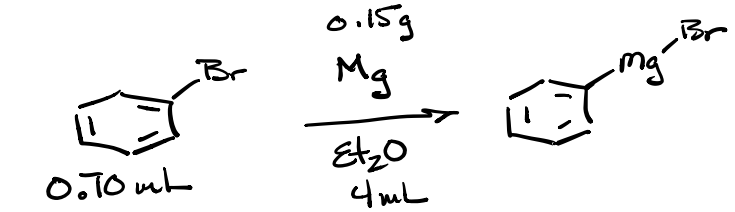


0.70 mL

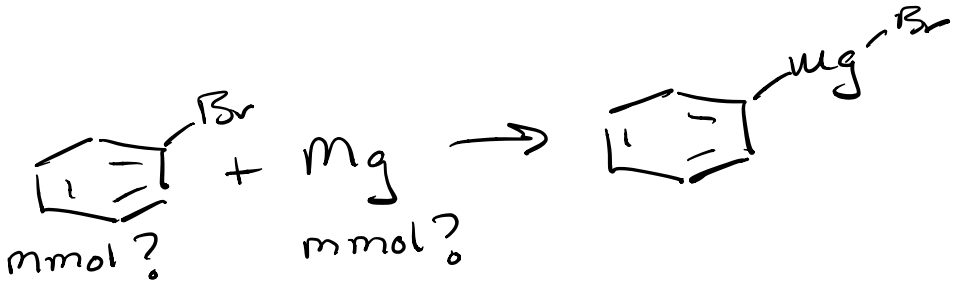
d = 1.5 g/mL

~ 1.05 g

What is the stoichiometry?

$$\underline{\underline{1}}A + \underline{\underline{2}}B \longrightarrow C$$

$$1A + 1B \longrightarrow C$$



mmol ? mmol ?

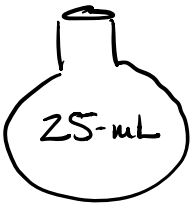
$$1.05\,g \times \frac{1\,mol}{157.0\,g} \times \frac{1000\,mmol}{1\,mol} = 6.69\,mmol$$

Mg

$$0.15\,g \times \frac{1\,mole}{24.31\,g} \times \frac{1000\,mmol}{1\,mol} = 6.17\,mmol$$

Limiting

Looks like ~ 6mmol Rxn



Golden rule of Rxns:
Don't fill a vessel more than 50%

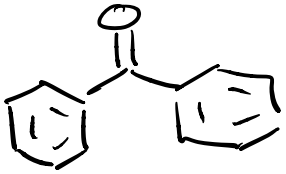
we want Reactants + work-up total volume to be ≤ 50% glassware volume

usually work in the 1-5 mmol range for 25-mL Roundbottom.

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

Mg

$$0.15\,g \times \frac{1\,mole}{24.31\,g} \times \frac{1000\,mmol}{1\,mol} = 6.17\,mmol$$



$C_{13}H_{10}O = 182.2\,g/mol$

limiting

$$1.09\,g \times \frac{1\,mole}{182.2\,g} \times \frac{1000\,mmol}{1\,mole} = 6.0\,mmol$$

