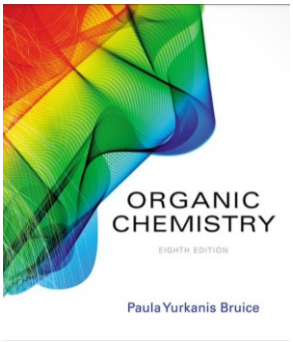
FLORIDA SOUTHWESTERN STATE COLLEGE

CHM 2210

Lecture 14



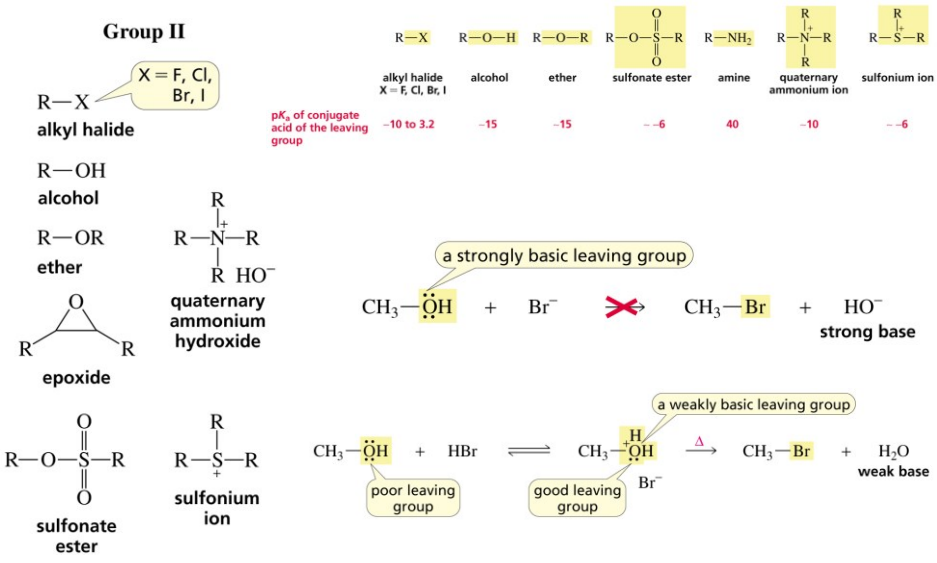
Outline

- Alcohols
  - Halogenation
  - Dehydration
  - Oxidation
  - Diol Synthesis
- Epoxides
  - Acidic
  - Basic
- Amines
- Thiols

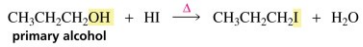
Soumya (SAM) Bhattacharya

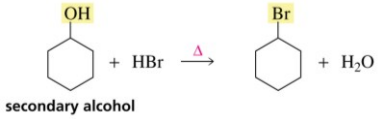
FLORIDA SOUTHWESTERN STATE COLLEGE

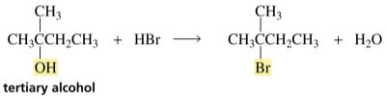
Leaving Group Saga

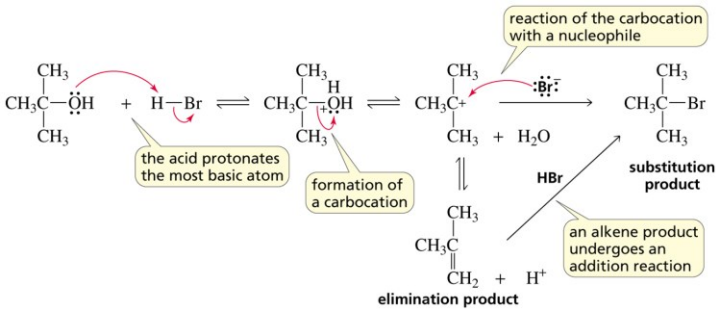


Alcohol – I: Halogenation









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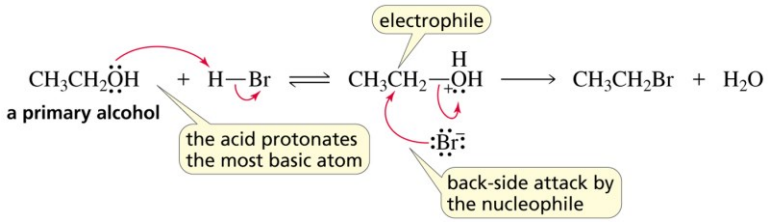
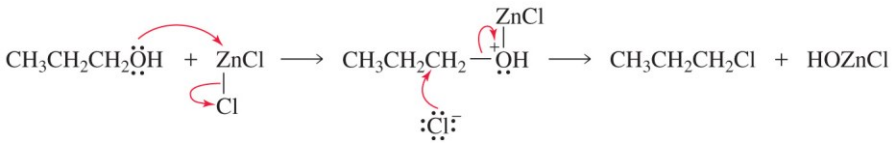
Alcohol – II: Halogenation





