

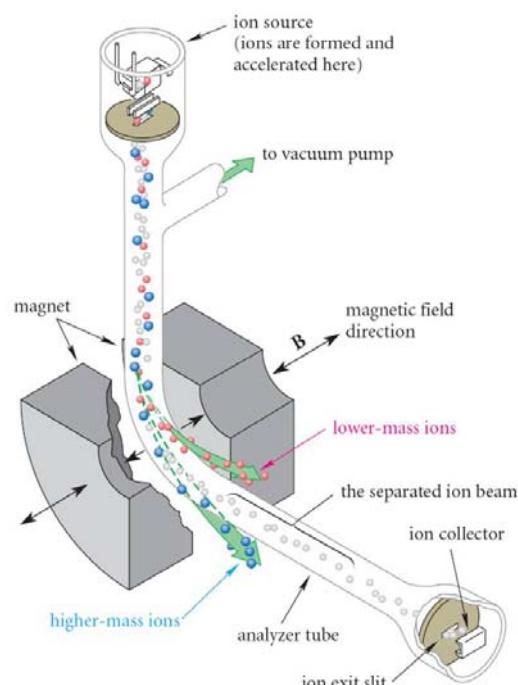
# The Chemistry of Aldehydes & Ketones

April 3, 2013

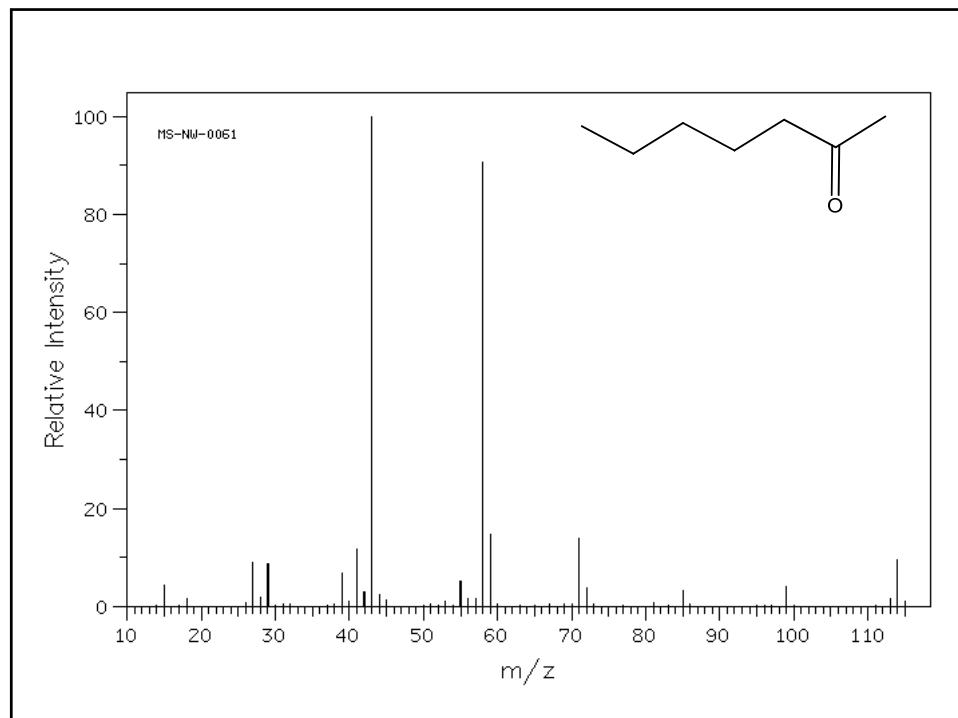
- Mass spectral analysis
- HCN addition/general addition reactions
- Reduction with LAH,  $\text{NaBH}_4$ ,  $\text{H}_2$
- Reactions with Grignard reagents and other C-nukes.
- The chemistry of acetals.

## Announcements

Suggested Problems for Chapters 18 and 19. 19.38, 19.42, 19.44, 19.45, 19.49, 19.52, 19.54, 19.57, 19.58, 19.61, 19.62, 19.64, 19.66, 19.68.

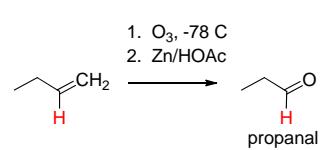


Loudon, p. 570.