$$\%\,yield = \frac{mmol\ of\ product}{mmol\ limiting\ reagent} \times 100$$

Characterization of a product

Identity vs. purity

↑ Characterization

our Lab {
- Mp or Bp
- FTIR

- NMR
  - HNMR
  - CNMR
- Mass Spec
- x-ray Crystallography

Mixtures
- Chiral molecules
- % ee

- Gas Chromatography
- Polarimetry
- HPLC

How to use melting point data

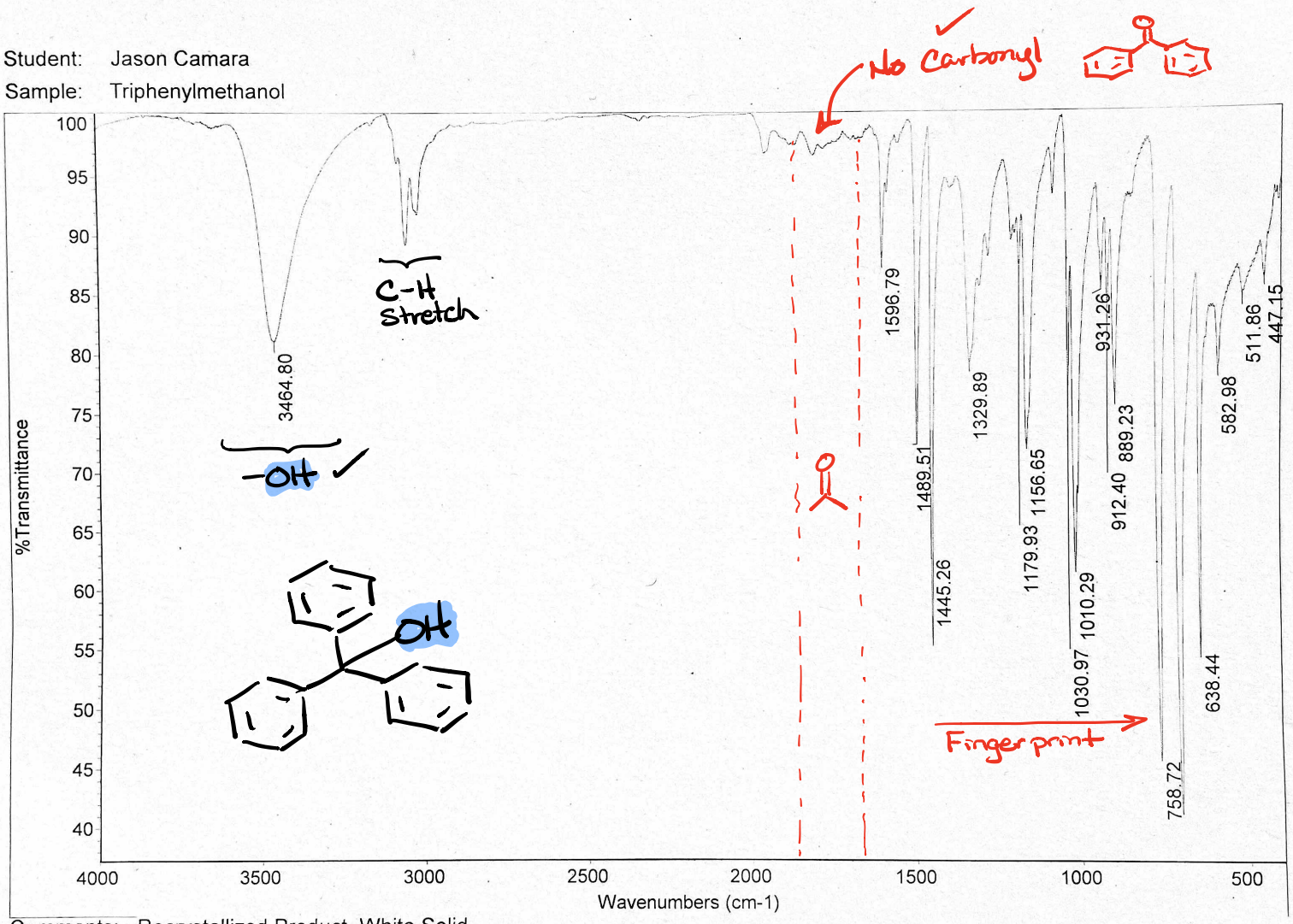
- Smaller the range & closer to expected value verifies the product identity
- Broad range & depressed means the product may not be as expected and may contaminates (Solvent, Side products or starting material)

FTIR Data

Looking for a match to literature values for the spectrum. Every peak must match for a match. Any lost peaks or new peaks means the sample may have impurities.

