Course Chem 343 Lecturer Gellman

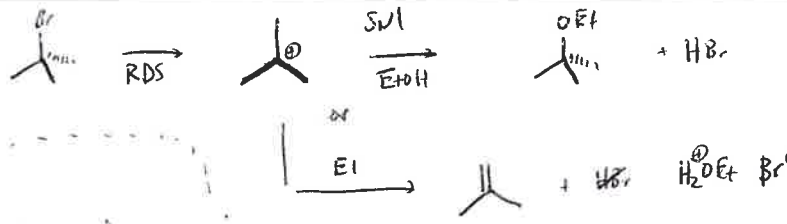
Day W Date 11/9/16

Notes Taken By SCS Total # of Pages 2

Submit a *Single-sided Copy* to the Undergraduate Office

NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW

Recall: S_N1 & E1 reactions:

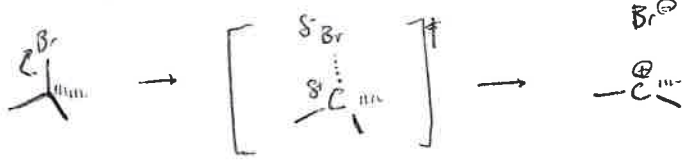


- S_N1/E1 reactivity patterns

① Among all halides: 3° > 2° (not 1°)
- based on carbocation trends (recall Hammond's Postulate)

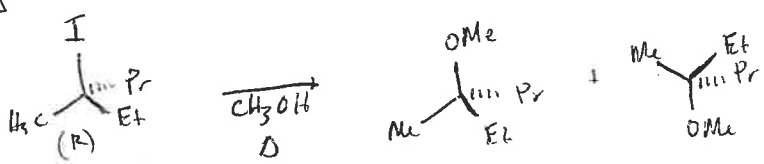
② Better leaving group → higher S_N1/E1 reactivity
R-I > R-Br > R-Cl (not R-F)

③ Solvent effects: for alkyl halides, polar, protic solvents promote S_N1/E1 ~~paths~~ paths relative to other solvents
i.e. H_2O, MeOH, EtOH
- recall: these solvents are effective for stabilizing anions & cations

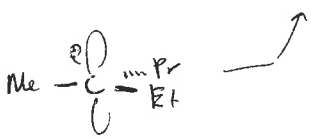


→ solvents good at accommodating charges, ~~in~~ good at accomodating partial charges as well
↳ lowers T.S. energy and promotes S_N1/E1 pathway

ex)



racemic!
- supports hypothesis of carbocation intermediate



- carbocation planar, stereochem of s.m. lost

Course Chem 343 Lecturer Coffman

Day W Date 11/9/16

Notes Taken By GS Total # of Pages 2

Submit a *Single-sided Copy* to the Undergraduate Office

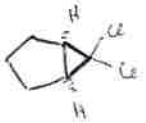
NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW

Selectivity : SN1 vs E1 vs SN2 vs E2 (Table 9.7)

- 1° alkyl halides don't do SN1/E1
  - ↳ usually do SN2 (although bulky bases like $^{\ominus}OtBu$ could affect E2)
- 3° alkyl halides don't do SN2
  - ↳ strong base gives E2
  - ↳ polar, protic solvent gives SN1/E1
- 2° alkyl halides, all paths are possible - need to consider conditions carefully

Carbenes → reaction intermediates

- simplest case : "$:CH_2$" highly electron deficient

ex)  + $HCCl_3$ $\xrightarrow{KOtBu}$ 

- believe to go through carbene intermediate

Mech

$tBuO^{\ominus}$ + $H-CCl_3$ ($pK_a \sim 25$) $\xrightarrow{-tBuOH}$ $Cl_3C^{\ominus}$ → $:CCl_2$ (like $^{(+)}_{(-)}C(Cl)Cl$)

(concerted)

ex)  $\xrightarrow[CHCl_3]{KOtBu}$ 

(not trans cyclopropane) - preserve olefin stereochem