Course CHEM 343 Lecturer Gellman

Day Mon 1:20PM Date 11/21/11

Notes Taken By Patrick Total # of Pages 3

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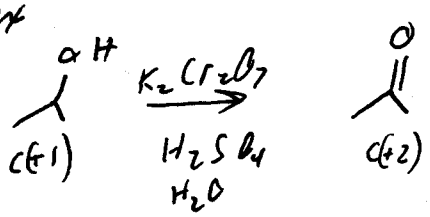
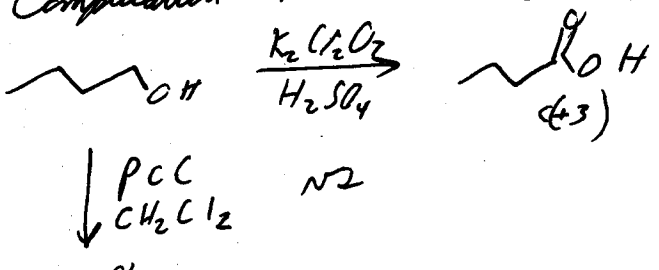
Recall ox of alcohols...

ex



Complication w/ 1° alcohol



These ox involve C–H bond breaking (@ C bearing O).
Thus, - no "over-oxidation" of 2° alcohols.
- no oxidation at all on 3° alcohols

Read carefully § 10.11. Perspective on devising multi-rxn sequences for synthesis of complex molecules from simple S.M. (starting materials)

§ 10.8

end Ch 10

Ch 11 - Ethers: Rec problems 1-24, 30, 40-42, 44, 46-65, 68, 69, 71, 75 (not e.g.), 72-79

R – O – R'
C

Perspective 

, X = O

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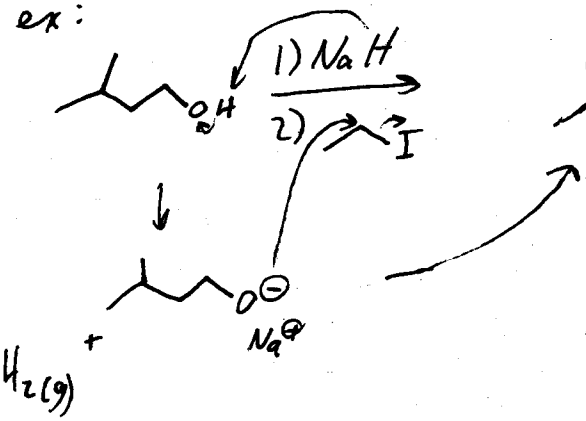
Synthesis of ethers:

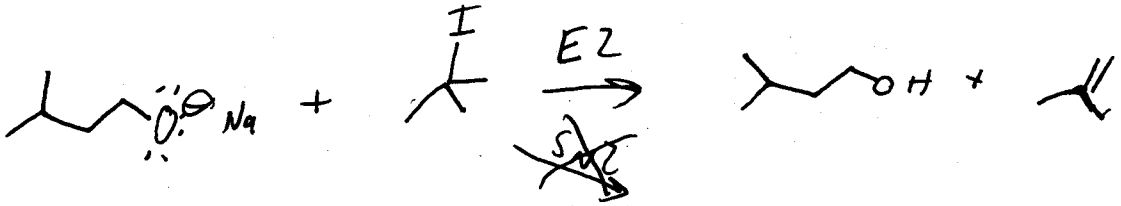
1) Williamson ether synthesis (S_N2 rxn of alcoxides)

ex:



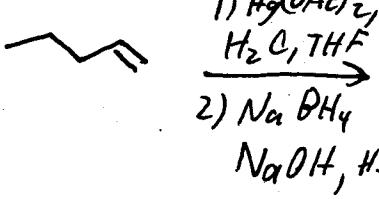
- 1st step-quantitative alkoxide formation
- 2nd step S_N2
- Limitations: must use good S_N2 substrate (methyl or 1° alkyl halide or sulfonate)

