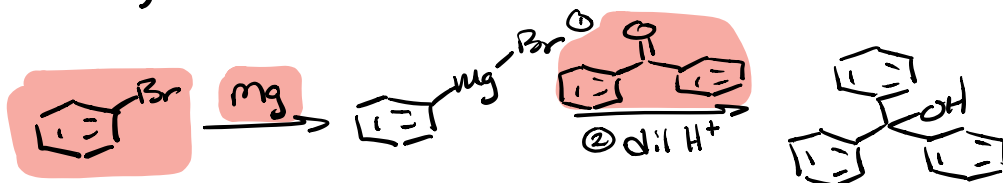
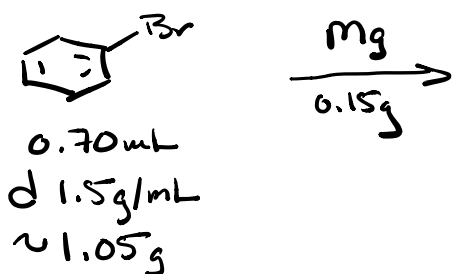


% yield of Reaction

Limiting reagent calculation



Pavia's lab manual



0.70 mL
d 1.5 g/mL
~ 1.05 g

1-5 mmol range
for lab experiments

mass g → moles → mmol

Bromobenzene 

$$1.05 \text{ g bromobenzene} \times \frac{1 \text{ mol}}{157.0 \text{ g bromobenzene}} \times \frac{1000 \text{ mmol}}{1 \text{ mol}} = 6.69 \text{ mmol}$$

exact

Mg

$$0.15 \text{ g Mg} \times \frac{1 \text{ mol}}{24.31 \text{ g Mg}} \times \frac{1000 \text{ mmol}}{1 \text{ mol}} = 6.17 \text{ mmol}$$

Benzophenone 

$C_{13}H_{10}O = 182.2 \text{ g/mole}$

$$1.09 \text{ g benzophenone} \times \frac{1 \text{ mole benzo}}{182.2 \text{ g benzo}} \times \frac{1000 \text{ mmol}}{1 \text{ mol}} = 5.98 \text{ mmol}$$

Limiting

% yield Reaction Stoichiometry 1:1:1

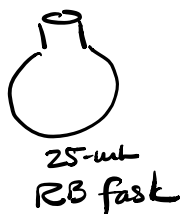
$$\frac{\text{mass actual triphenylmethanol}}{\text{mass theoretical triphenylmethanol}} \times 100$$

or

$$\frac{\text{actual mmol triphenylmethanol}}{\text{mmol limiting reagent}} \times 100$$

% yield on Rxn done $\approx 65\%$

How reaction was run



≈ 6 mmol Rxn

0.7 mL Bromobenzene

~~4~~ mL Et₂O

2 mL Rinse

1.0 mL benzophenone

2 mL Et₂O

1 mL Et₂O Rinse

~~6~~ mL 6M HCl

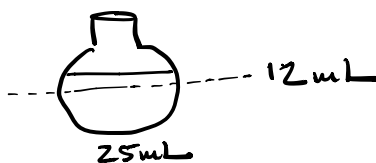
Rxn

work up

Total Volume

≈ 17 mL

Total volume should not exceed $\frac{1}{2}$ the flask.



Formal Report

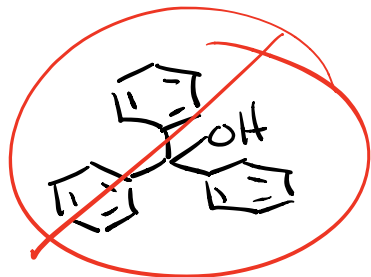
Resources

Both in Canvas & ChemEd.study

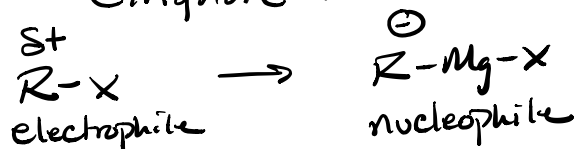
- Formal Report Rubric
- Formal Report Guidelines
 - Examples of methods ← actual Grignard material
- Example Formal to Model base on aspirin lab

