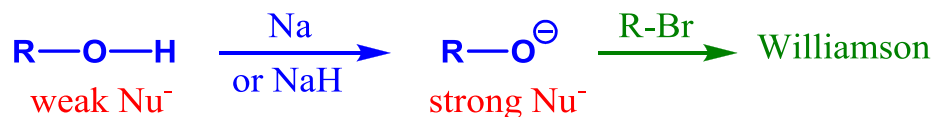
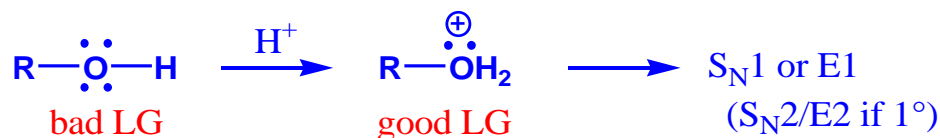


Overheads: - Outline

Recap Friday: Reactions of Alcohols

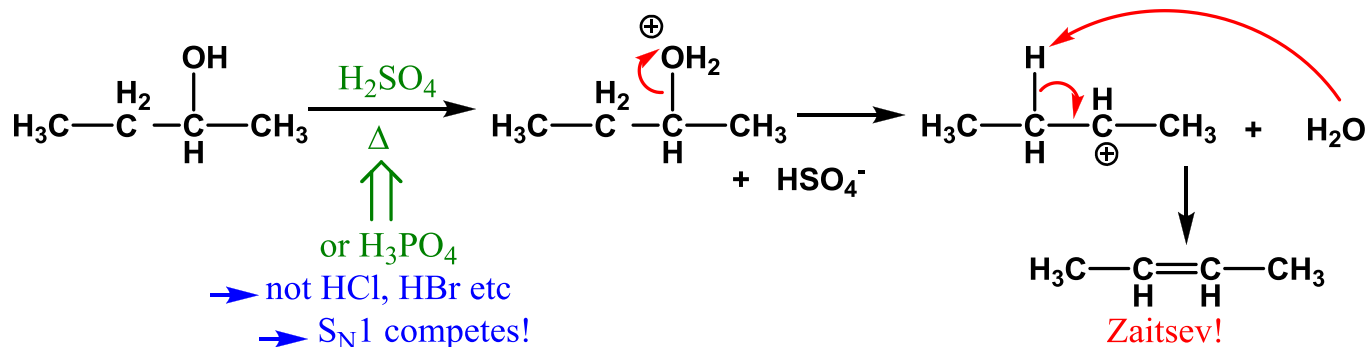
1) As Nu⁻

2) As LG

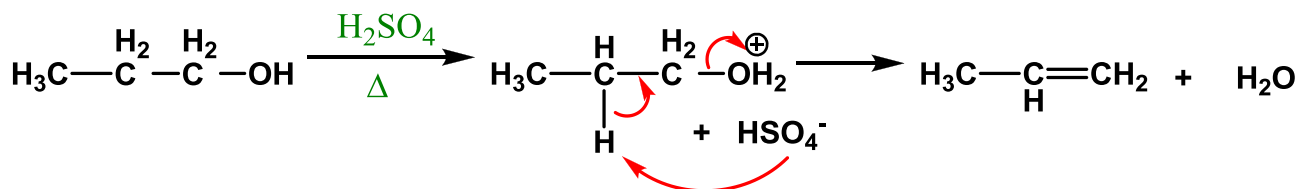


Elimination Reactions of Alcohols

⇒ Dehydration of alcohols (remove H₂O)



⇒ 1° goes by E2, but much slower (base = HSO₄⁻ = weak)



