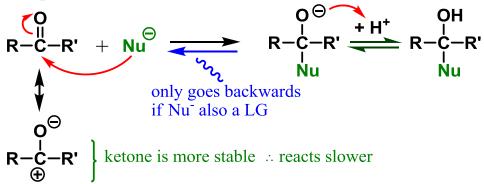
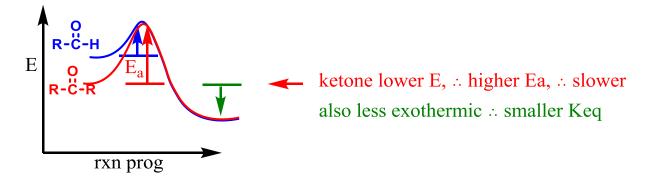
Overheads: - Outline

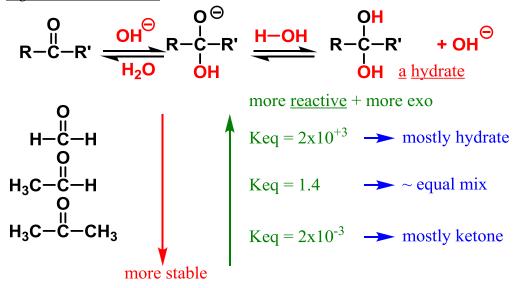
Quiz #5

Recap Before the Storm: Reactions of Ketones and Aldehydes





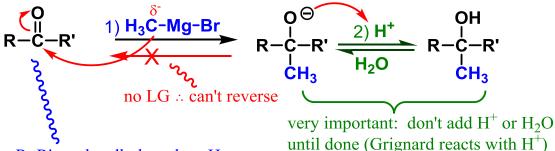
e.g. Addition of OH



Types of Nu

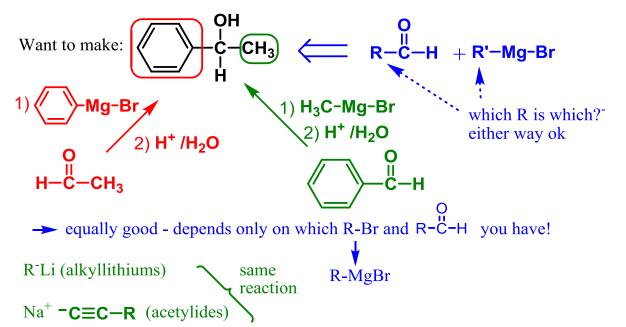
1) C Nucleophiles:

a) Grignards
$$\left(\mathbf{R} - \mathbf{Br} + \mathbf{Mg} \xrightarrow{\text{or THF}} \mathbf{R} - \mathbf{Mg} - \mathbf{Br} \right)$$



- R, R' can be alkyl, aryl, or H
- can make alcohol with 3 different R groups!

Strategy for Synthesis



b) Cyanide $(\ominus C \equiv N)$

2) Addition of H⁻ (hydride):

- third way to make this (see Grignard example)

Source of H

- Na⁺H⁻ does not work

works for base reactions, but not good Nu-

Common Hydrides:

- NaBH Salvent

 NaBH Salvent

 LiAlH Salvent

 LiAlH Salvent

 LiAlH Salvent

 LiAlH Salvent

 Safer Safer Salvent

 Safer Salvent

 Safer Salvent

 Safer Salvent

 Safer Salvent

 Safer Salvent

 Safer Safer Salvent

 Safer Salvent

 Safer Safer Salvent

 Safer Safer Salvent

 Safer Safer Salvent

 Safer Safer Safer Safer Salvent

 Safer Safer

all 4 H⁻ can add (so only need ¹/₄ mole)

In general:

$$R-\overset{O}{\overset{II}{C}}-R' \xrightarrow{\begin{array}{c} 1) \text{ NaBH}_4 \\ \hline 2) \text{ H}^+/\text{H}_2\text{O} \end{array}} R-\overset{OH}{\overset{I}{\overset{I}{C}}}-R'$$

- many other R₂B-H and R₃Al-H reagents used for slightly different purposes/selectivities