Introduction

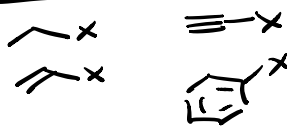
- To stimulate interest
- Talk about history or prior art
- Why the work is important
- How this work is different (non-technical overview)



Grignard Reaction



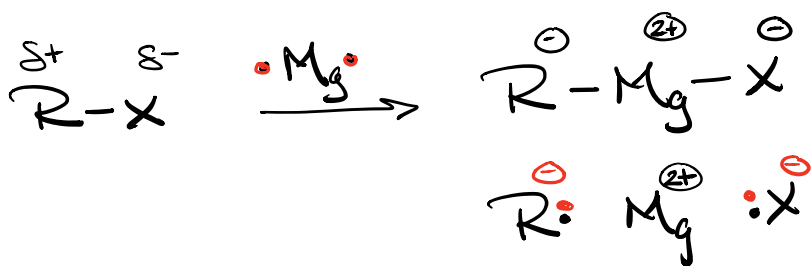
R Very General R_{Gr}



Because the mechanism of R_{MgX} is so small we can deal with it in the intro

Oxidative Insertion

- Concerted or Stepwise depending on substrate



Discussion

- mechanism

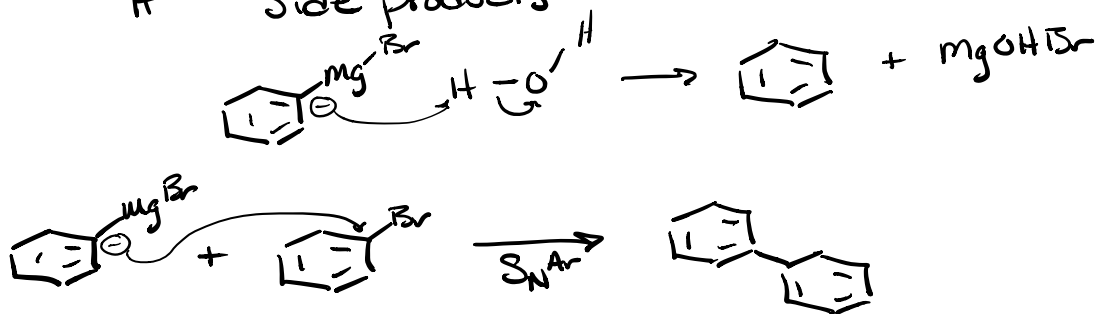
- Product Characterization

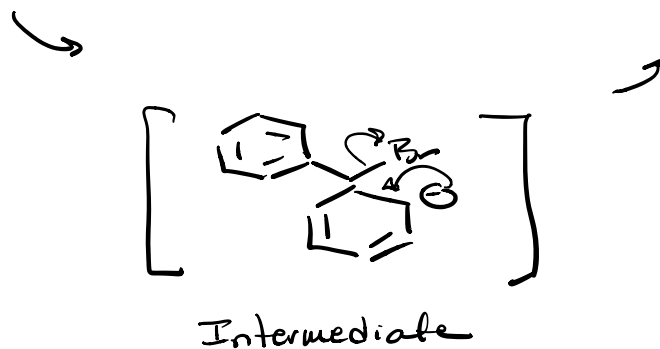
TP % yield

TP mp

TP FTIR

TP side products





% yield - Explain low yields

H₂O present

Storm

oven off & need to flame dry
glassware assembled on camera

Slower than should be

loss in transfers (mechanical loss)

- Rotovap

- Trituration

mp - ours was low & Broad

155.4 - 157.5 °C (Lit 161 °C)

Recrystallized w/ 2-propanol &
dried only 5 min.

