1

Functional Group Synthesis - CHEM 261

Alcohols

1. Oxymercuration

$$\begin{array}{c|c} H \\ \hline & 1. \ Hg(OAc)_2, \ H_2O/THF \\ \hline & 2. \ NaBH_4 \\ \end{array}$$

2. Hydroboration

Alkanes

1. Catalytic hydrogenation of alkenes and alkynes

2. Reduction of alkyl halides

3. Corey - Posner, Whitesides - House synthesis

RX
$$\frac{1. \text{ Li}}{2. \text{ Cul}}$$
 $R_2\text{CuLi}$

$$R_2$$
CuLi $\xrightarrow{R'X (1^0) \text{ or ArX}}$ R-R or R-Ar

Alkenes

1. Dehydrohalogenation of alkyl halides

2. Dehydration of alcohols

$$\begin{array}{c|c} & H \\ \hline & H_2SO_4 \text{ or } H_3PO_4 \\ \hline & \Delta \end{array}$$

3. Dehalogenation of vicinal dihalides

4. Hydrogenation of alkynes

Alkyl halides

1. Halogenation of alkanes

RH
$$\frac{X_2/\Delta \text{ or hv}}{}$$
 RX

2. From alcohols

3. From alkenes

4. Finkelstein reaction

Alkynes

1. From vicinal dihalides