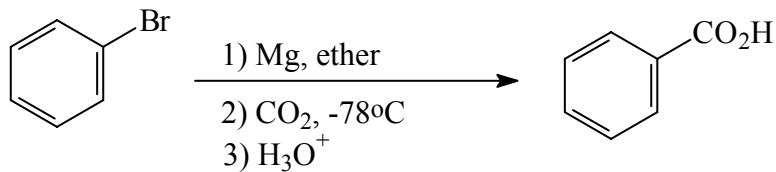


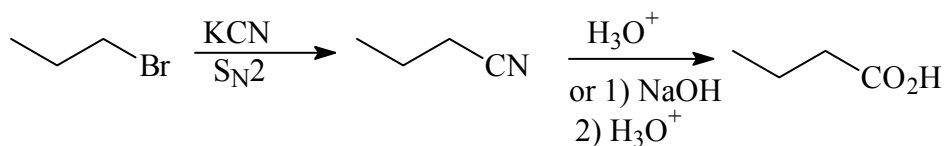
## Carboxylic Acids

### Preparation:

Grignard reaction with CO<sub>2</sub> (dry ice):

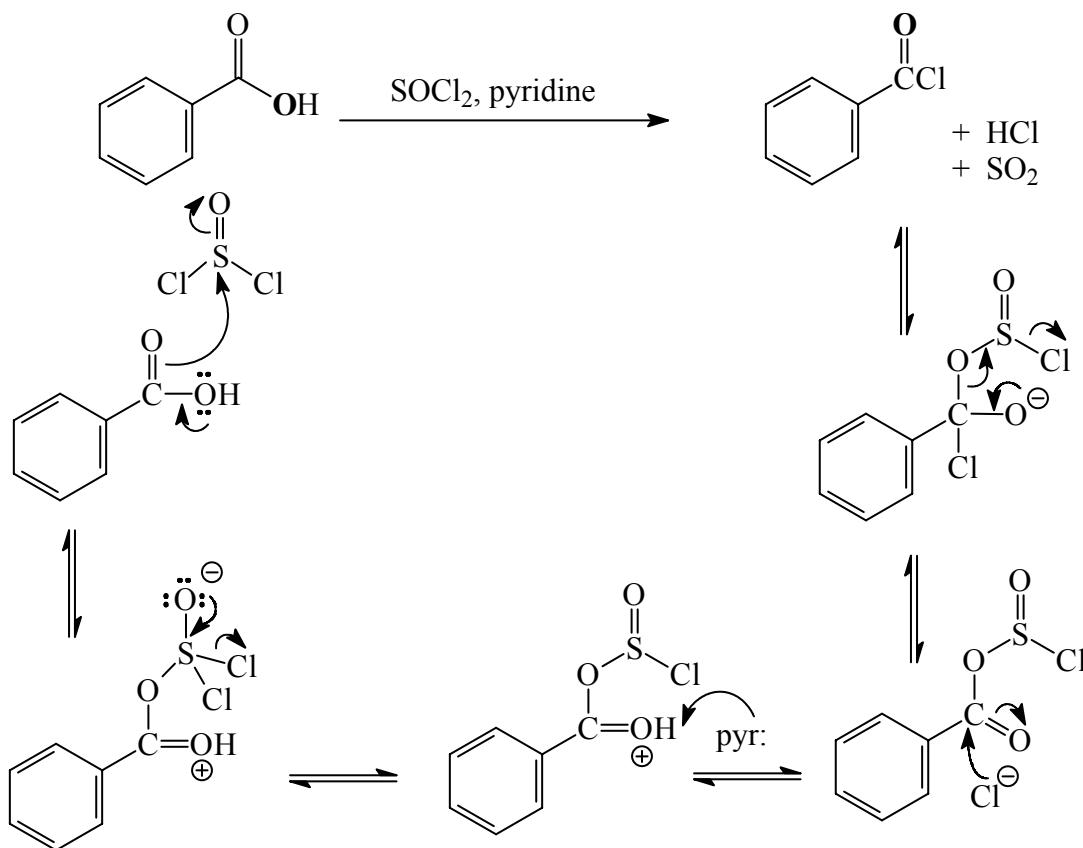


Hydrolysis of nitrile:



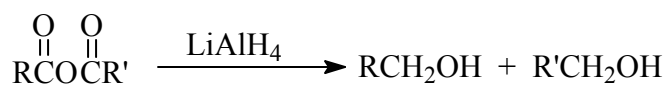
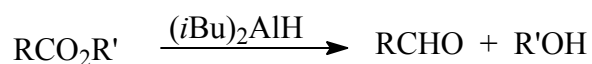
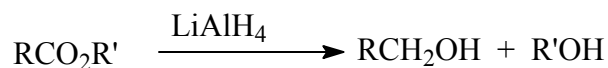
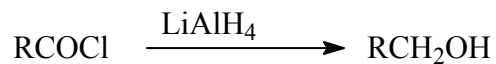
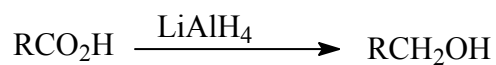
## Acid Chlorides

Preparation from Carboxylic Acids:



## Reductions of carboxylic acids and their derivatives

(all with  $\text{H}_3\text{O}^+$  work-ups)



## Reactions of acid chlorides (1st four give HCl as well):