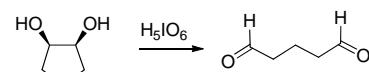


## Synthesis of Aldehydes: a Review

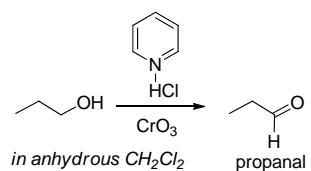
### Ozonolysis of alkenes:



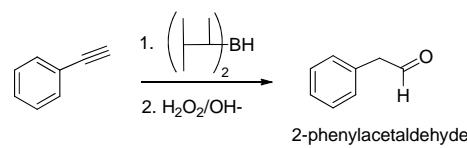
### Periodate cleavage of diols:



### PCC oxidation of 1° alcohols:

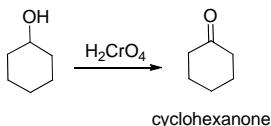


### Hydroboration-oxidation of terminal alkynes:

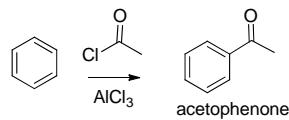


## Synthesis of Ketones: a Review

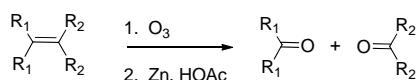
Jones oxidation of 2° alcohols:



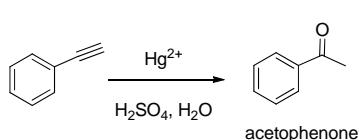
Friedel-Crafts Reaction:



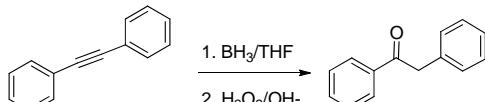
Ozonolysis of alkenes:



Hydration of alkynes:



Hydroboration-oxidation of alkynes:



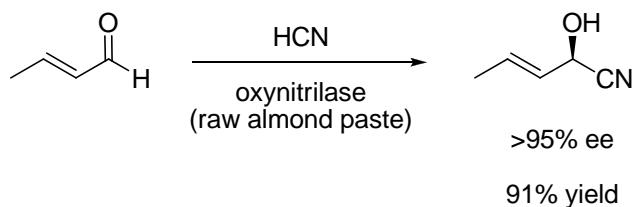
## Synthesis of *E*-vinylogous (*R*)-amino acid derivatives via metal-catalyzed allylic substitutions on enzyme-derived substrates

Donald R. Deardorff,\* Cullen M. Taniguchi, Anna C. Nelson, Andrew P. Pace, Alexander J. Kim, Aaron K. Pace, Regan A. Jones, Sanaz A. Tafti, Charles Nguyen, Caitlin O'Connor, Judy Tang and Judy Chen

