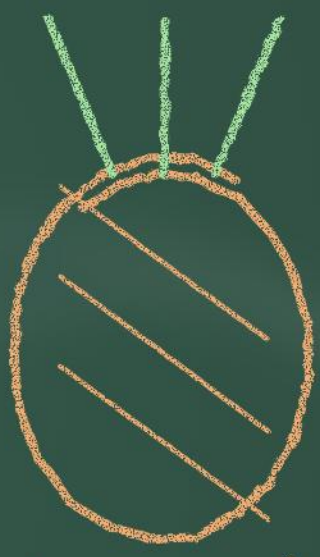
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PRAYOGX

Esters & the C-OH Group



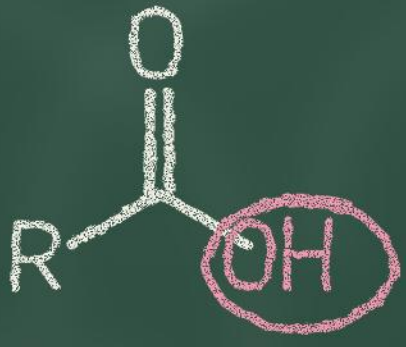
banana



pineapple

fruity smell = esters

acid + alcohol → ester

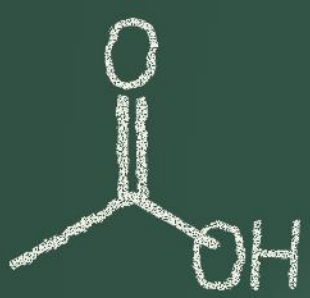


swap this OH

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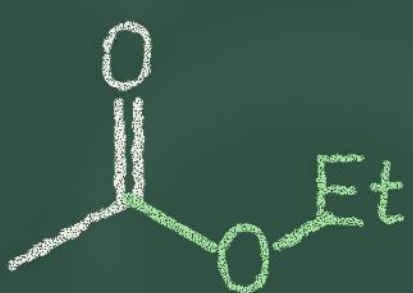
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Esters & the C–OH Group



+ C_2H_5OH

⇌ conc. H_2SO_4, heat



+ H_2O

ethyl acetate

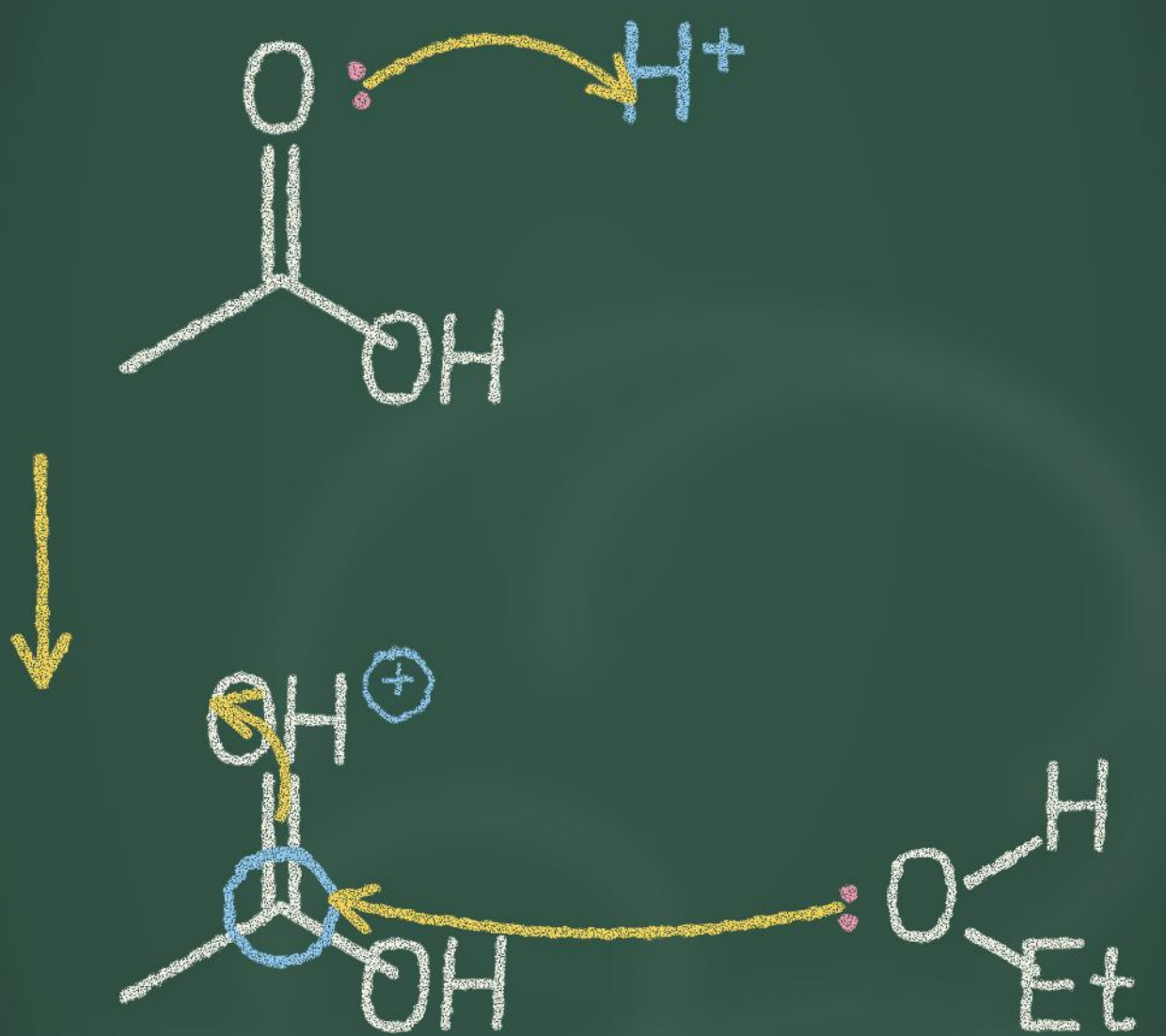
reversible ⇌

remove water, or excess alcohol

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Esters & the C–OH Group



C=O⁺H: C more δ⁺

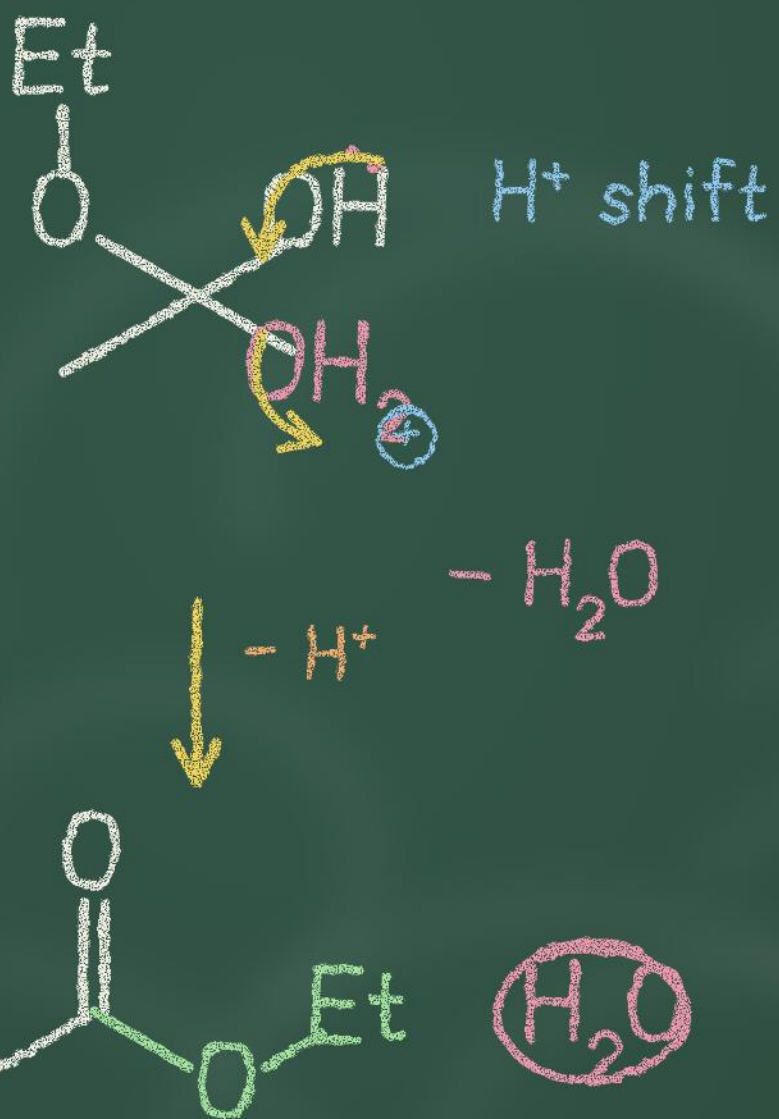
alcohol O attacks C

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tetrahedral intermediate



its O came from the acid

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OH → Cl



acid chloride

PCl_5: + $POCl_3$ + HCl

PCl_3: + H_3PO_3

$SOCl_2$: + SO_2 + HCl

both gases: they escape

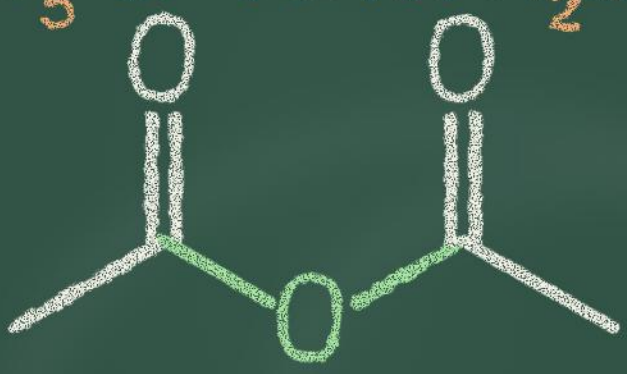
