

**The Aldol Reaction**  
**(due by 4:00 pm, wed, 3/11/09)**

Name \_\_\_\_\_

Section \_\_\_\_\_

The Aldol reaction is an important C-C bond forming reaction of aldehydes and/or ketones useful in assembling larger molecules. The synthesis project being considered for this semester starts with an Aldol reaction, so an understanding of this reaction is useful prior to the start of this synthesis project.

The paper should be 5+ pages, in 3<sup>rd</sup> person, typewritten, double spaced, using 14 pt Times New Roman font, and with 1.0" margins. L & R margins should both be justified. Pages should be numbered and include a cover page. References should be provided as endnotes. The grading sheet must be attached to the paper.

Topics to be included are:

Mechanism (base catalyzed)-typeset, may be copied from a web source and cited. ChemOffice in rm 120 CLC, also works well for drawing structures.

Structural requirements to undergo Aldol reaction.

Bases typically used and any reasons to choose one over another.

Alkyl vs Aryl aldehydes, their relative reactivity, rates, yields.

Effect of e- donating vs e- withdrawing substituents on rates, yields.

Crossed Aldols and control of product distribution.

Claisen-Schmidt reaction (A crossed Aldol)

Experimental conditions, Recommended solvents.

Recommended times and reaction temperatures.

Common side reactions and measures to reduce these.

Recommended reference sources:

"Organic Reactions", v. 16 - on reserve at library circulation desk for chem. 228

Solomons, "Organic Chemistry", 9<sup>th</sup> ed.-current organic text (pp. 742-749)

Wikipedia - has an entry for the Aldol condensation, possibly useful for the mechanism.