

Chem 228 WS/2013
Ethylene Ketal Protecting Group: Library Assignment
(due 3/20-22/13)

Name _____ Section _____ StdntNo _____

Attach this Sheet to Your Search Results

The following searches are to locate needed information about compounds involved in your synthesis project and to familiarize you with some of the standard reference sources for organic compound information.

1. Procedures-Download the following articles from the Journal of Chemical Education website:
Paulson, et al., JChemEd, 50(3), 216-17 1973. –original lab (basis for procedure)
Alber, et al., JChemEd, 88(1), 82-85 2011 –modified & improved procedure (we are doing this)
Print out and attach procedure. Keep a copy for yourself.

2. Background-the following sources provide some background for the reactions above.
Solomons, 10th ed refers to the current organic textbook for 221/223.

Ketals: Solomons, 10th ed, pp. 681-682

Grignard reaction: Solomons, 10th ed, pp. 808

Alcohol dehydration: Solomons, 10th ed, pp. 935-936, 941-942

3. MSDS info-for Ethyl levulinate, ethylene glycol and other reagents and solvents used.
You will need MWt, MP, BP, structures, CAS# for all reagents and products.
Also IR, H-NMR spectra for each product.

Recommended sources: Synth Project WS13 web link, SDBS, Merck Index, SciFinder.

Handbook of Data on Organic Compounds, MST **reference** QD257.7.H36

Dictionary of Organic Compounds, MST **reference** QD246.D5

4. Summary of reactions:

step 1 Ethyl Levulinate is converted to Ethylene Ketal

step 2 Ethylene Ketal is reacted with Phenyl Magnesium Bromide (Grignard rxn.)

step 3 Ketal is removed and alcohol dehydrated to form final product

Attach your balanced reactions to this sheet and keep another copy for yourself.

This Week In Lab: We will begin the first step of the synthesis on 3/20/13.

Expect a quiz over step 1. Gloves are recommended for all steps.

You should come prepared to do step 1 of the procedure.

Adjust amounts in JChemEd procedure to use ~0.11 mole of Ethyl Levulinate.

Calculate the theoretical amount of water formed in the first reaction.

You should also have the usual prelab property table prepared in your lab book and an MSDS form covering all chemicals to be used in the first step.

NOTE: Xerox machines on the first floor of the library can scan documents to pdf which can be stored on a thumb drive allowing free copying of reference materials.