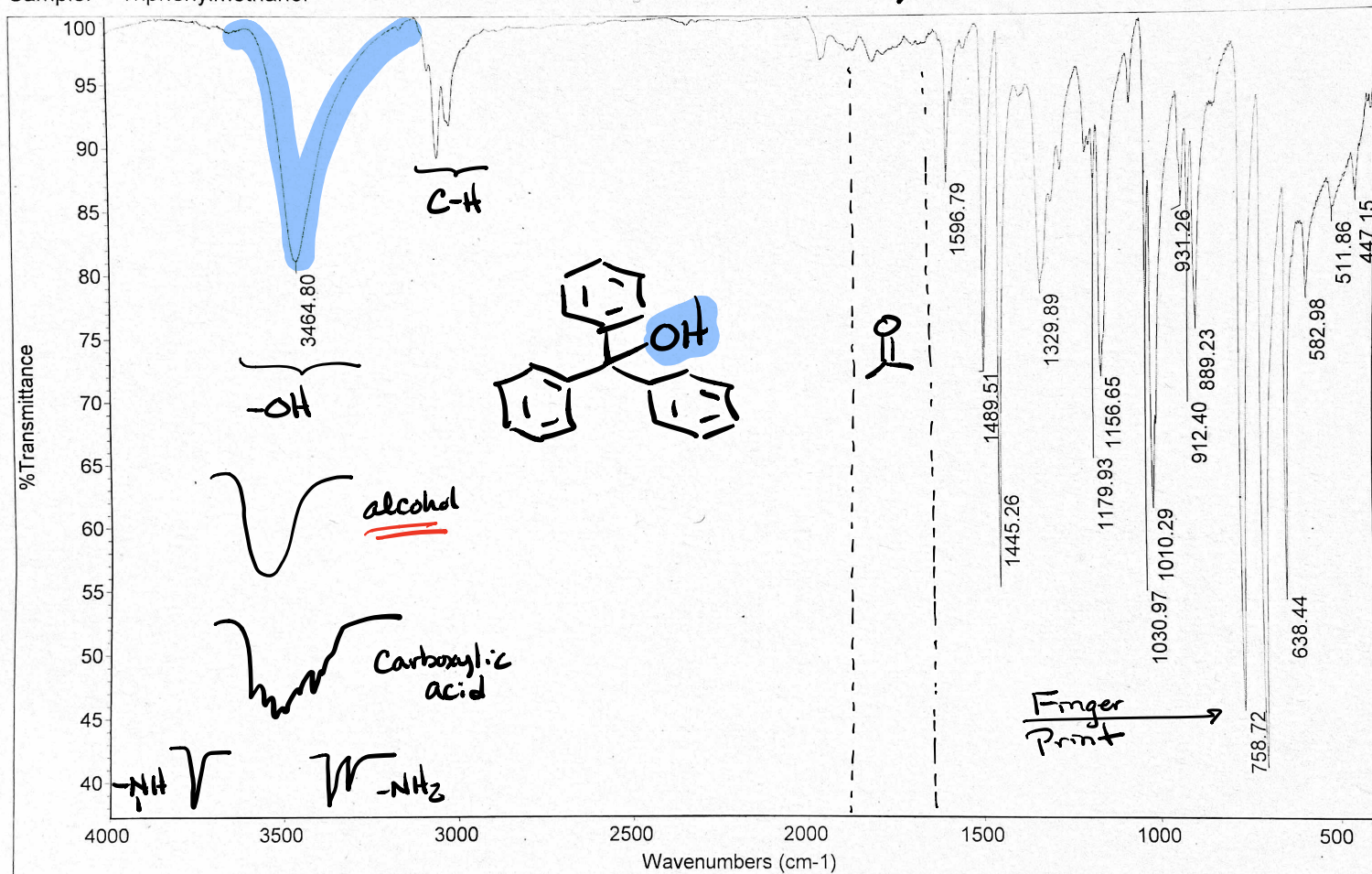
- No biphenyl

- No benzene

- No Starting Material

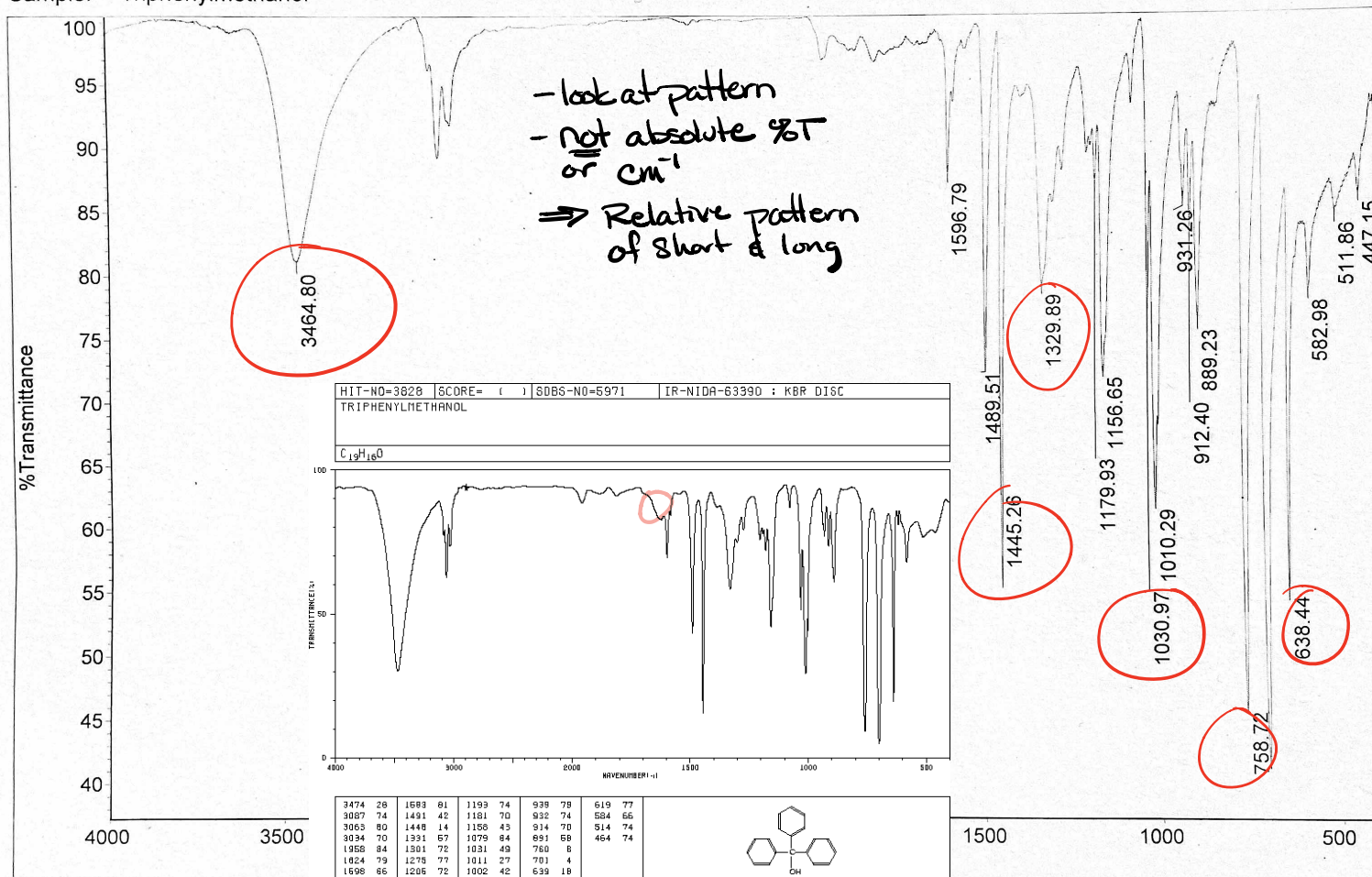
} by FTIR

Student: Jason Camara
Sample: Triphenylmethanol



Comments: Recrystallized Product. White Solid.

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 Sample: Triphenylmethanol



Comments: Recrystallized Product. White Solid.

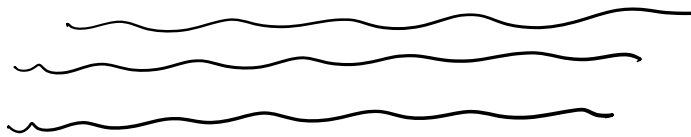
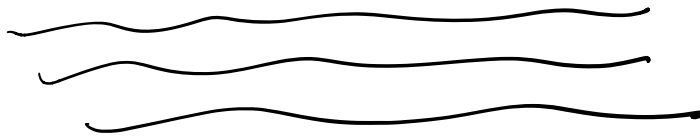


Fig. 1 formation Grignard

} Leave space
& draw
by hand



ChemDraw Educational \$ 500.-

ChemDoodle Educational \$ 40-60.-