

## Additions to Alkenes (Chapter 8)

<u>Reagents</u>	<u>adds what?</u>	<u>Regiochemistry</u>	<u>Stereochemistry</u>	<u>kn</u>
HBr or HCl	-H -Cl ( <i>or</i> -Br)	Markovnikov	mixed(carbocation)	
HBr, ROOR (peroxides)	-H -Br	<i>anti</i> -Markovnikov	mixed(radical)	
H <sub>2</sub> O, H <sub>2</sub> SO <sub>4</sub>	-H -OH	Markovnikov	mixed(carbocation)	
1) Hg(OAc) <sub>2</sub> , H <sub>2</sub> O 2) NaBH <sub>4</sub>	-H -OH	Markovnikov	mixed	
1) BH <sub>3</sub> , THF ( <i>or</i> B <sub>2</sub> H <sub>6</sub> ) 2) H <sub>2</sub> O <sub>2</sub> , NaOH	-H -OH	<i>anti</i> -Markovnikov	<u>syn</u> addition	
Br <sub>2</sub>	-Br -Br	N/A	<u>anti</u> add'n (bromonium ion)	
Br <sub>2</sub> , H <sub>2</sub> O ( <i>or</i> ROH)	-Br -OH (-OR)	"Markovnikov"	<u>anti</u> add'n (bromonium ion)	
H <sub>2</sub> , catalyst	-H -H	N/A	<u>syn</u> addition	

## Additions to Alkynes (Chapter 9)

<u>Reagents</u>	<u>adds what?</u>	<u>Regiochemistry</u>	<u>Product?</u>	<u>know mechanism?</u>
H <sub>2</sub> , catalyst	(-H -H) x2	N/A	alkane	no
H <sub>2</sub> , Pd, BaSO <sub>4</sub> , quinoline	-H -H	N/A	<u>cis</u> alkene	no
Na, NH <sub>3</sub>	-H -H	N/A	<u>trans</u> alkene	no
HBr or HCl	(-H -X) x2	Markovnikov x2	dihalide	yes
Br <sub>2</sub>	(-Br -Br) x2	N/A	tetrahalide	yes
H <sub>2</sub> O, H <sub>2</sub> SO <sub>4</sub> , HgSO <sub>4</sub>	-H -OH	Markovnikov	2° enol → <b>ketone</b>	yes
1) Hg(OAc) <sub>2</sub> , H <sub>2</sub> O 2) NaBH <sub>4</sub>	-H -OH	Markovnikov	2° enol → <b>ketone</b>	no* *except for tautomerization
1) BH <sub>3</sub> , THF ( <i>or</i> B <sub>2</sub> H <sub>6</sub> ) 2) H <sub>2</sub> O <sub>2</sub> , NaOH	-H -OH	<i>anti</i> -Markovnikov	1° enol → <b>aldehyde</b>	no* *except for tautomerization

Still to come...oxidation reactions!