

# ① LECTURE 7

Conformational Analysis of Acyclic Systems

PS#3 due now.

PS#4 due Tues 9/29.

Seminar: Armen Zakarian (UCSB)  
Wed, 219 BRL, 4pm

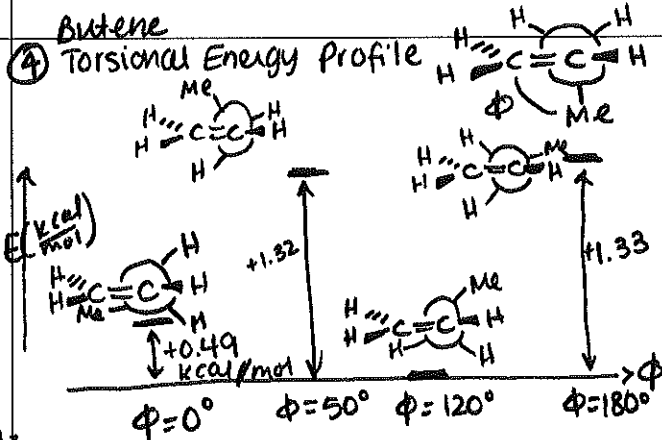
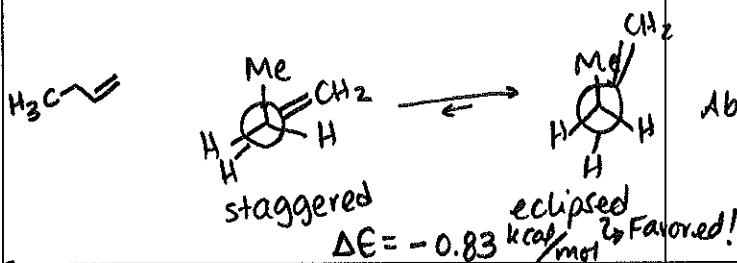
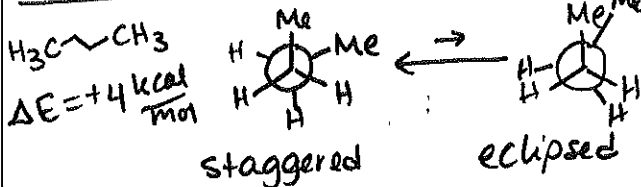
②

See notes at end of lecture 6 for saturated acyclic systems.

## ③ OLEFINS

-unusual when compared to their saturated counterparts.

Butane vs. Butene

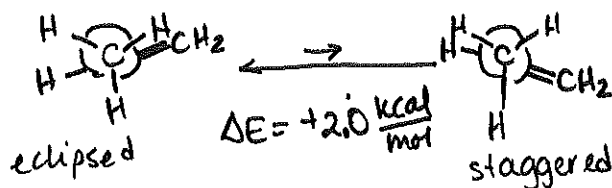


Ab initio values (calculated):  
 Wiberg & Martin JACS 1985, 107, 5035.  
 Review: Hoffman Chem Rev 1989, 89, 1841.

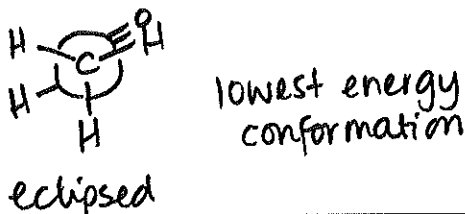
Torsional Energy Profiles: thanks to Prof. DA Evans!