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Alcohol – III: Halogenation

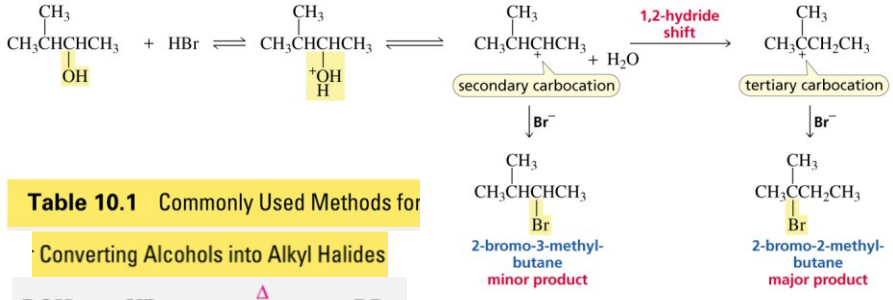
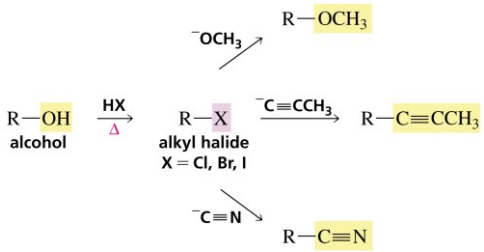


Table 10.1 Commonly Used Methods for Converting Alcohols into Alkyl Halides

ROH	+ HBr	$\xrightarrow{\Delta}$		RBr
ROH	+ HI	$\xrightarrow{\Delta}$		RI
ROH	+ HCl	$\xrightarrow[\Delta]{ZnCl_2}$		RCl
ROH	+ PBr_3	$\xrightarrow[\text{pyridine}]{}$		RBr
ROH	+ PCl_3	$\xrightarrow[\text{pyridine}]{}$		RCl
ROH	+ $SOCl_2$	$\xrightarrow[\text{pyridine}]{}$		RCl



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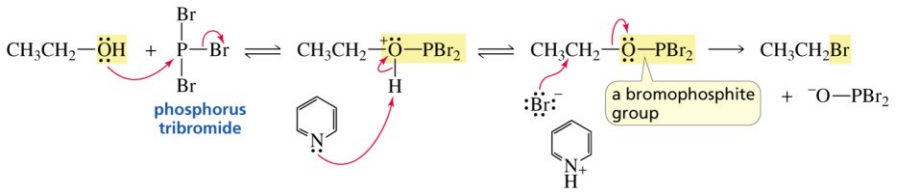
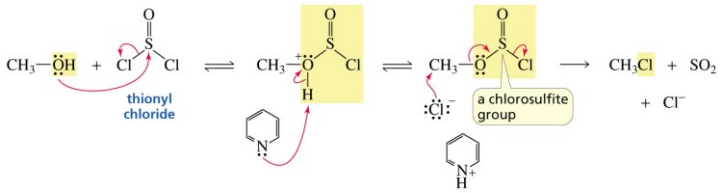
Alcohol – IV: Halogenation

$$CH_3CH_2OH + PBr_3 \xrightarrow[\text{pyridine}]{} CH_3CH_2Br$$

$$CH_3CH_2OH + PCl_3 \xrightarrow[\text{pyridine}]{} CH_3CH_2Cl$$



$$CH_3CH_2OH + SOCl_2 \xrightarrow[\text{pyridine}]{} CH_3CH_2Cl$$



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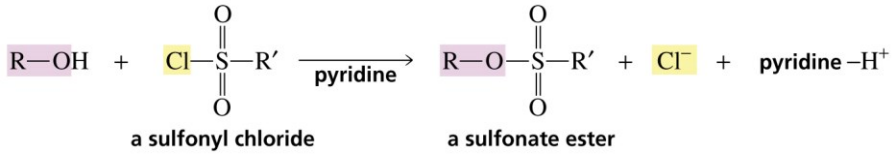
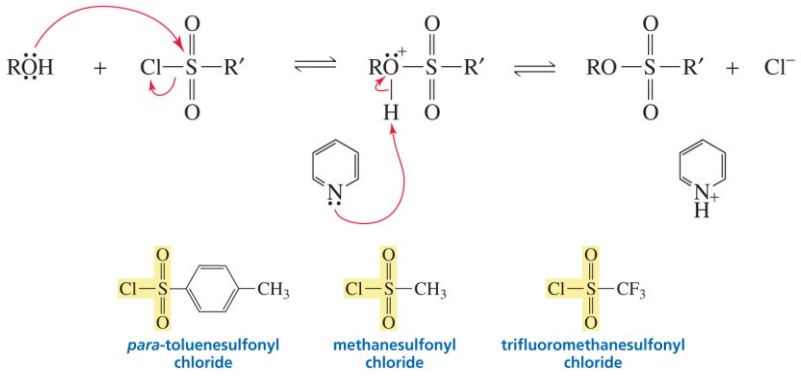
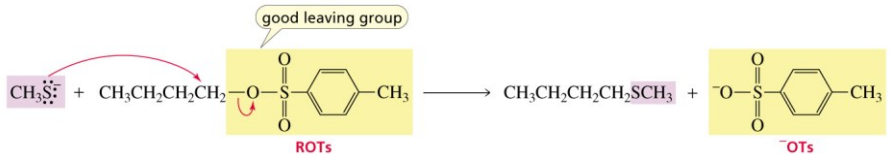
Alcohol – V: Sulfonation