*Department of Chemistry, Occidental College, Los Angeles, CA 90041, USA*

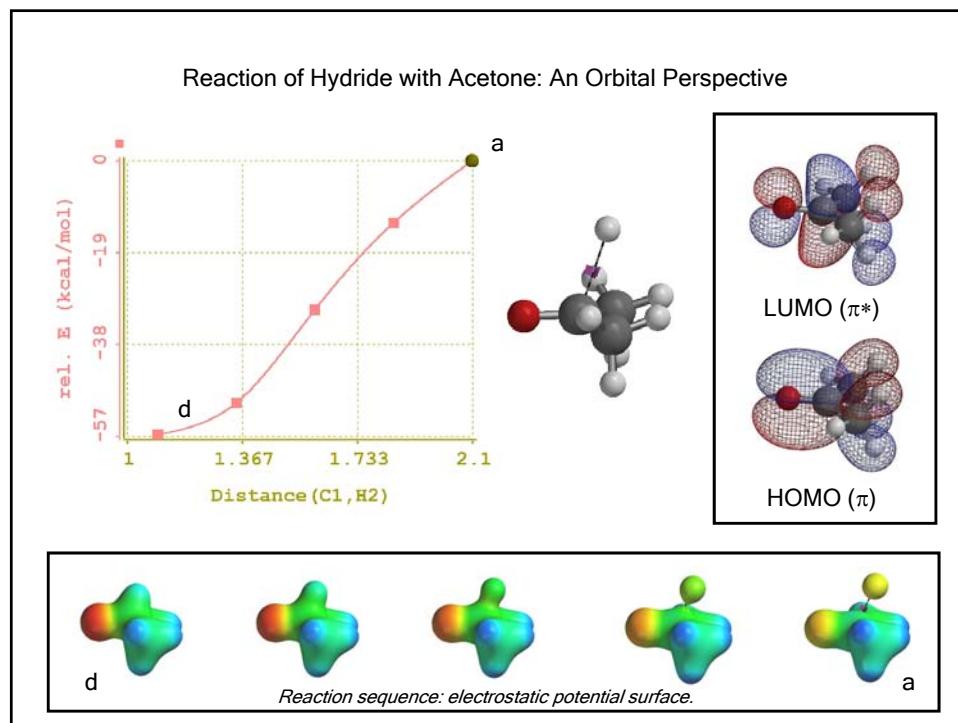
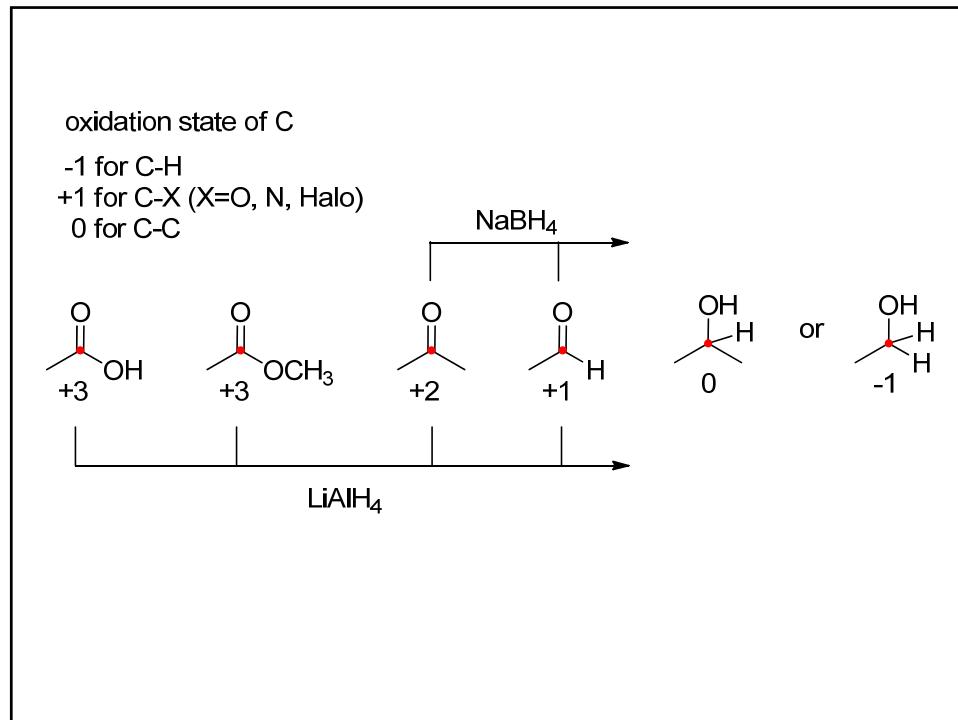


