Course CHEM343 Lecturer Gellman

Day Fri 1:20PM Date 11/18/11

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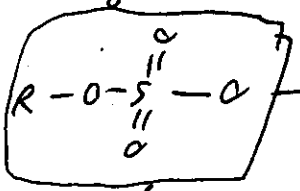
Final ~~Exam~~ exam Sunday Dec 18th @ 7:45 AM

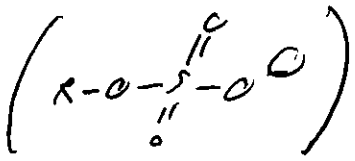
A-E Psych 121

F-Z Psych 105

Recall: convert OH to good LG by forming sulfonate ester

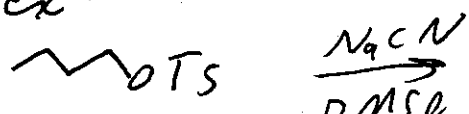


good LG

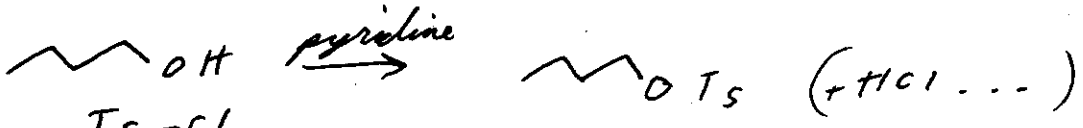


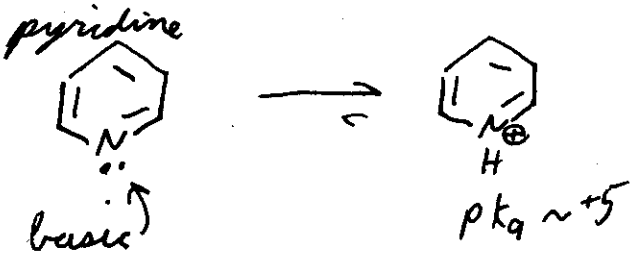
very stable anion

Ex:



From TsOR & from alcohol





basic

pKa ~ +5

$HCl \longrightarrow H^+ + Cl^-$

pKa ~ -7

Tosylates also good substrates for E2 rxns

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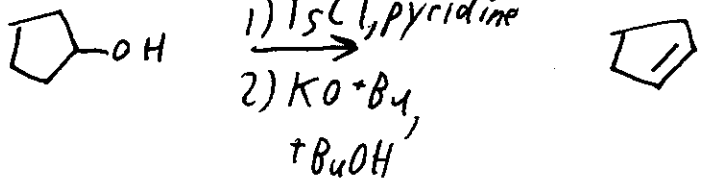
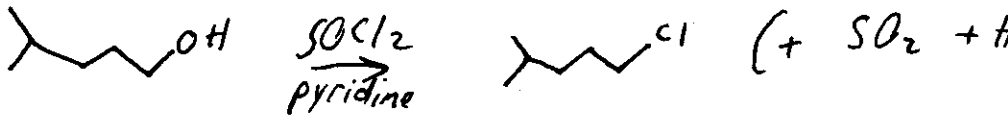


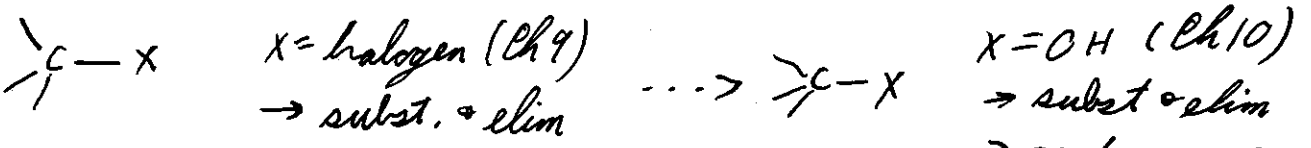
- alternative method for converting hydroxyl to a good LG (Cl or Br)

"handled" or neutralized by pyridine

Ex:



see pp 450-451 on differences among reagents

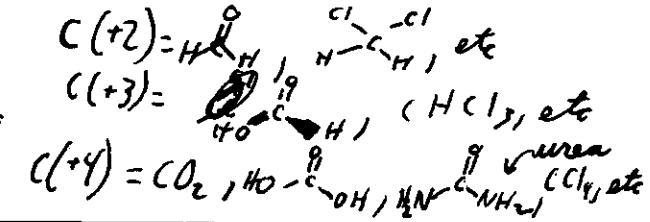


Oxidation states of organic molecules (see pp 452-455)

- Focus on individual C atoms
  - Carbon ox state = 0 to +4
  - Increment C ox state by +1 for every bond to a more electronegative element (N, O, halogens, S, P)
  - no increment for bonds to another C or to H

Ex C(0) = CH_4, etc.

C(+1) = CH_3OH, CH_3NH_2, CH_3Cl, etc



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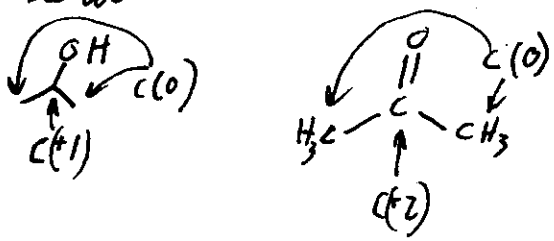
Extend to molecules w/ >1 C:

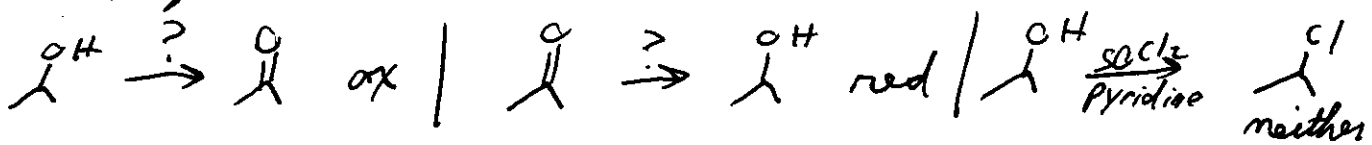
OX = oxidation
red = reduction



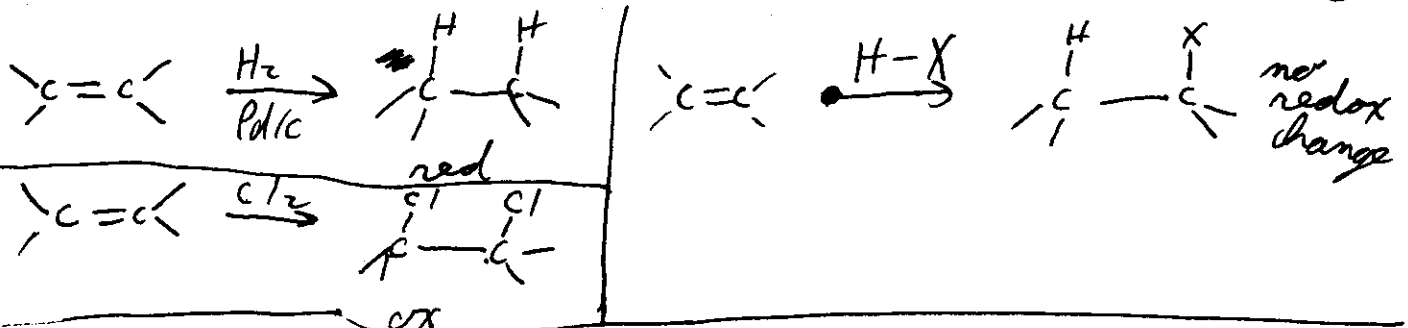
3 part classification of organic rxns:

1) Rxn in which organic molecule is oxidized
2) " " " " " " reduced
3) " " " " " " neither oxidized or reduced

For example

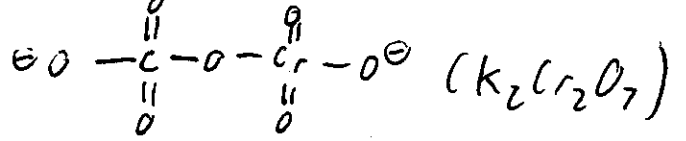


- In this C ox state scheme, must assign $(\frac{1}{2})$ to alkene C



Oxidation of alcohols:

- oxidizing agents based on Cr(+6): $O=Cr(-O^{\ominus})(O^{\ominus})$ ("chromate") (Na_2CrO_4),



$(K_2Cr_2O_7)$, $O=CrO_2$ (CrO_3)

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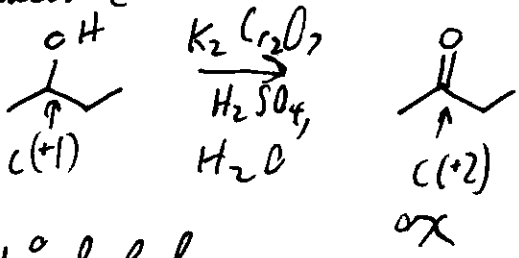
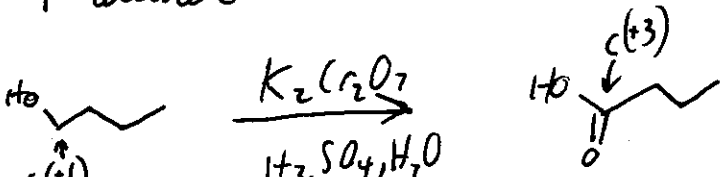
2° alcohol



$(Cr(+6) \rightarrow Cr(+3))$
red

or

1° alcohol

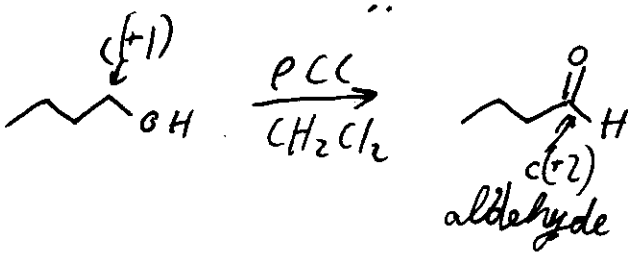


carboxylic acid!
double ox via aldehyde intermediate

Problem: Cr(+6) ox in the presence of H_2O cannot stop at the aldehyde (C(+2))

∴ Need Cr(+6) reagent that dissolves in nonpolar (i.e, H_2O free) solvent

$CrO_3 + HCl +$  → pyridium chlorochromate (PCC)



aldehyde