

Lab 6: Electrophilic Addition

Introduction

- 0.5 pages max
- You must use size 12 font, Times New Roman, single space, 1 inch borders and justified paragraphs.
- Failure to comply will result in mark deduction.
- Briefly explain the following:
 - o What is the name of the reaction you will be doing?
 - o What is the compound containing the electrophile? (what is being attacked)
 - o What is the compound containing the nucleophile? (what is attacking)

Table of Reagents

A table of reagents looks like the following:

Chemical Name	Equivalents*	Moles	Mass/Volume	Molar Mass	Density
Limiting reagent always go here	Limiting reagents doesn't have equivalents	Find in lab book	Find in lab book	Calculate or find online	Find online if reagent is a liquid
Excess reagent 1 or catalyst	*				

- * Calculating the equivalents is as follows:

$$\text{Equivalent} = \frac{\text{moles of compound in question}}{\text{moles of limiting reagent}}$$

Reactions

Please provide the full mechanism for the full Grignard reaction (including formation of the phenylmagnesiumbromide).

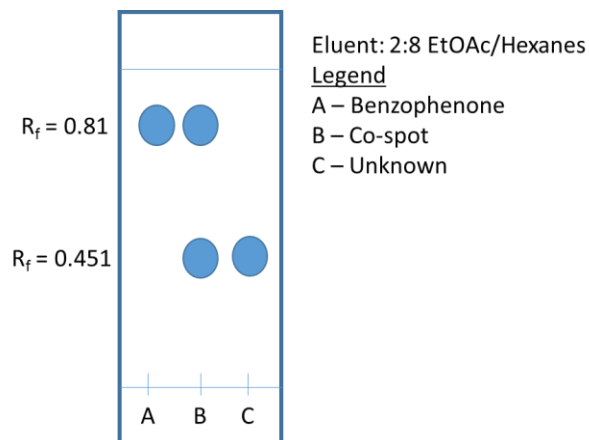
-1 mark for each major mistake. -0.5 for each minor mistake (electrons misplaced, arrows pointing somewhere wrong, etc.)

The mechanism can be drawn using Chemdraw OR hand-drawn but it must be legible or else marks will be deducted.

TLC

TLCs will be marked as with Lab 1.

One change: I want you to write the R_f value of each spot beside the plate as shown in the modified example (From Lab 1) below:



Discussion

Please answer the following questions:

1. What is the purpose of the nitric acid in the experiment? (2 mark)
2. Which isomers did you observe in your products? Ortho, meta, para or di-nitrobenzene? In what percentage were they found? (3 mark)
3. Why do we expect the para isomer to be most prevalent? (3 marks)
4. Why do we not expect to see any or much ortho isomer? (2 marks)
5. Why do we not expect to see any meta isomer? (2 marks)
6. If we obtain di-nitrobenzene, where would the two nitro substituents ideally end up? (2 marks)
7. What isomer would you expect if your starting reagent was acetophenone? Why? (3 marks)
8. What isomer would you expect if your starting reagent was chloro-benzene instead? Why? (3 marks)
9. For your recrystallization, why does your mother liquor still contain some of your product? (3 marks)