$SOCl_2$ is best

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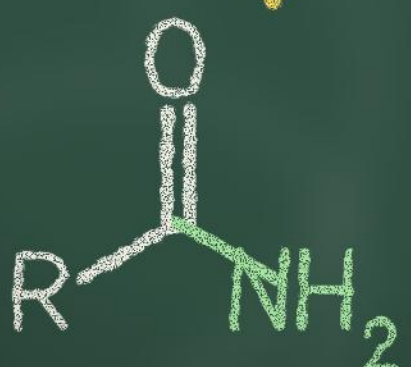
Esters & the C-OH Group

$$2\,RCOOH \xrightarrow[P_2O_5 \text{ or conc. } H_2SO_4]{-H_2O}$$



acid anhydride

$$RCOOH + NH_3 \rightarrow RCOO^- NH_4^+ \xrightarrow{\text{heat}, -H_2O}$$

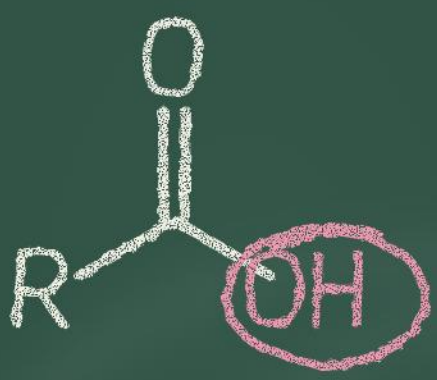


amide

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PRAYOGX

Esters & the C–OH Group



$R'OH$, H^+ → ester $RCOOR'$

$SOCl_2$ → acid chloride $RCOCl$

P_2O_5 → anhydride $(RCO)_2O$

NH_3, heat → amide $RCONH_2$

every time, the OH is swapped

next: removing a carbon