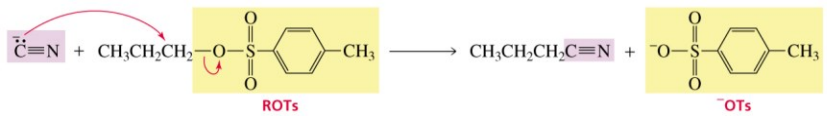


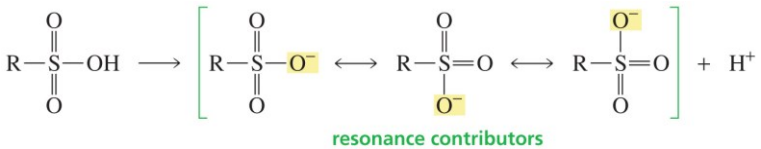


tosyl chloride = TsCl

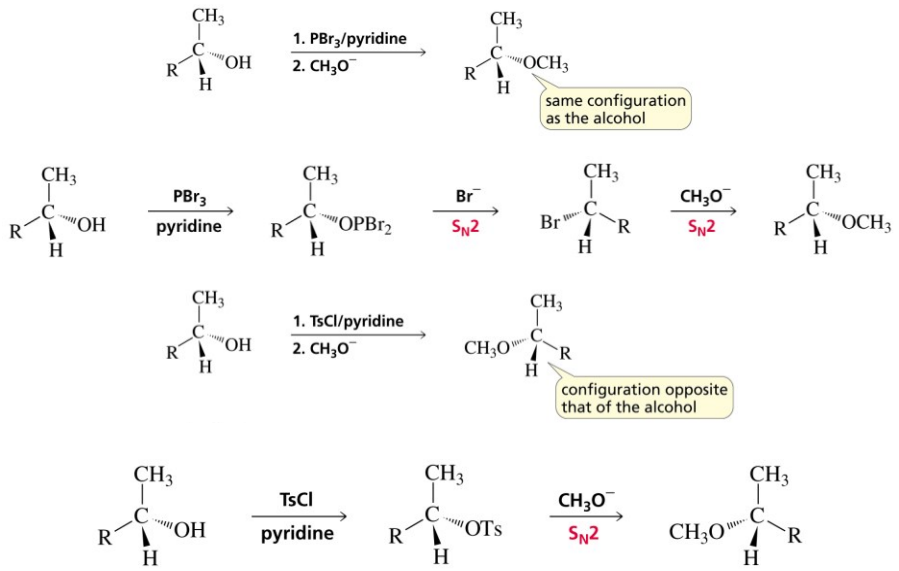
Alcohol – VI: Sulfonation







Alcohol – VII: Configuration Considerations



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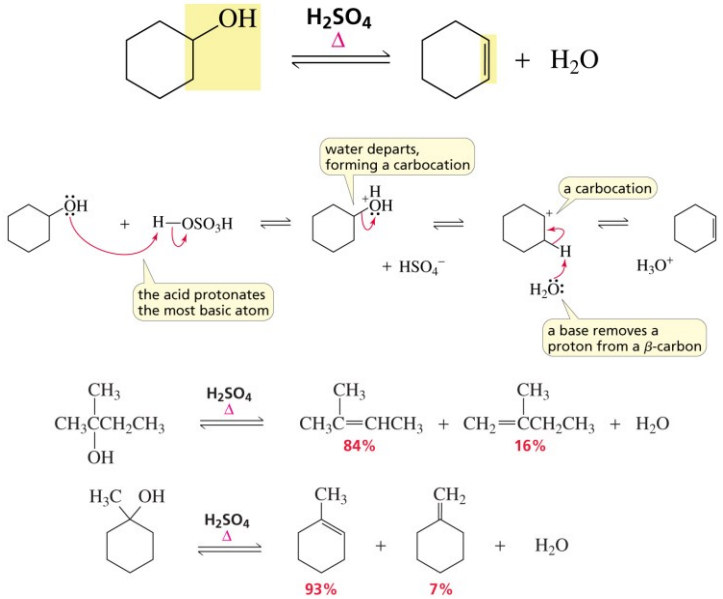
Alcohol – VIII: Dehydration



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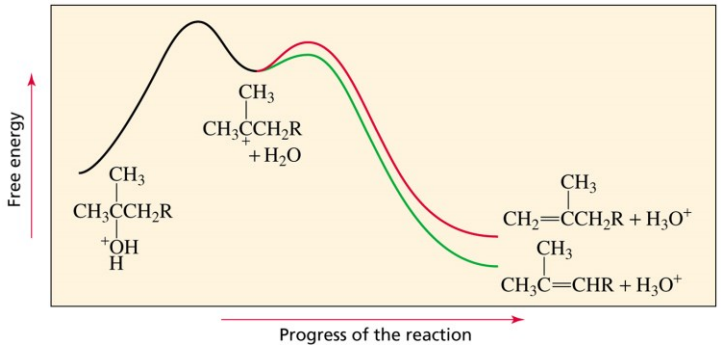
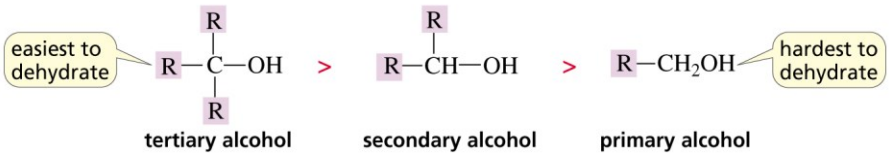
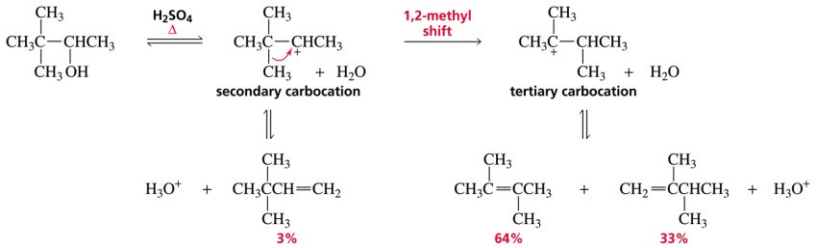
Alcohol – IX: Dehydration