⑤

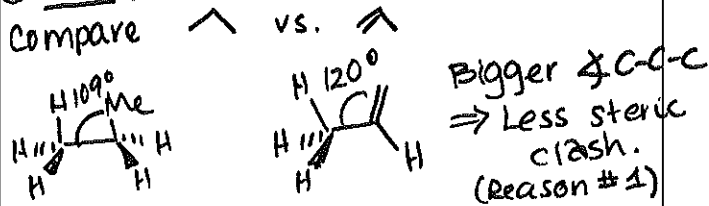
PROPYLENE:  $\text{CH}_2=\text{CH}-\text{CH}_3$



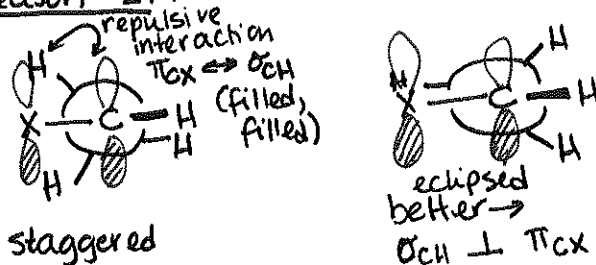
ACETALDEHYDE  $\text{CH}_3-\text{CHO}$



⑥ WHY?

