*CHEM 242 – Lecture 11 31/01/2014*

Overheads: - Outline Handout: Sub/Elim

Feedback Quiz #2

Recap Wednesday:

Competition Between the 4 Reactions:

1) Is a C+ likely formed?

- 1° R-LG ⇨ NO

- 3° ⇨ YES (except strong base = E2)

- 2° / allylic ⇨ strong base/Nu-, aprotic = NO

weak base/Nu-, protic = YES

2) Substitution or Elimination? (Elim needs -H)

a) If C+ SN1 & E1 compete

b) If no C+ SN2 & E2 compete

- E2 needs strong base (OH- or better)



Last deciding factor: Temperature! (consider LAST)

⇨ increasing temperature increases rate of all reactions,

but rate of elimination increases more!

(effect of entropy: G° = H° - TS°)

- elimination gives more molecules more S

E1 / E2 favored if HOT

(lab 2 *vs* lab 3!)

Substitution and Elimination Reactions in Synthesis

Synthesis: - always want desired product to be major (even better, only!) product

Must consider: - competing reactions (sub *vs* elim etc)

- regiochemistry

- stereochemistry

A) Elimination



B) Substitution: important application: R-O-H 🡪 R-O-R’ (alcohol 🡪 ether)

Williamson Ether Synthesis:





⇨ need to consider competition from E2 (RO- = strong base)



Reactions of Alcohols R‑O‑H

Seen: - can turn into strong Nu- (alkoxide)



- can turn into good LG by protonation



Substitution Reactions of Alcohols