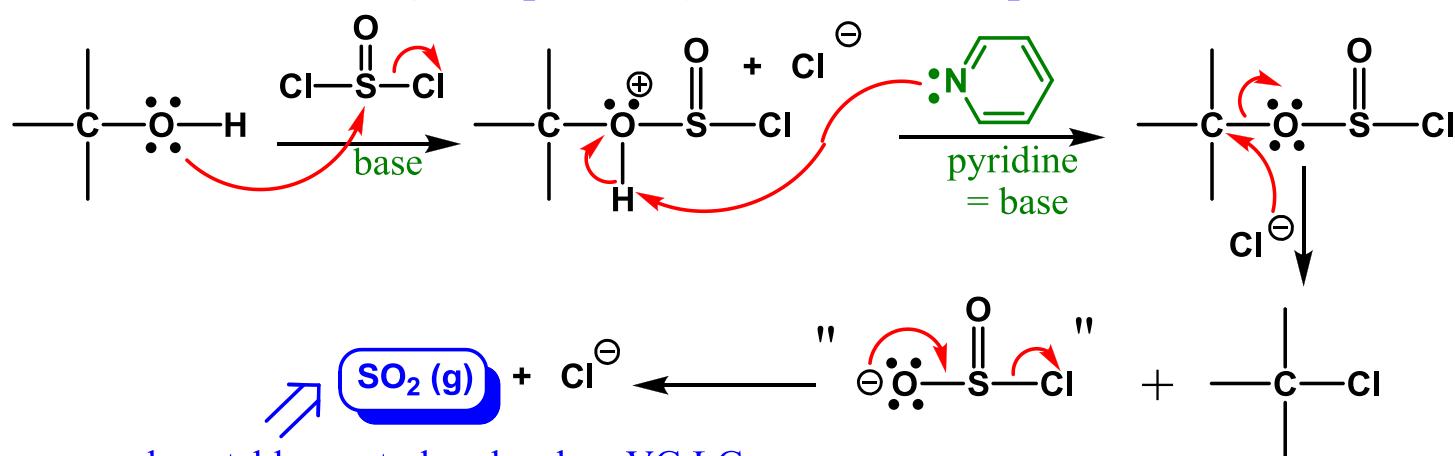
For Dehydration: 3° ROH > 2° ROH >> 1° ROH

*** Also need to consider possible rearrangements!

Other ways to turn OH into LG:

⇒ HCl *etc.* only good for simple ROH ⇒ rearrangements, side reactions)

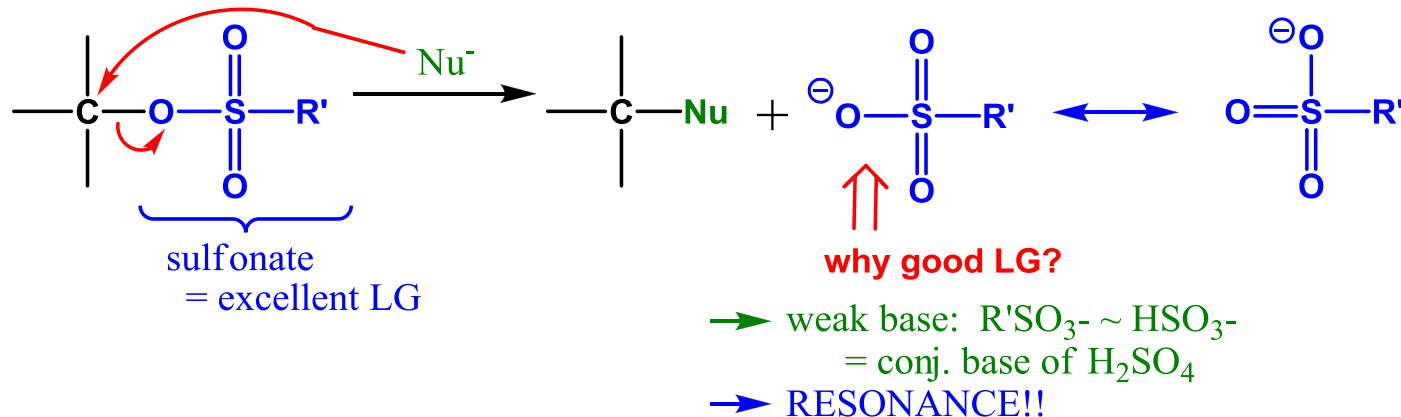
1) Turn into Cl or Br using SOCl_2 (= thionyl chloride) or SOBr_2



