

## Chap 6 The Reactions of Alkenes•The Stereochemistry of Addition Reactions

### 6.1 The addition of a hydrogen halide to an alkene

Predict the outcome of the addition of HX to an alkene.

### 6.2 Carbocation stability depends on the number of alkyl groups attached to the positively charged carbon

Rank carbocations by stability.

Explain the relative stability of carbocations.

### 6.3 What does the structure of the transition state look like?

Describe a transition state: charges and partial bonds

Draw a transition state when reactants and products are given.

### 6.4 Electrophilic addition reactions are regioselective

Determine the major products of electrophilic addition reactions (addition of HX, ROH, X<sub>2</sub>, X<sub>2</sub> with ROH, and BH<sub>3</sub>)

### 6.5 The addition of water to an alkene

### 6.6 The addition of an alcohol to an alkene

### 6.7 A carbocation will rearrange if it can form a more stable carbocation

Determine the major products of electrophilic addition reactions (addition of HX, ROH, X<sub>2</sub>, X<sub>2</sub> with ROH, and BH<sub>3</sub>)

### 6.8 The addition of borane to an alkene: Hydroboration–oxidation

### 6.9 The addition of a halogen to an alkene

skipping 6.10 the addition of a peroxyacid to an alkene

skipping 6.11 The addition of Ozone to an alkene: Ozonolysis

### 6.12 Regioselective, stereoselective, and stereospecific reactions

Describe/define regioselectivity, stereoselectivity, and stereospecificity

### 6.13 The stereochemistry of electrophilic addition reactions

Predict the stereochemical outcome of electrophilic addition reactions (addition of HX, ROH, X<sub>2</sub>, X<sub>2</sub> with ROH, and BH<sub>3</sub>)

skipping 6.14 The stereochemistry of enzyme–catalyzed reactions

skipping 6.15 Enantiomers can be distinguished by biological molecules

### 6.16 Reactions and Synthesis