Organic Chemistry Lesson 6

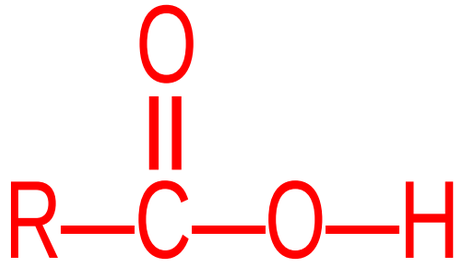
Carboxylic Acids and Esters

Primary Learning Goals

I can use IUPAC conventions to write systematic names and draw structures for carboxylic acids and esters.

I can name, describe, and recognise various chemical reactions involving carboxylic acids and esters, and predict the products of these reactions.

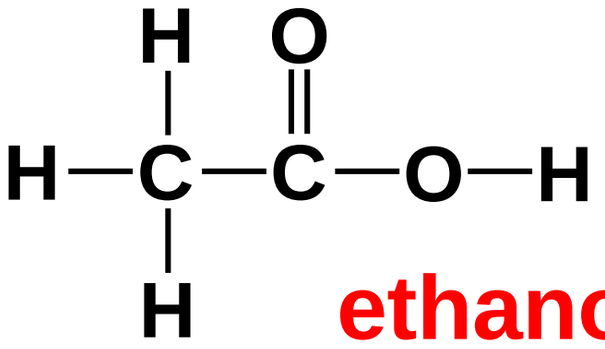
Carboxylic Acids

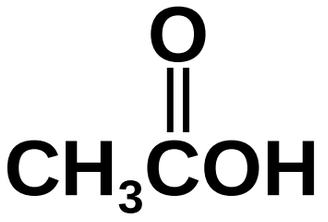
Generic Structure: 

Functional Group: carboxyl group (—COH) 

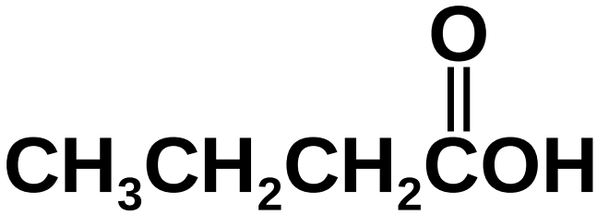
Nomenclature: “-oic acid” suffix

examples



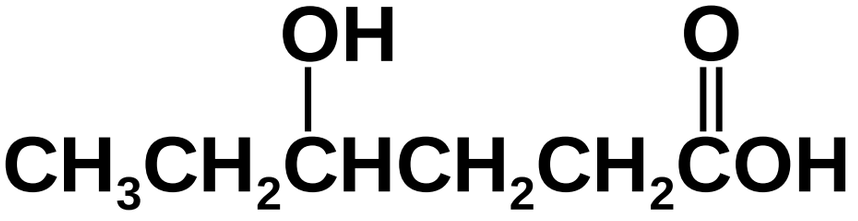


ethanoic acid
(acetic acid)



butanoic acid

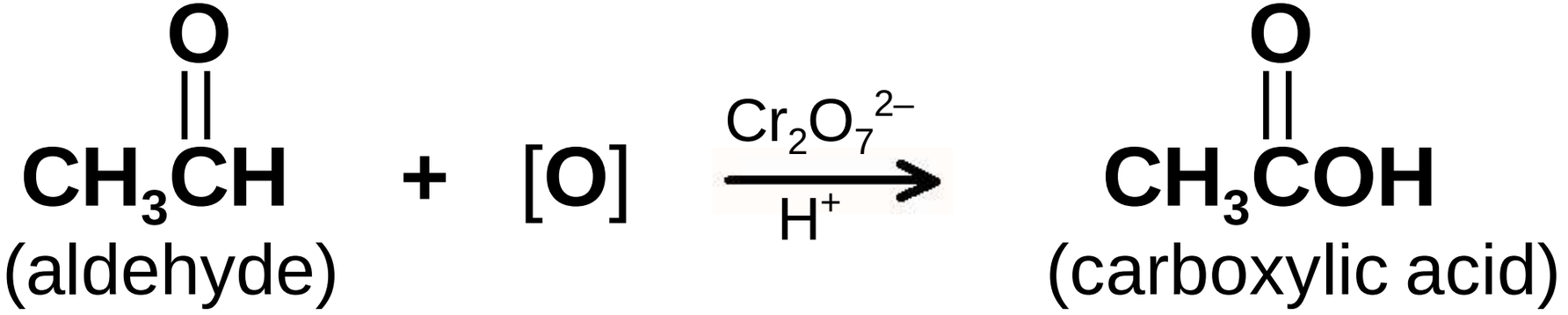
methanoic acid
(formic acid)



4-hydroxyhexanoic acid

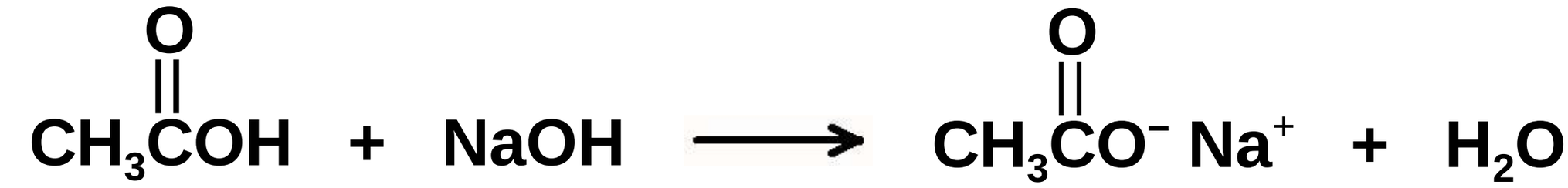
Reactions:

1. Controlled oxidation of an aldehyde produces a carboxylic acid.



(aldehyde) (carboxylic acid)

2. Neutralization reaction between a carboxylic acid and a base.



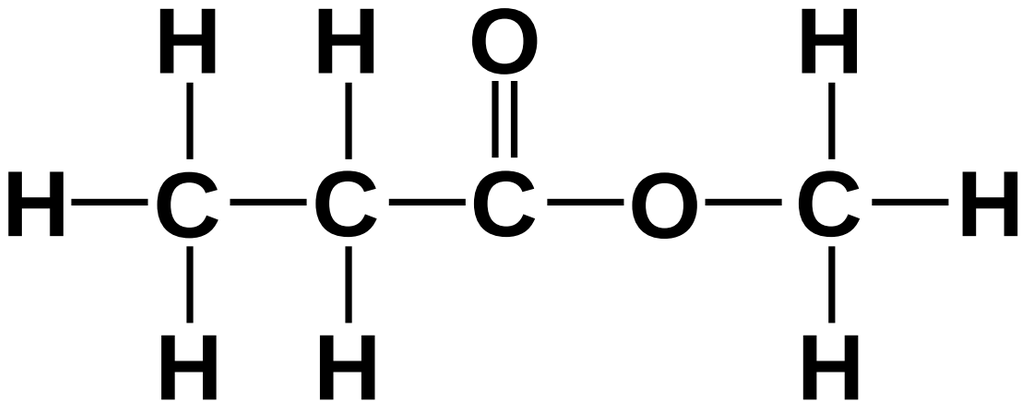
Esters

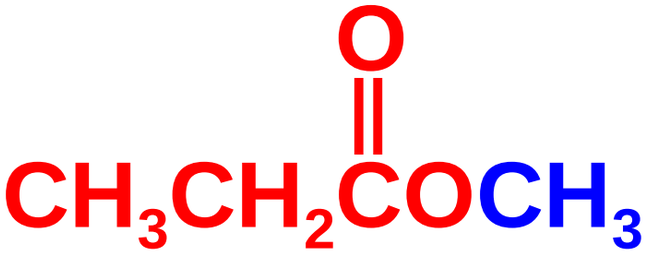
Generic Structure: 

Functional Group: ester group 

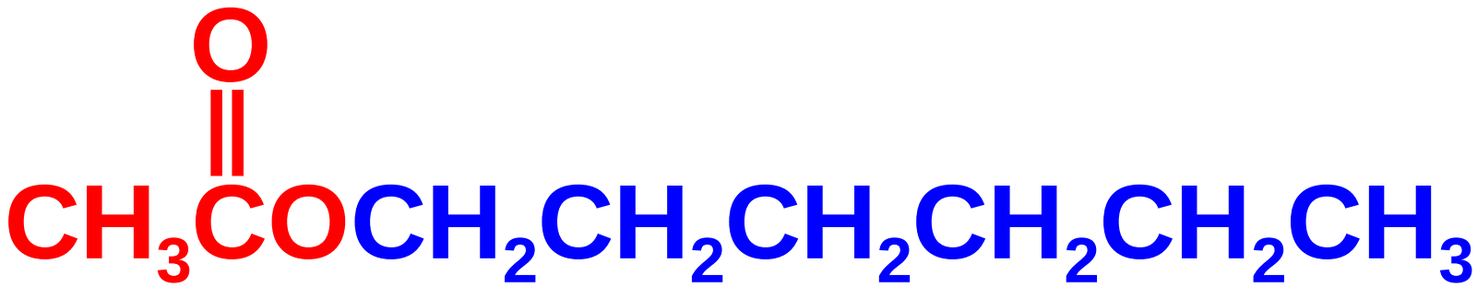
Nomenclature: “-oate” suffix with alkyl branch

examples





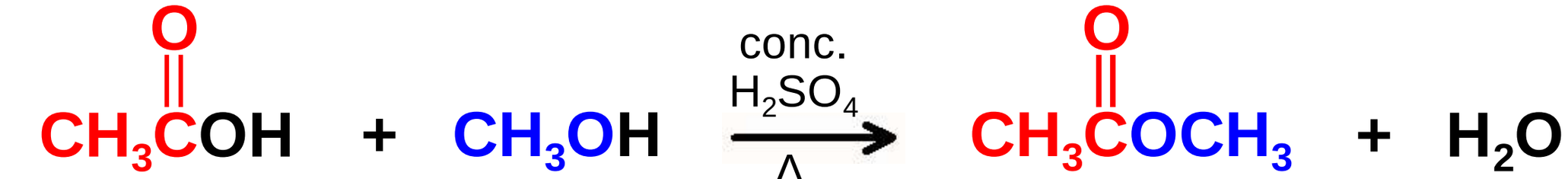
methyl propanoate



hexyl ethanoate

Reactions:

1. A condensation reaction between a carboxylic acid and an alcohol produces an ester.



ethanoic acid (acetic acid) + methanol → methyl ethanoate (methyl acetate) + H_2O

"esterification"