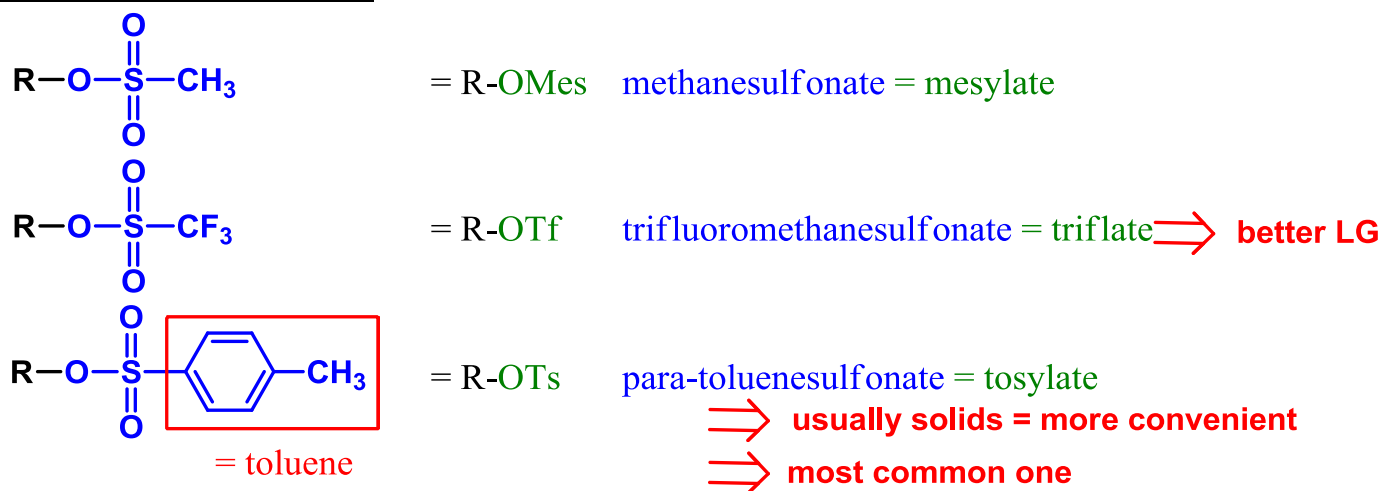
makes stable, neutral molecule \therefore VG LG
also gas, \therefore can't go back!

\Rightarrow PCl_3 (or PBr_3) and pyridine give same product (similar mechanism)

