

Alkene Reactions

- Addition
- Substitution
- Diels-Alder
- Cleavage

Addition Reactions

✦ Syn addition

✦ Anti addition

✦ Carbocation formation

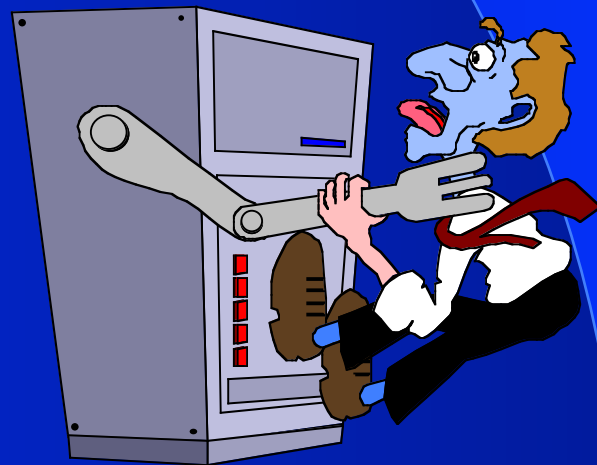
✦ Radical formation

Syn Addition Reactions

✦ Hydrogenation

✦ Hydroxylation

✦ Hydroboration



Anti Addition Reactions

