Course CHEM 343 Lecturer Gellman

Day Fri 1:20 Date 12/2/11

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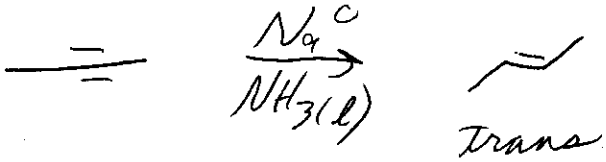
Exam 3 on Monday; same room as previously

Recall rxns of alkynes

alternative approach produces trans alkenes from alkynes

"Dissolving metal rxn"

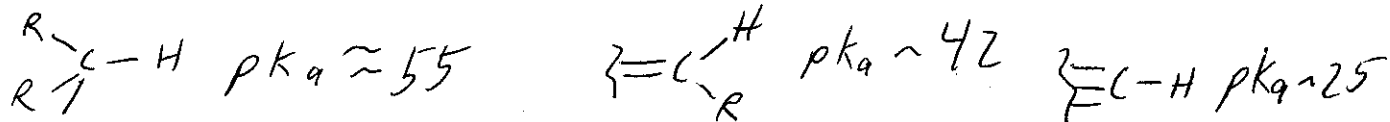
$$Na^{\circ} + NH_{3(l)} \longrightarrow Na^{\oplus} + e^{\ominus}(NH_3)_n$$ "solvated electrons"



$(+ Na^{\oplus}\ {}^{\ominus}:\ddot{N}H_2)$ "sodium amide"

H's from NH_3, N_2 from H_2

Hydrocarbon pKa values



Most stable anion – proportion of s-character is critical, More s ⇒ better accommodation of e^-s

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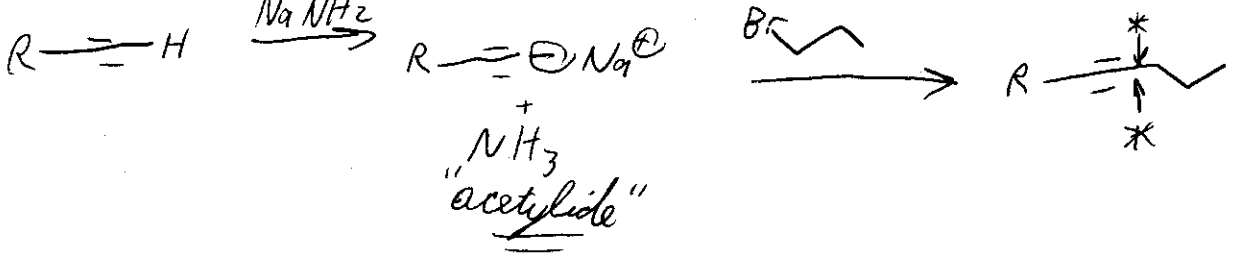
Synthetic ramification via alkyne derived anions as nucleophiles to form new C-C bonds via S_N2 rxns



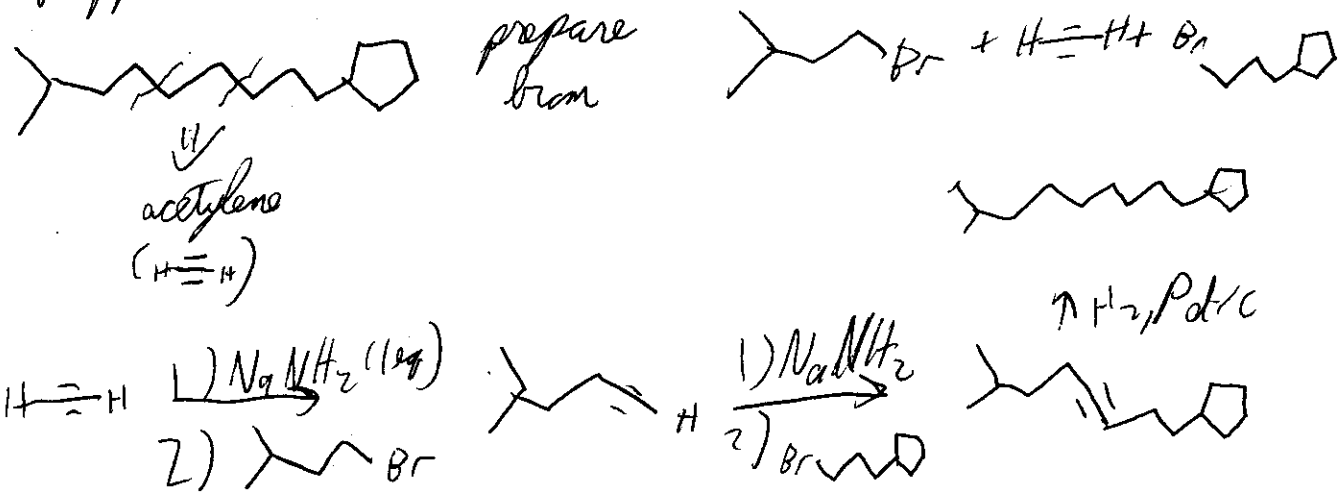
Note: For Li, Mg, Cu C-M from C-halogens

vs

$R-C\equiv C^{\ominus}$ via deprotonation

Limitation in C-C bond formation via $R-C\equiv C^{\ominus}Na^{\oplus}$:
only 1° alkyl halides (CH_3) are effective (E2 elimination for 2° R-X)

Ex of application:



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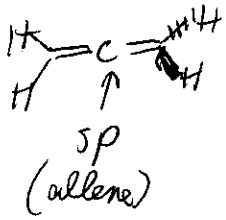
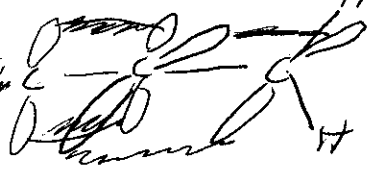
Ch. 15 - Dienes, Resonance, & Aromaticity

Rec Problems: 3-5, 11-24, 27-30, 33-45, 50-73

Diene = Di - alkene, i.e., has 2 C=C units

Classify dienes into three groups, based largely on spacing b/w C=C units

1) allenes $R_2C{=}C{=}CR_2$ 

3D structure has twist 

2) Conjugated dienes - C=C units are immediately adjacent 
$H_2C{=}CH{-}CH{=}CH_2$ or
(1,3-butadiene
caveat This spacing is necessary for conjugation but not sufficient

3) Ordinary dienes → at least one sp^3 atom (C) b/w C=C units