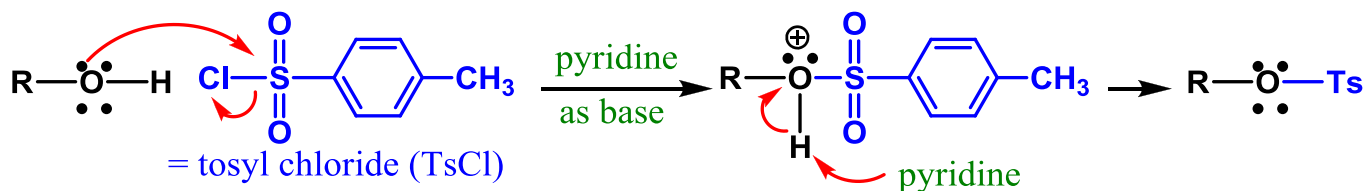
2) Sulfonate Esters



Common Sulfonate Esters

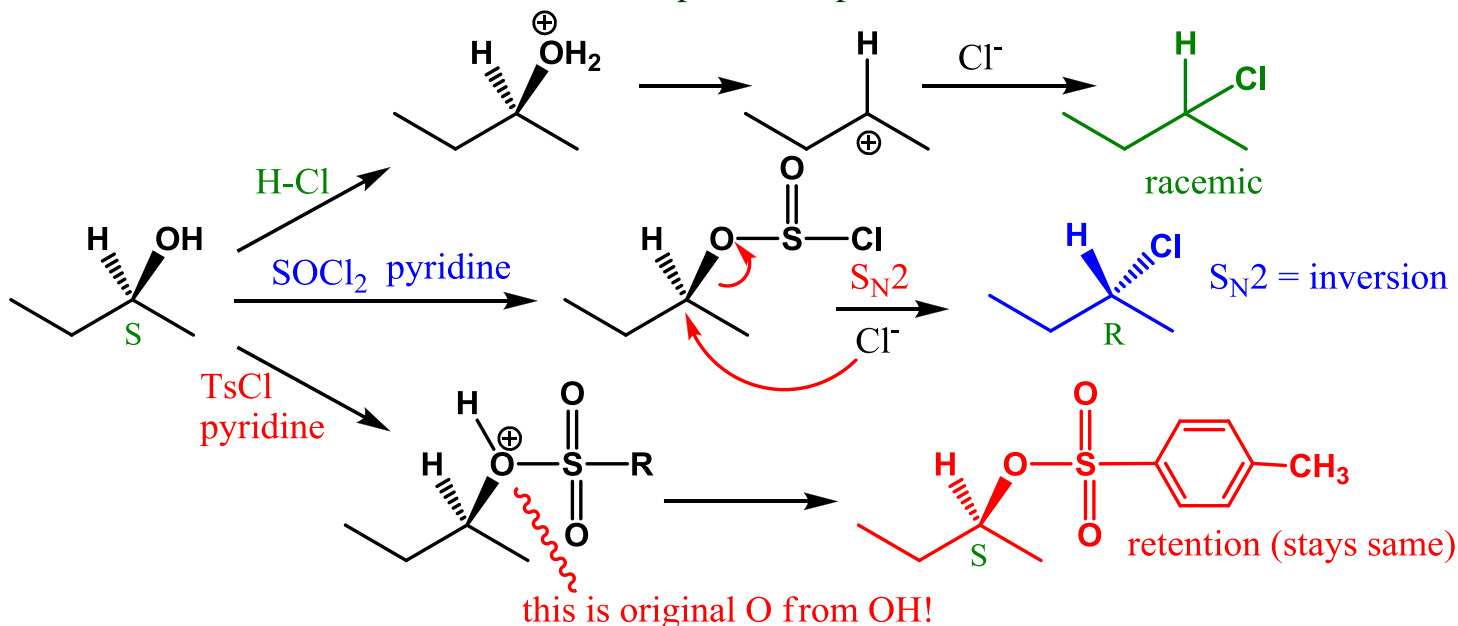


How to make Sulfonates



Stereochemistry: $\text{R}^*-\text{O}-\text{H} \rightarrow \text{R}^*-\text{LG}$

\Rightarrow if "R" is chiral center, stereochem. of product depends on how LG is added!



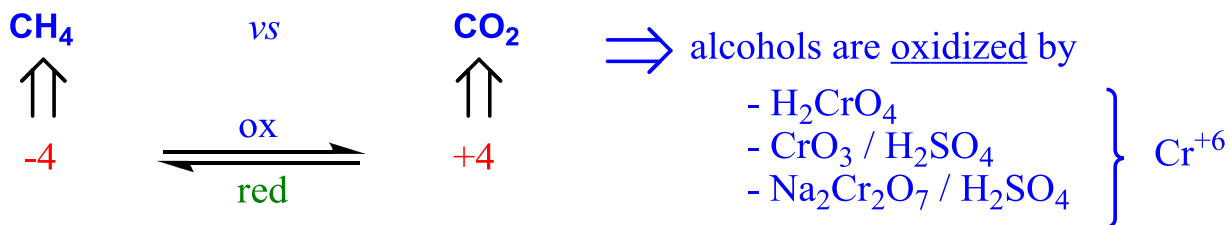
$\text{H}-\text{Cl}$ (C⁺) \Rightarrow racemic
 SOCl_2 \Rightarrow inverts (or PCl_3 etc)
 TsCl \Rightarrow retains

Then if we do $\text{S}_\text{N}2$ to replace LG, get **double inversion** (SOCl_2) or **inversion** (TsCl)
 $\hookrightarrow \text{S} \rightarrow \text{R} \rightarrow \text{S}$ $\hookrightarrow \text{S} \rightarrow \text{S} \rightarrow \text{R}$