★ Hydroxylation

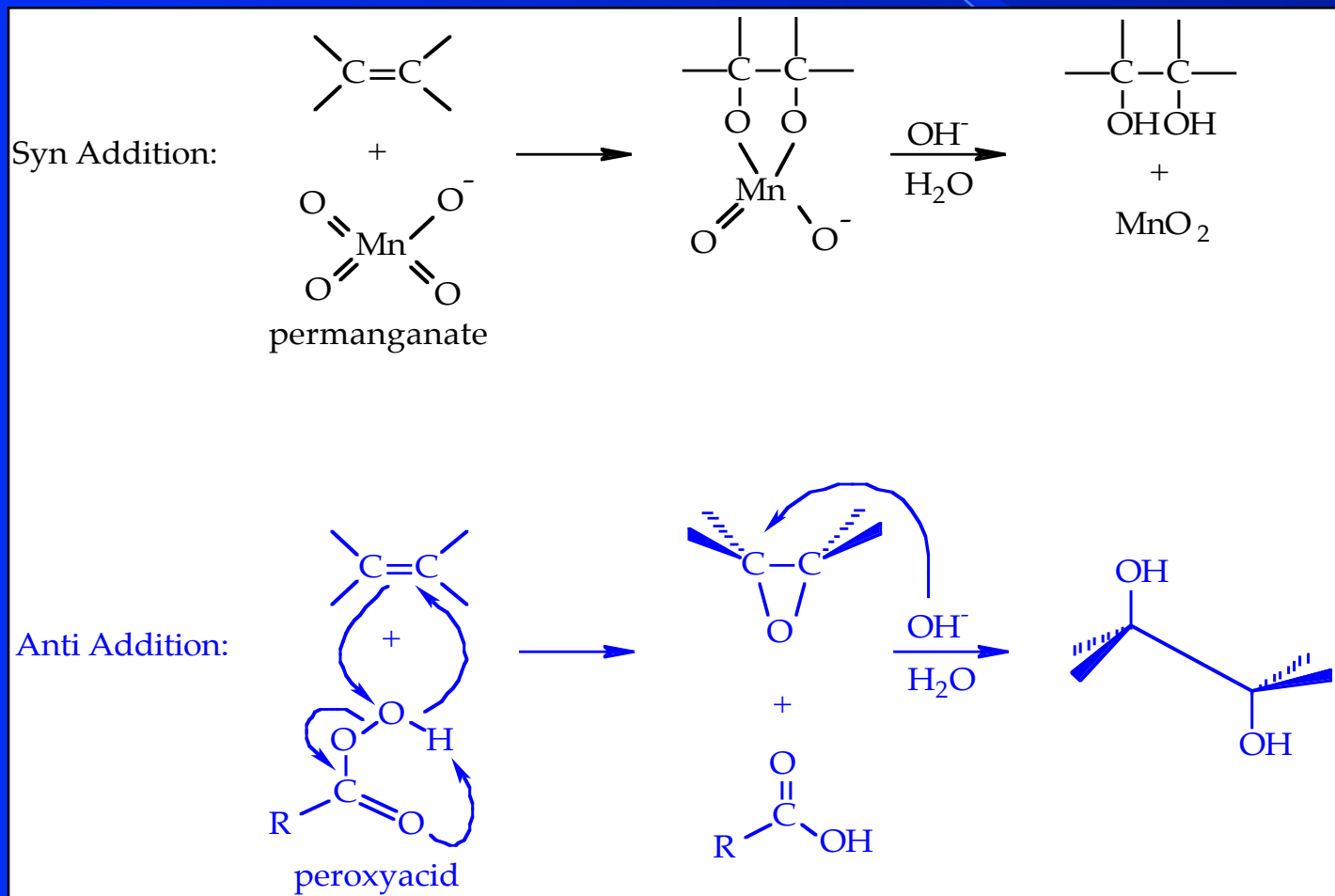
★ Halogenation

★ Halohydrin formation

Hydroxylation

❖ Syn addition

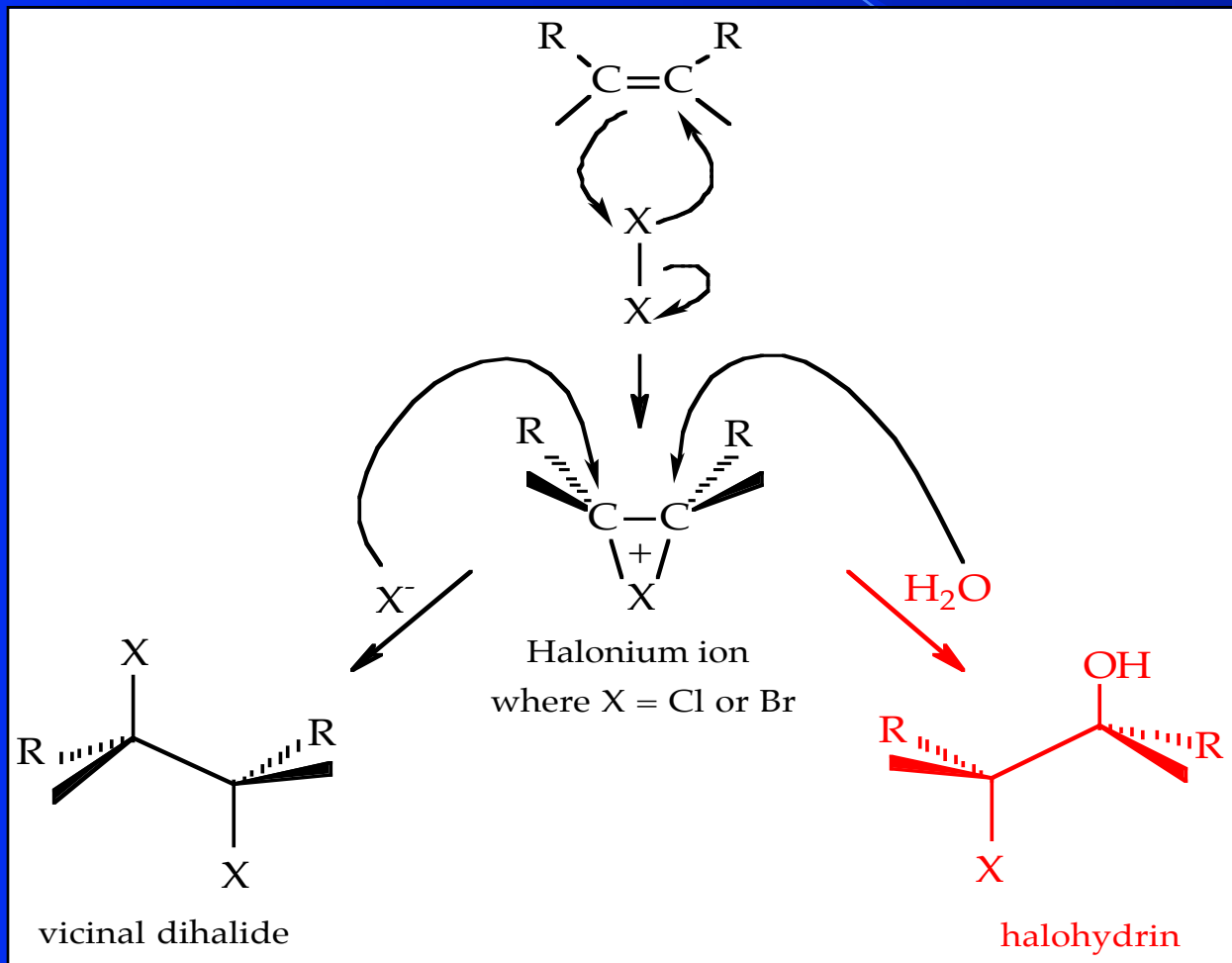
❖ Anti addition



Alkene Addition Reactions via Halonium Ions

* Halogenation

* Halohydrin formation



Carbocation Formation

● Hydration

- Alcohol formation

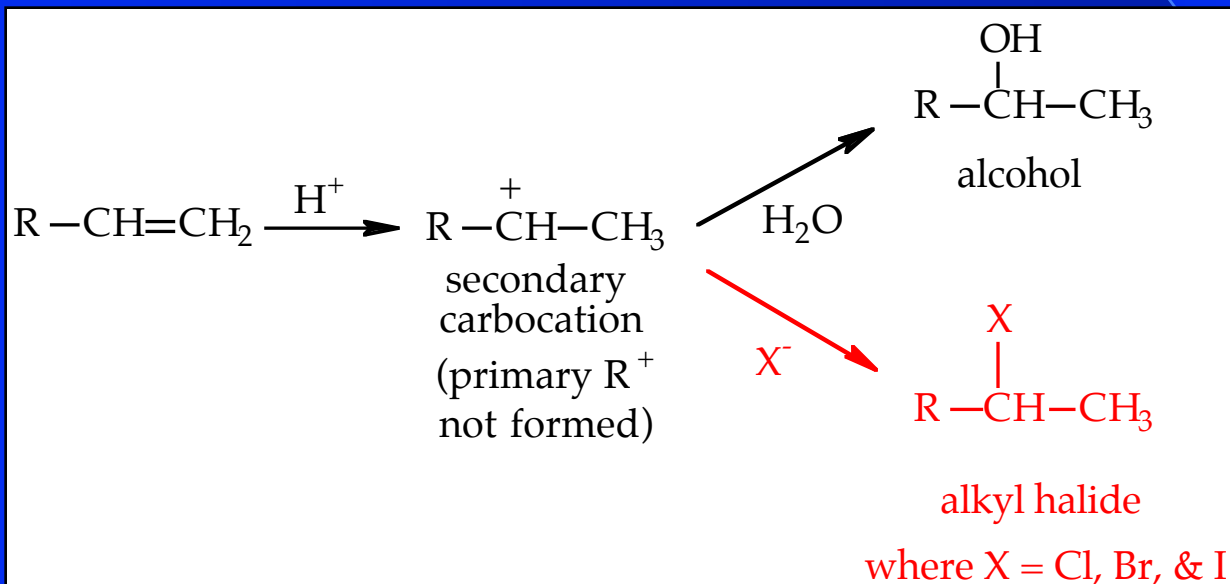
● HX Addition

- Alkyl halide formation

Alkene Addition Reactions via Carbocation Intermediates

Hydration

Hydrogen halide addition

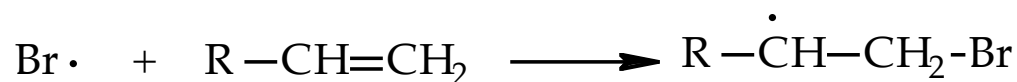
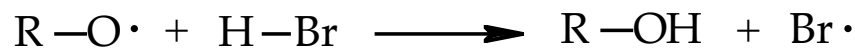
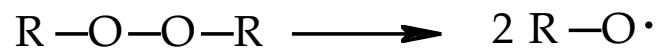


Reaction products are examples of Markovnikov addition

Radical Addition

HBr Addition/ROOR present
Anti-Markovnikov regiochemistry

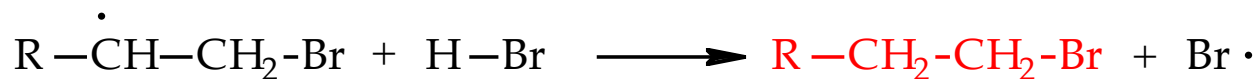
Peroxide-mediated HBr Addition to Alkenes



secondary radical

(primary R·

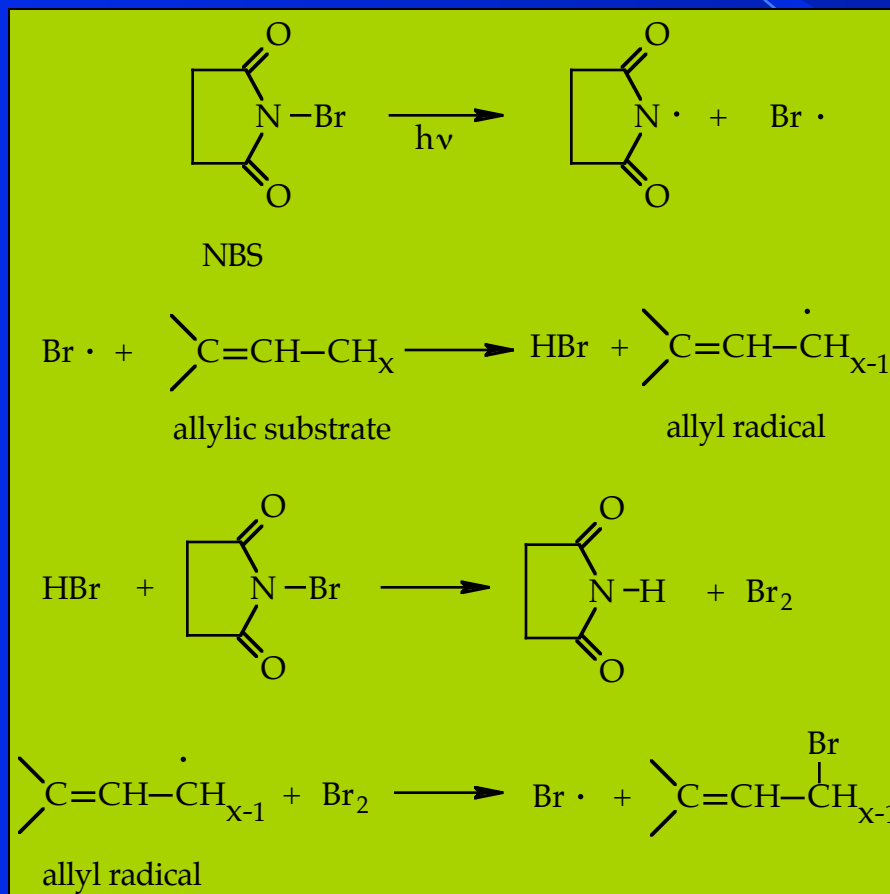
not formed)



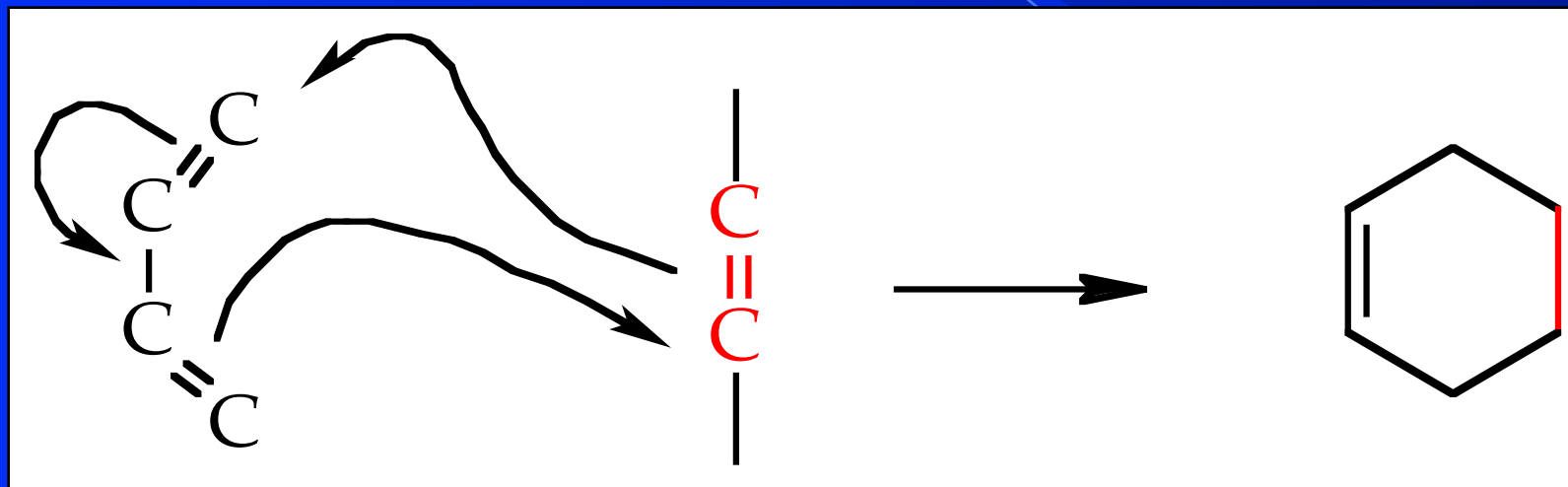
The alkyl bromide product is an example of Anti-Markovnikov addition

ALLYLIC SUBSTITUTION

NBS/ROOR OR NBS/LIGHT



Diels-Alder Reaction

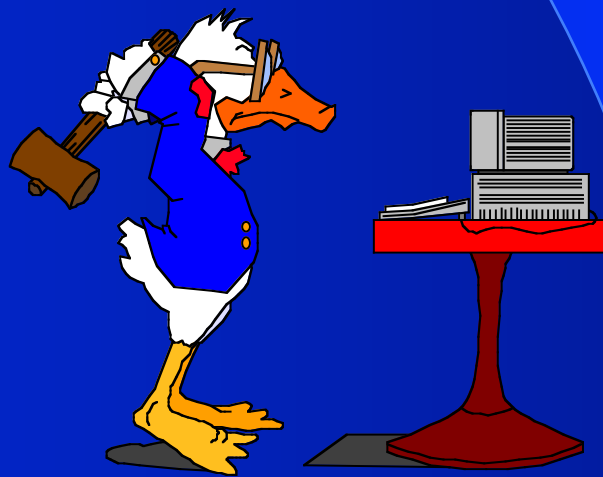


- Six-membered ring formation (4+2)
- Diene + Dienophile

Cleavage Reactions of Alkenes

✿ Ozonolysis

✿ Hot Potassium Permanganate



Cleavage Reactions of Alkenes

