*CHEM 242 – Lecture 9 27/01/2014*

Overheads: - Outline

Model: to show anti elimination

Recap Friday: E2 *vs* E1 Reactions

E2 *vs* E1

- one step - two steps

- no C+ - C+ intermediate (⮳ can rearrange!)

- rate = k[R-LG][base] - rate = k[R-LG]

(bimolecular) (unimolecular)

- regiochem = Zaitsev - regiochem = Zaitsev

- ALL!! - 3° > 2° (no 1°) {C+ stability}

Other factors in predicting E1 vs E2:

2) Base Strength:

E2 needs strong base (OH- or better)

⇨ high concentration helps increase rate

E1: weak base is ok (*eg* H2O)

⇨ NaHCO3, Na2CO3 are weak bases, but not good nucleophiles help E1

* recall Lab 2: side product with lower BP = E1 product



3) Solvents: polar aprotic = E2 same reasons as SN1 *vs* SN2

protic = E1

Stereochemistry of Elimination Reactions (cis *vs* trans)

1) E1: Zaitsev: most stable alkene formed



2) E2: more complicated!

⇨ reaction is concerted (one step)

orbitals must line up in same plane (*ie* -H & LG must be in same plane)

Two ways possible:



Consequences: - depends on the molecule



Elimination from Cyclohexanes

- for E2 to go by anti elim., H & LG must both be axial (even though axial is BAD)