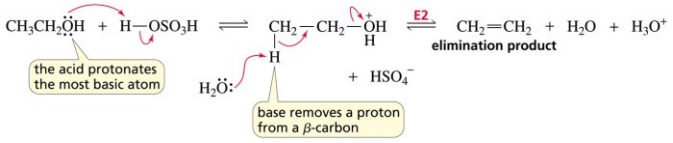


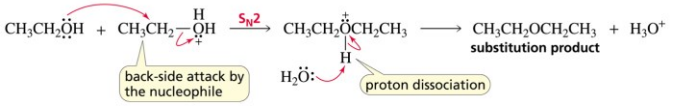
relative ease of dehydration



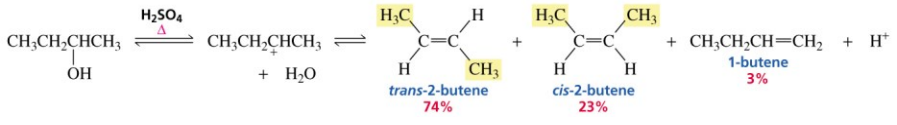
Alcohol – X: Dehydration

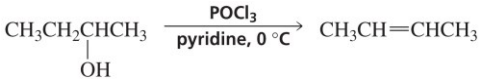


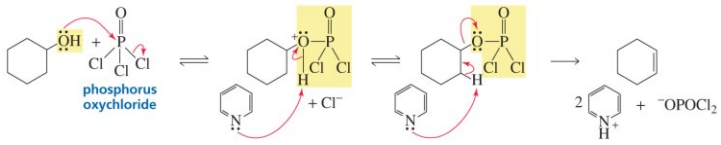


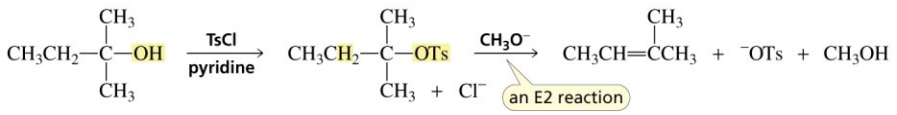


Alcohol – XI: Dehydration









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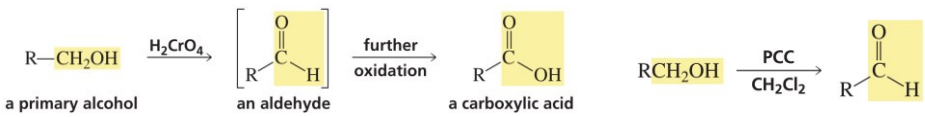
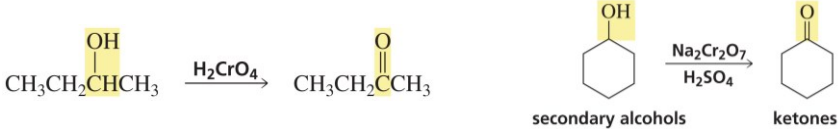
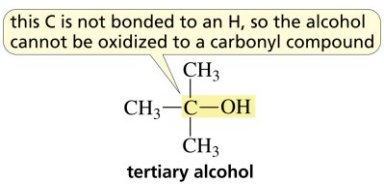
Alcohol – XII: Oxidation





- **Jones Reagent**
  - Dichromate Salt
  - Concentrated Sulfuric Acid
  - Acetone



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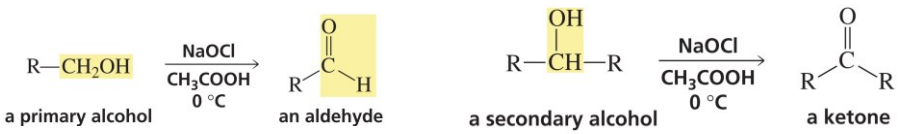
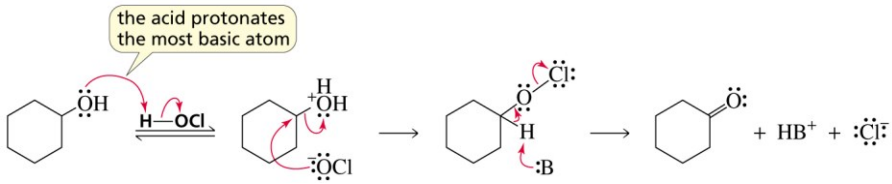
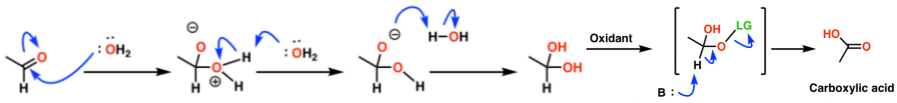
Alcohol – XIII: Oxidation