Thus,

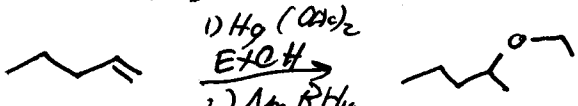


2) Alkoxymercuration reduction

recall

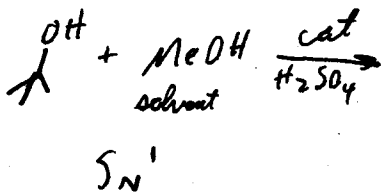


- Variation for ether synthesis uses alcohol [redacted] instead of H_2C [redacted] in first step

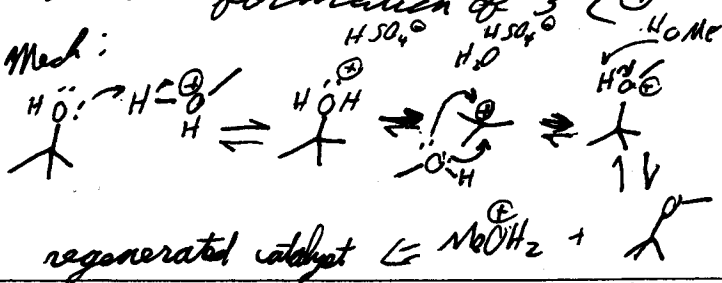


3) Acid-catalyzed rxns, from alcohols or alkenes
⇒ most useful versions involve formation of 3° ⊕

a) From alcohol



Mech:



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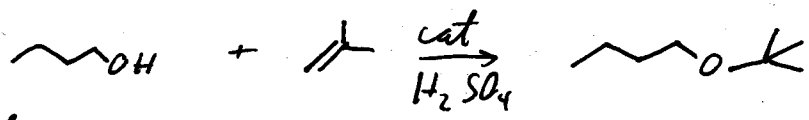
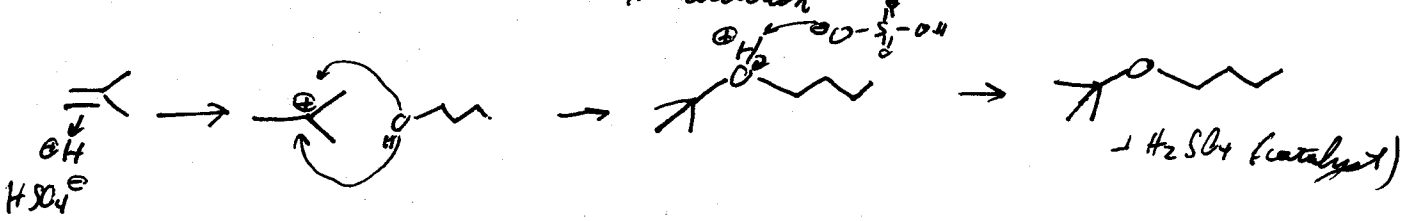
Note: limited to simple alcohols - can also use as solvent

b) Start from alkene

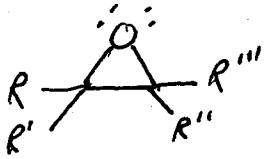
ex 

Mech: Variation on H–X addition



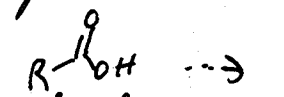
Cyclic ethers, e.g. 

- Special class of ethers: epoxides
  - unusual reactivity because of ring strain

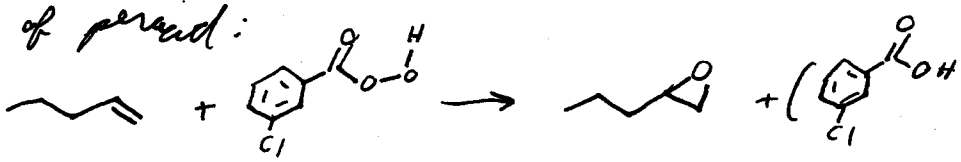


3-membered ring

1) Use of peracids to synthesize epoxides

Recall 

carboxylic acid — percarboxylic acid ⇒ "peracid"

Use of peracid: 

m-chloroperbenzoic acid ⇒ cheaper & not as explosive as other peracids
(mCPBA)

Proposed mechanism: