

Carboxylic Acids & Carboxylic Acid Derivatives
Learning Objectives

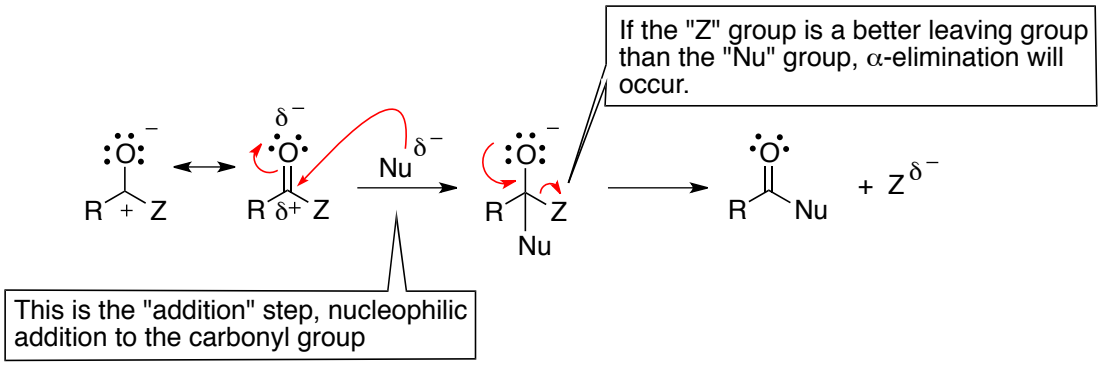
As we study this chapter, you should...

1) **Understand that carboxylic acids are polar protic compounds with higher acidities than most other organic functional groups.** They therefore act as acids to many organic functional groups. Although the specific acid-base reactions that RCO_2H undergo aren't list on the following reaction table, you will be expected to know them and know how to use them based on your previous studies of acid-base chemistry.

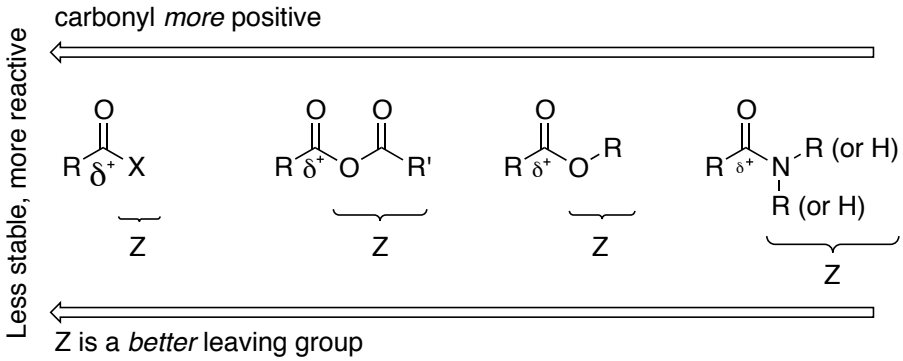
2) **Recognize that carboxylic acids undergo hydrogen bonding**.

3) **Recall the reactions we used to synthesize carboxylic acids**:
1) primary alcohols → carboxylic acids (H_2CrO_4 oxidation)
2) alkyl benzenes → carboxylic acids ($KMnO_4$ or $Na_2Cr_2O_7$ oxidation of side chain)

4) **Understand that Addition-Elimination is the main mode of reactivity for carboxylic acid derivatives:**



5) **Understand that the reactivity of carboxylic acid derivatives depends on 2 things:**
1) the positive character of the carbonyl
2) the leaving group ability of the "Z" group



6) **Be able to name carboxylic acids, dicarboxylic acids, and their derivatives** (learn on your own via the text and the problems therein).

7) **Understand how soaps are formed (saponification) and how/why soaps form micelles.**

8) **Know that all carboxylic acid derivatives can be hydrolyzed to carboxylic acids.**

9) **Understand how carboxylic acids can be "activated," that is, made more reactive towards carbonyl addition.**