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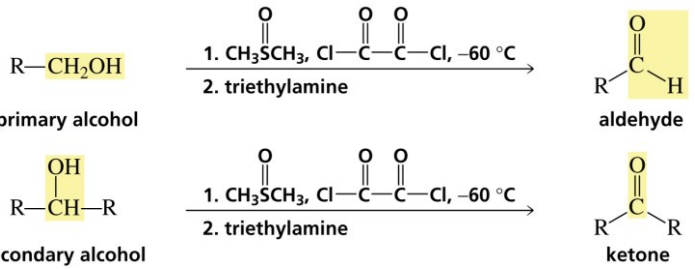
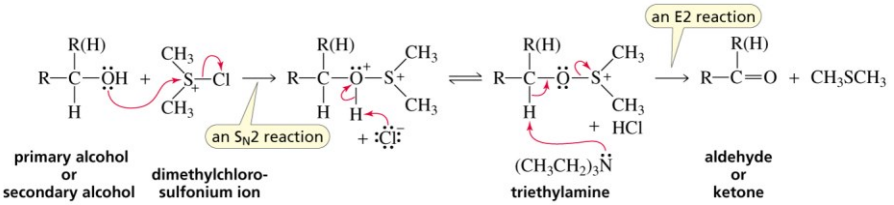
Alcohol – XIV: Oxidation

❖ **Swern Oxidation**





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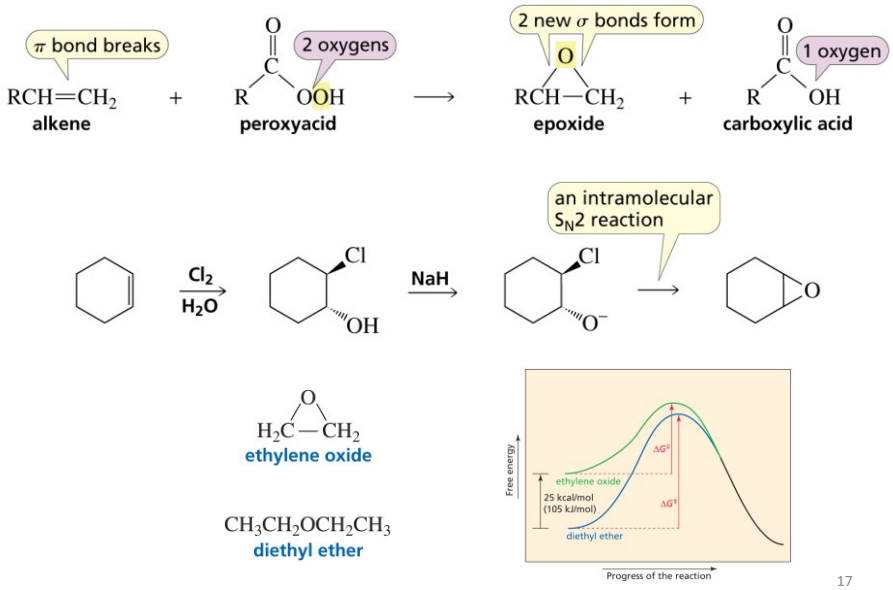
Epoxides – I: Synthesis



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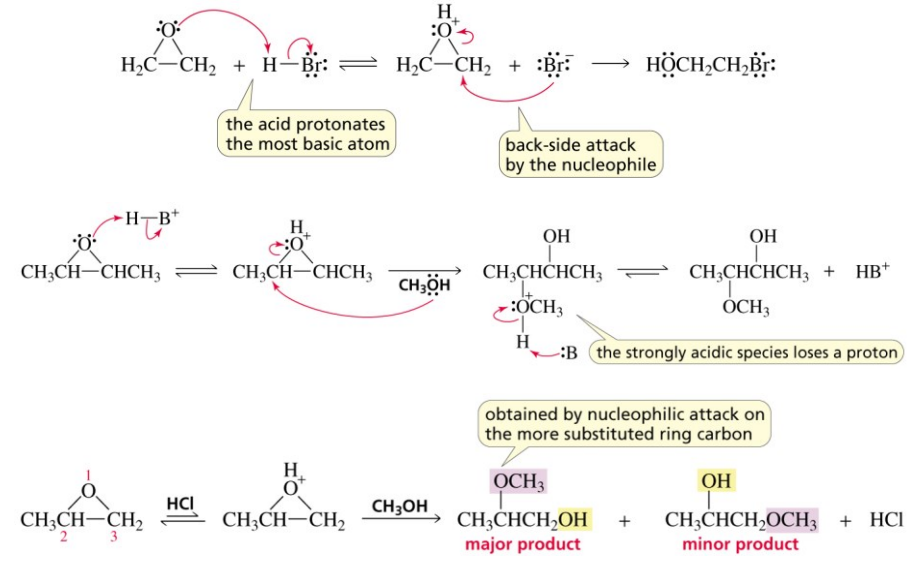
Epoxides – II: Acid Catalyzed Ring Opening



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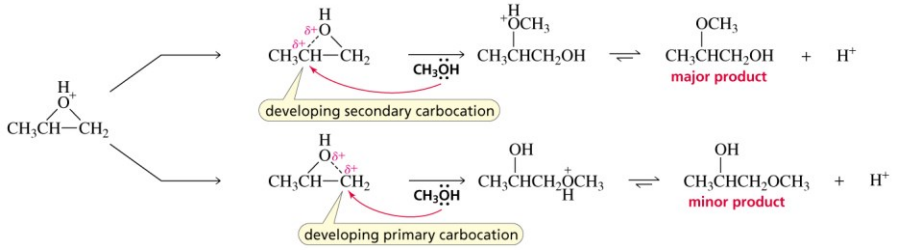
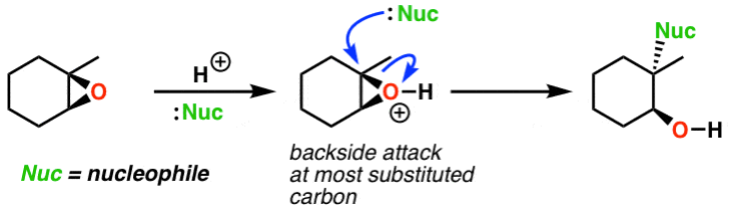
Epoxides – III: Acid Catalyzed Ring Opening





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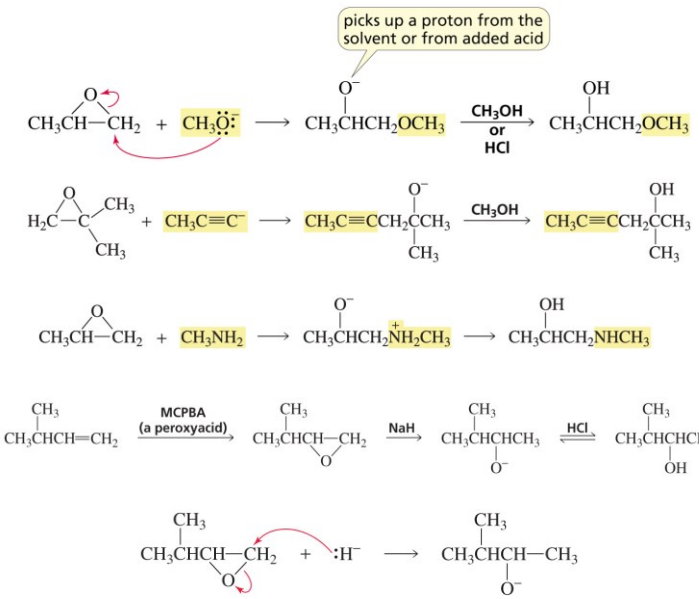
Epoxides – IV: Base Catalyzed Ring Opening



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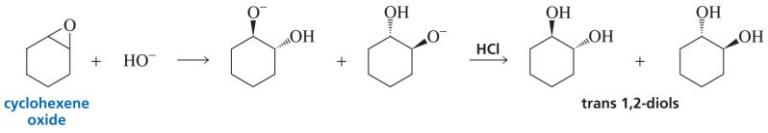
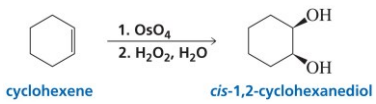
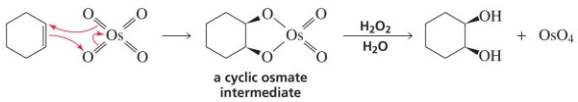
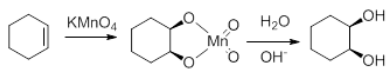
Diols









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Reaction Map – I: Alcohols

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