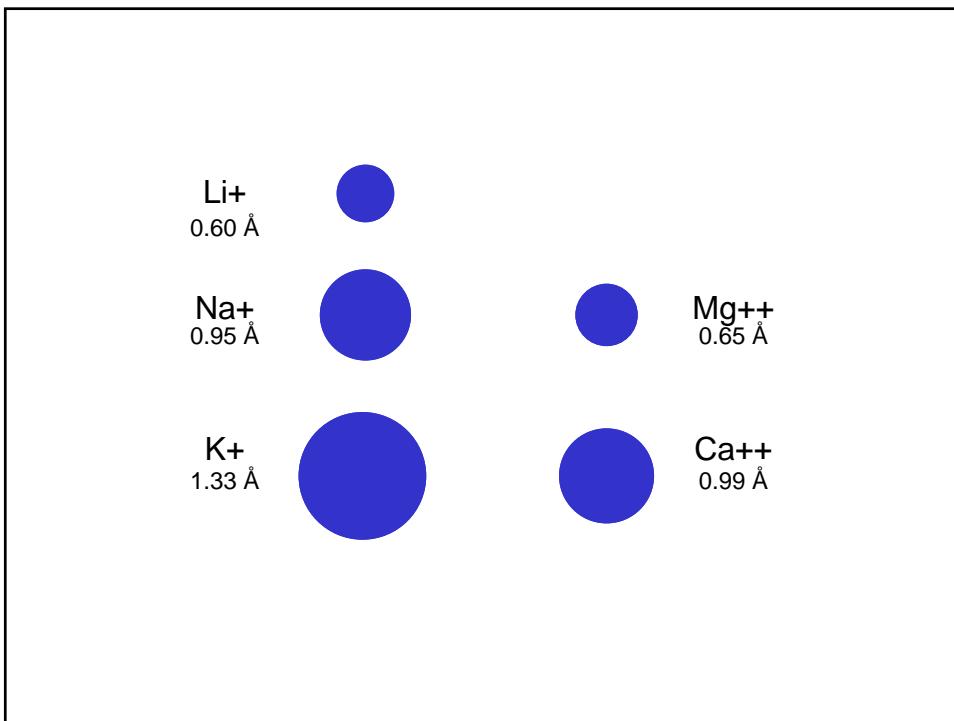
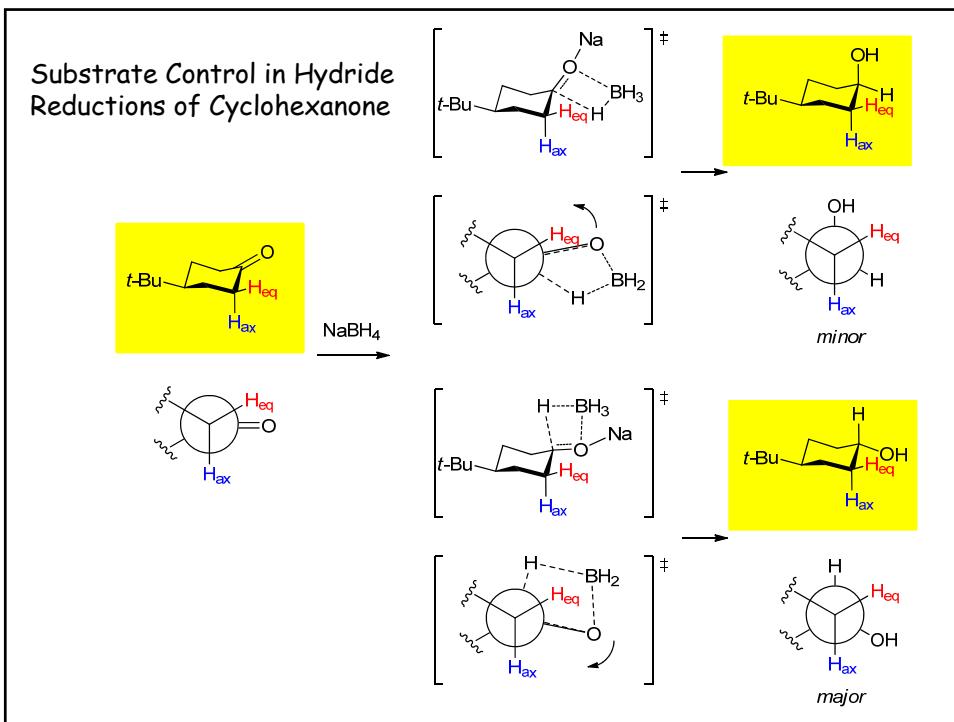
Prof. Deardorff



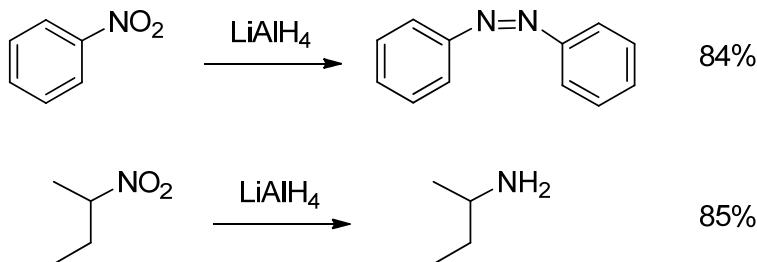
Trader Joe's raw almonds were fabulous!

Tetrahedron: Asymmetry 2005, 16, 1655-1661

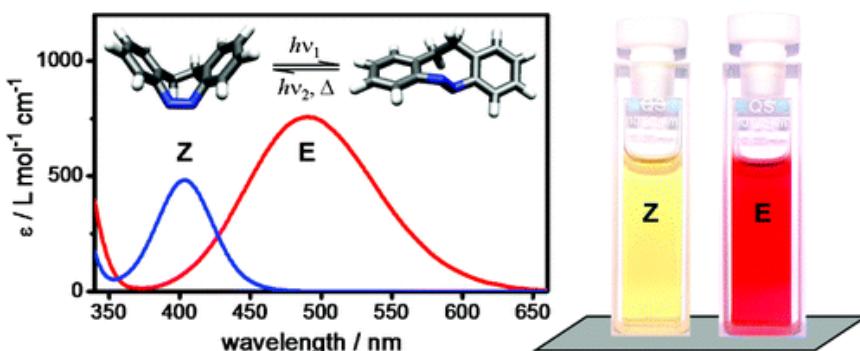




*"Nitromethane, undiluted, reacted with [LiAlH<sub>4</sub>] at room temperature with explosive violence. The higher aliphatic nitro compounds were less reactive but it proved advantageous to add these in the form of dilute ether solutions.*



JACS, **1948**, 70, 3738.



Highly Efficient Reversible Z–E Photoisomerization of a Bridged Azobenzene with Visible Light through Resolved S<sub>1</sub>(nπ\*) Absorption Bands

JACS, **2009**, 131, 15594.