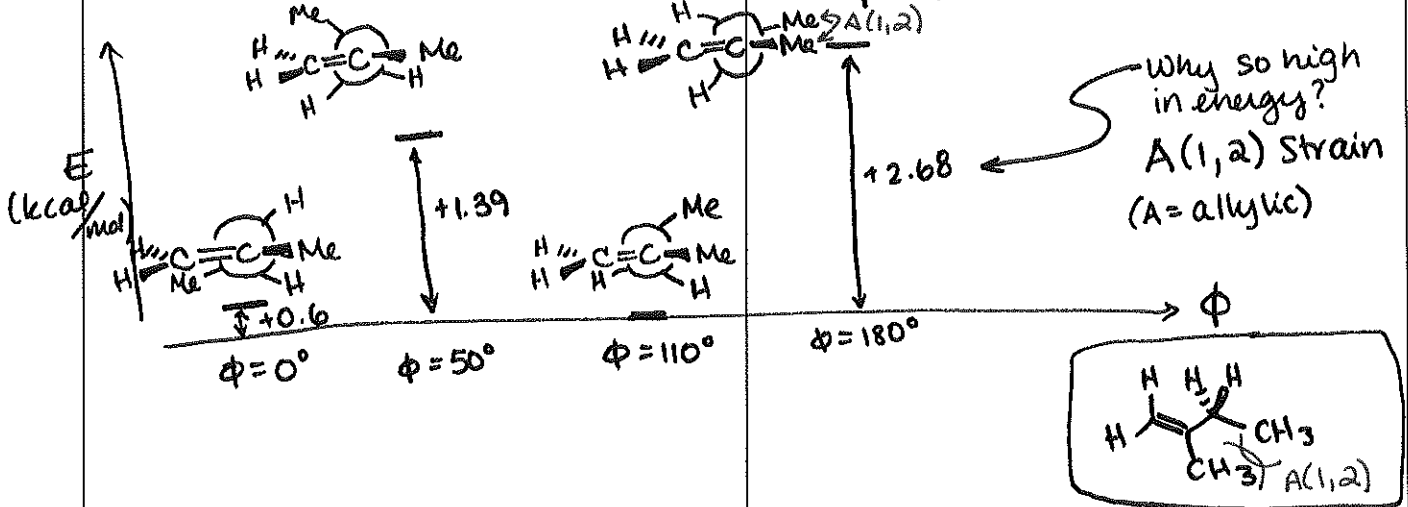


Reason #2: NEW DESTABILIZING EFFECT



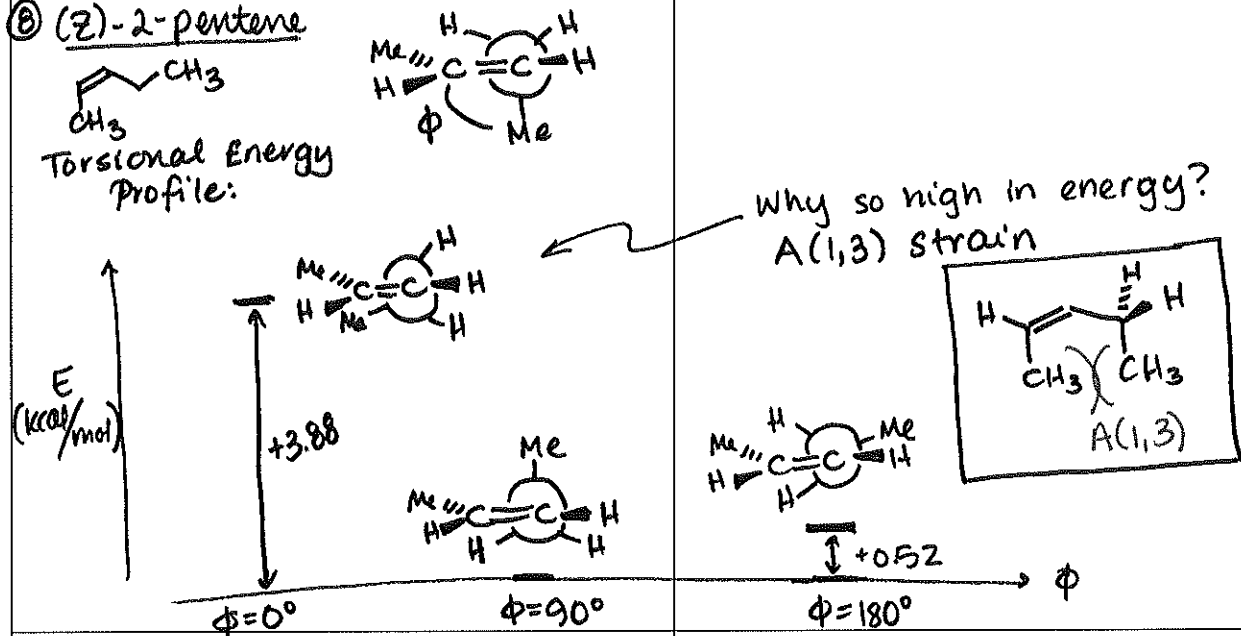
⑦ 2-METHYL-1-BUTENE

Torsional Energy Profile:



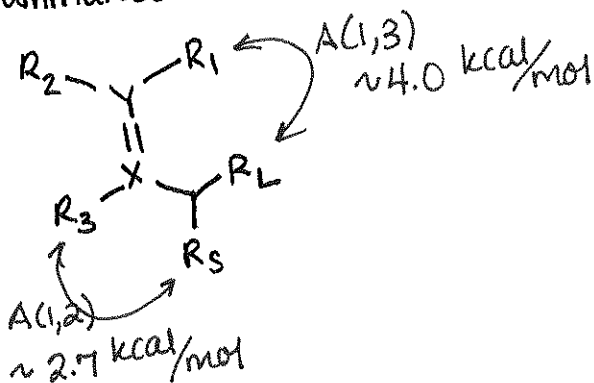
⑧ (Z)-2-pentene

Torsional Energy Profile:



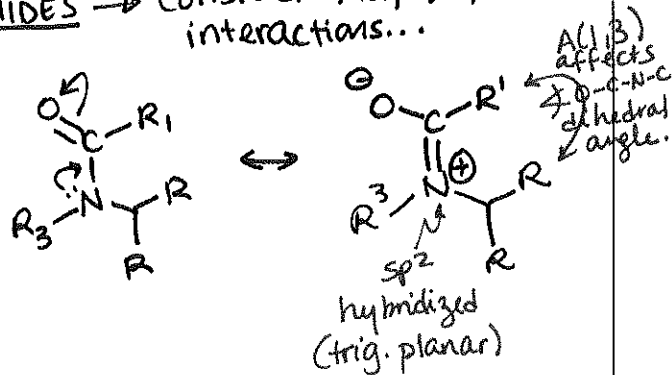
⑨

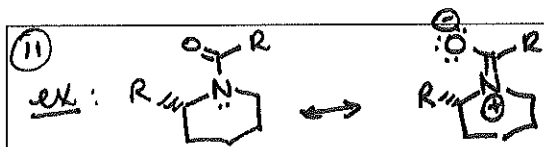
To summarize:



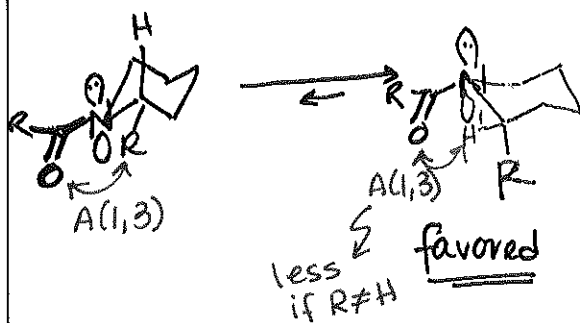
⑩

AMIDES  $\rightarrow$  Consider A(1,2) & A(1,3) interactions...



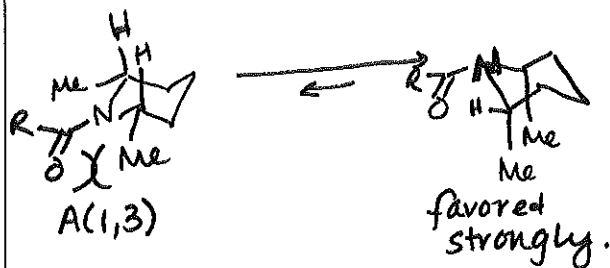


Conformation?



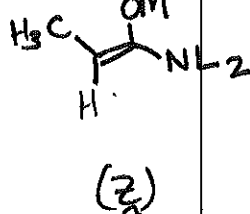
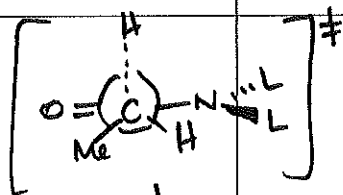
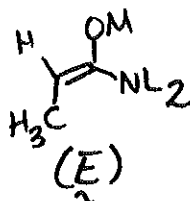
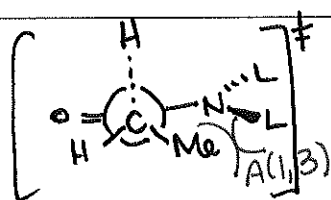
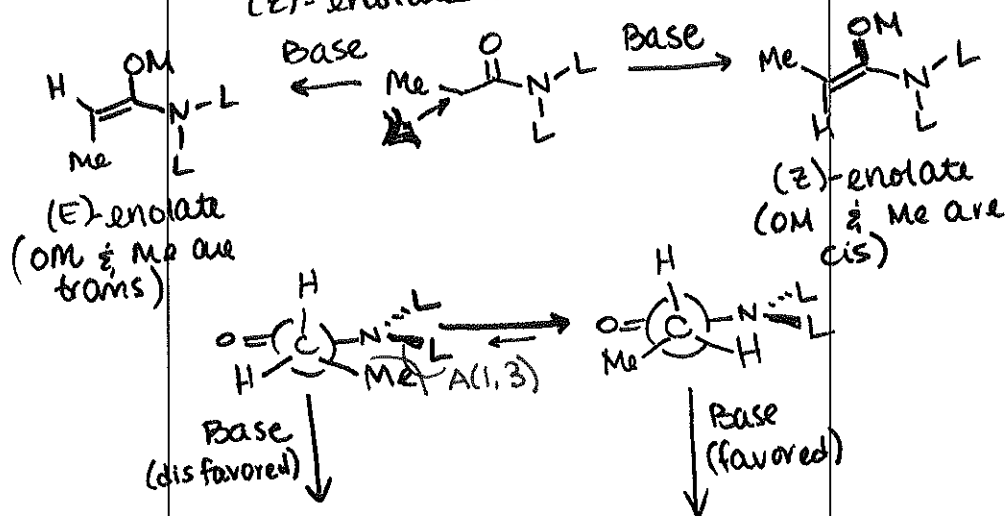
Chow. Can J Chem 1968, 45, 2821

⑫



Quick JOC 1978, 43, 2705

⑬ Result: Amides always give (Z)-enolates ...



114 Rxn Coordinate Diagram

