Due this week: prelab preparations as outlined above.

Due next week: nothing there is no lab, unless you need to do a makeup Due the week after Thanksgiving, this worksheet and prep for the last lab – oxidation of isoborneol.

Due the last week of lab - your worksheets for the conferences if you have not turned them in JUST for accounting purposes and the final quiz. The quiz will be distributed the last week and will be on the two conferences.

This is the whole deal no surprises.

Worksheet for Total Synthesis of 7-Heptoxy-4-methylcoumarin (Heptylated Umbelliferone)

## Part I – Synthesis of 4-Methylumbelliferone

- 1. What is purpose and importance of this Reaction? (10 points) Read the paper for this one and discussed in class.
- 2. Write the Main Reaction for this Reaction (8 points) In paper and done in class.
- 3. Outline the steps (transesterification and Friedel-Crafts) involved in the reaction and write the mechanism for the Friedel Crafts step (the second step of the reaction). (20 points)
  In paper and discussed in class.

4. Observations (10 points)

All scientists should make observations in their notebooks.

5. Yield of Product in grams and moles (6 points)

6. Calculation of percent yield (10 points) Show work	
7. Attach IR – Interpretation of functional group section of IR (12 points) Look at structure and see if you have the expected functional groups. Use a table.	
8. Melting point range:	
9. Briefly: Explain where you lost material and any contaminants that may be in your sample. Think about the steps you went through. (20 points)	
10. Why is this called a "green reaction". (10 points) See the paper and class notes.	

## Part II . Study of Alkylation by TLC.

1.	Briefly state what the purpose and importance of this second synthetic step (10 points) see paper, class notes.
2.	Write the main reaction for this step. (10 points) See paper class notes.
3.	Write a complete mechanism for this step (20 points) See class notes.
3.	Observations. (10 points) All Scientists should record observations in their notebooks.
4.	Diagram of Baseline TLC with Rf values (10 points) see class notes, reading on TLC

5.	Diagram of TLC at one hour with Rf values (10 points)
6.	Diagram of TLC at two hours with Rf values (10 points)
7.	Interpretation of TLC results (20 points)
8.	Explain why you think the reaction must be kept dry. (12 points)