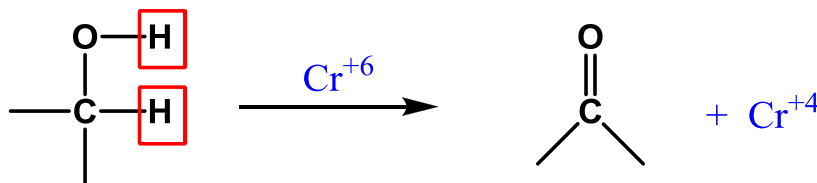
Last Reaction of Alcohols: Oxidation

Oxidation: increase in # of C-O bonds

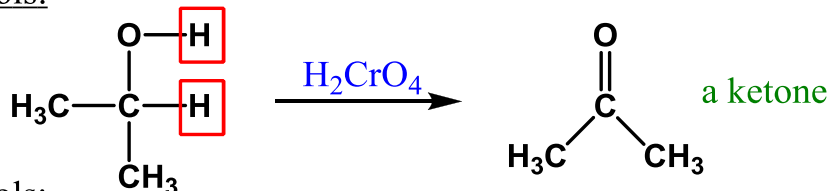
Reduction: increase in # of C-H bonds



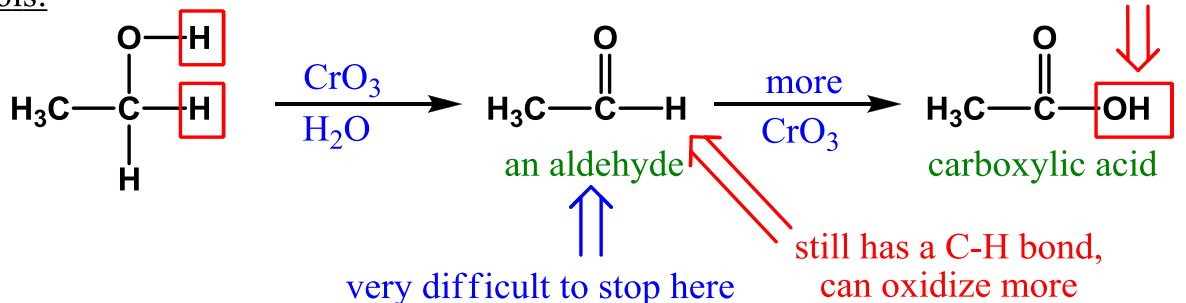
In general:



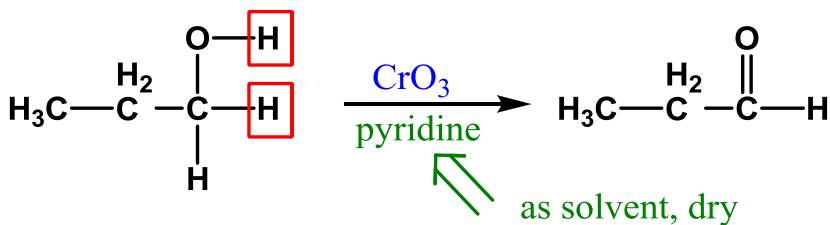
2° Alcohols:



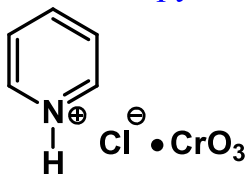
1° Alcohols:



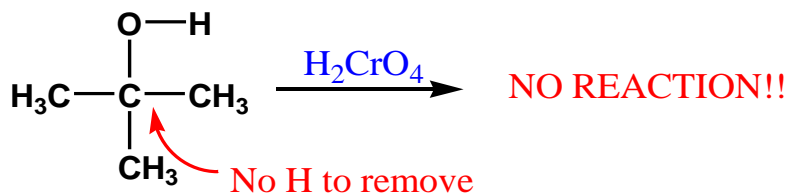
- to stop at aldehyde, need milder ox. agent and no H₂O



- or use "PCC" = pyridinium chlorochromate in CH₂Cl₂ (no H₂O)



3° Alcohols:



How does the Oxidation work?

