration Reaction
6. Hydroboration/Oxidation Reaction
 - a. borane, BH_3
 - b. hydride
 - c. anti-Markovnikov regioselectivity
7. Hydrogenation Reaction
 - a. reduction
8. Hydroxylation Reaction
 - a. oxidation
 - b. cis-1, 2-diol
9. Ozonolysis Reaction
 - a. oxidative cleavage
 - b. ketone
 - c. aldehyde

d. formaldehyde

10. Oxidative Cleavage Reaction

- a. terminal alkene
- b. internal alkene
- c. carboxylic acid
- d. carbonic acid

II. Alkynes

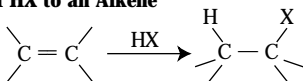
- A. Introduction
- B. Naming Alkynes
- C. Alkyne Structure

III. Alkyne Addition Reactions

1. Halogen Addition to an Alkyne
2. Addition of a Haloacid to an Alkyne
3. Mercuric Ion-Catalyzed Hydration Reaction
 - a. enol
 - b. enol-ketone tautomerization
4. Hydroboration/Oxidation Reaction
5. Reduction Reactions
 - a. hydrogenation
 1. Palladium catalyst
 2. Ni_2B catalyst
 - b. Dissolving Metal Reduction
6. Oxidative Cleavage Reactions

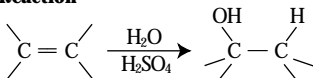
Alkene Electrophilic Addition Reactions:

1. Addition of HX to an Alkene



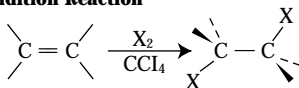
Markovnikov's Rule is observed.
X = Cl, Br or I

2. Hydration Reaction



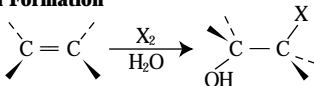
Markovnikov's Rule is observed.

3. Halogen Addition Reaction



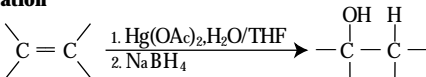
Anti-addition is observed.
X = Cl or Br

4. Halohydrin Formation



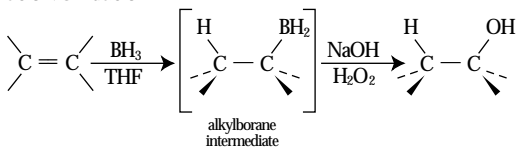
Markovnikov's Rule is observed.
Anti-addition is observed.

5. Oxymercuration



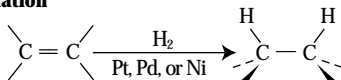
Markovnikov's Rule is observed.

6. Hydroboration/Oxidation



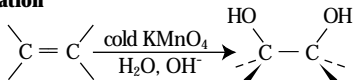
Anti-Markovnikov syn addition is observed.

7. Hydrogenation



Syn addition is observed.

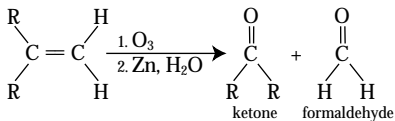
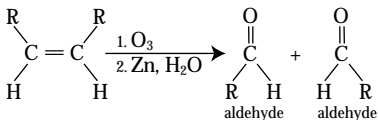
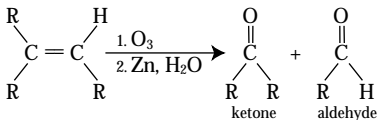
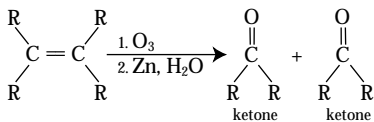
8. Hydroxylation



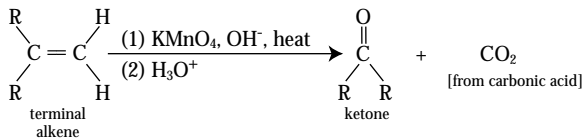
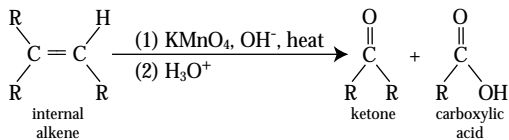
Syn addition is observed.

Oxidative Cleavage of Alkenes:

9. Ozonolysis

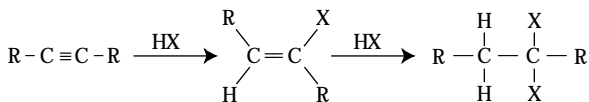


10. Oxidative Cleavage



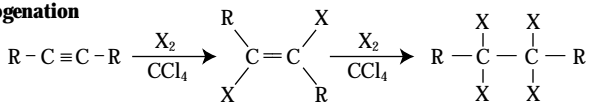
Alkyne Addition Reactions:

1. Addition of HX to an Alkyne



Markovnikov's Rule is observed.
X = Br or Cl

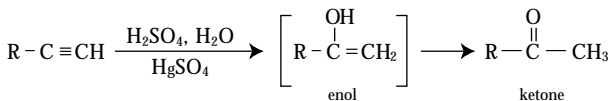
2. Halogenation



X = Br or Cl

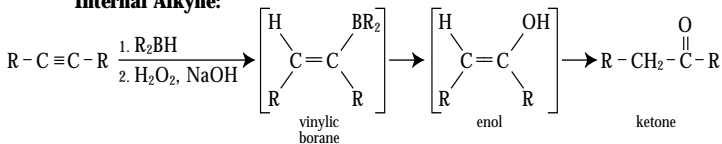
3. Hydration Reactions:

3a. Mercuric Ion-Catalyzed Hydration Reaction

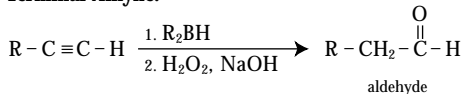


3b. Hydroboration/Oxidation

Internal Alkyne:



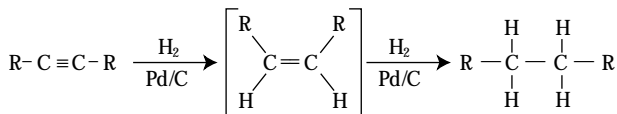
Terminal Alkyne:



4. Hydrogenation (Reduction)

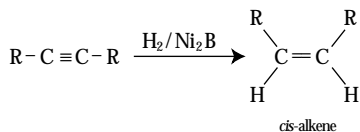
4a. Palladium Catalyst

(Alkyne to alkane using a palladium catalyst)



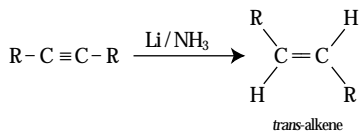
4b. Ni₂B catalyst

(Alkyne to *cis*-alkene using nickel boride catalyst)



4c. Dissolving Metal Reduction

(Alkyne to *trans*-alkene using lithium and ammonia)



5. Oxidative Cleavage of Alkynes