Student: Jason Camara

Sample: Triphenylmethanol

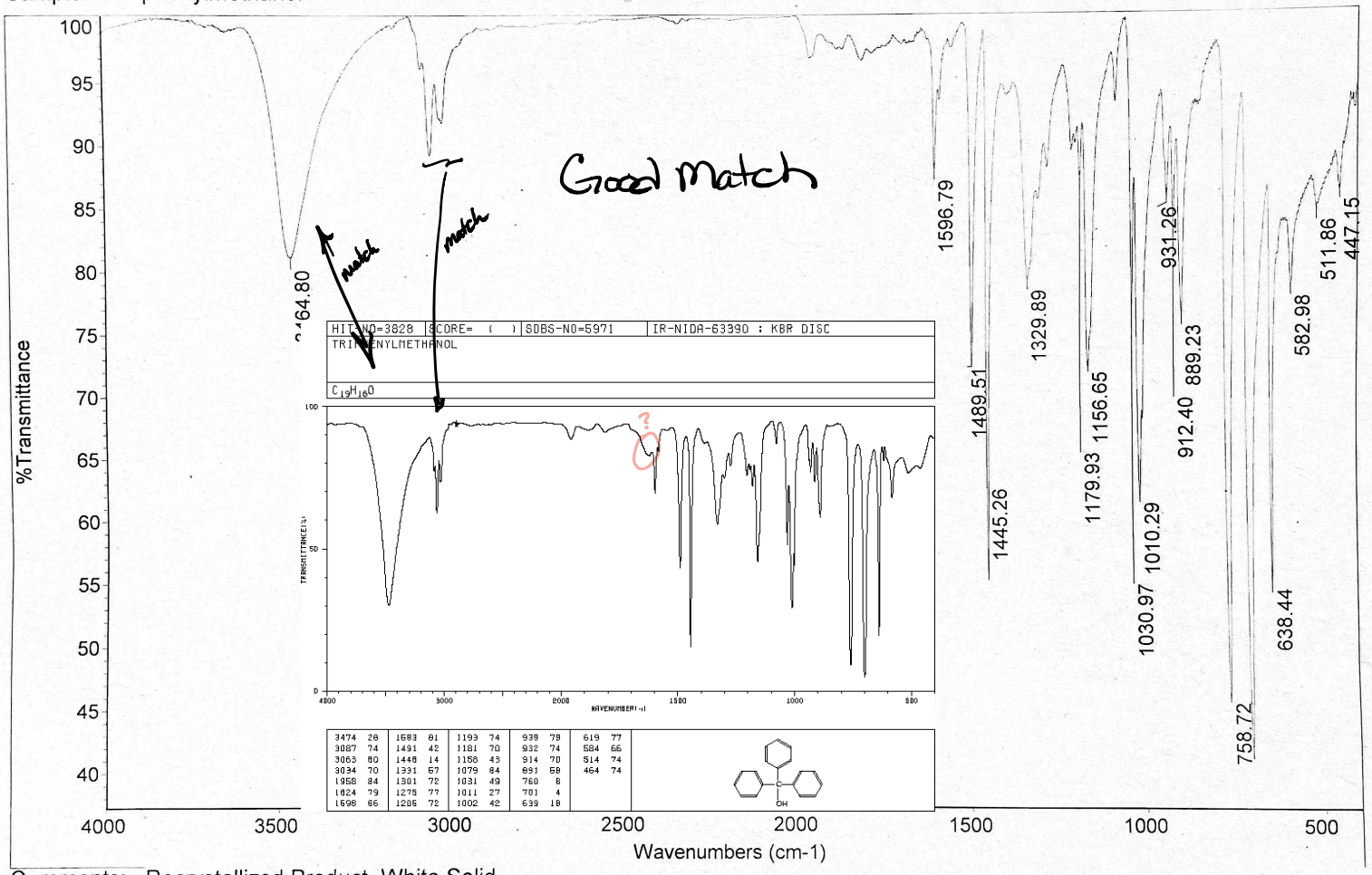


Comments: Recrystallized Product. White Solid.

* look at Relative intensity & shape

Student: Jason Camara

Sample: Triphenylmethanol



Comments: Recrystallized Product. White Solid.

Formal Report

Introduction

- Relavence to the work. Why it is important
- Prior Art (the work that was done previously that your work builds on).

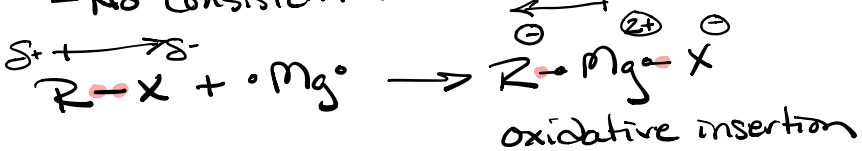
⟹ Focus here is on Grignard & ability to make C-C bonds

- Short history on Grignard
- Utility (Generality) of Grignard Rxn

$$R\text{-}X \xrightarrow{Mg} R\text{-}Mg\text{-}X$$

R
- alkyl
- alkenyl
- alkynyl
- aryl

- No consistent mechanism



Can be concerted or stepwise & depends on what R is.

Changed an electrophilic Carbon into a form of nucleophilic Carbon

Allows for Synthesis & new frameworks

⇒ Last paragraph of introduction is a non-technical overview.

Goes over rxn w/o Times, temps, amounts
⇒ no technical details

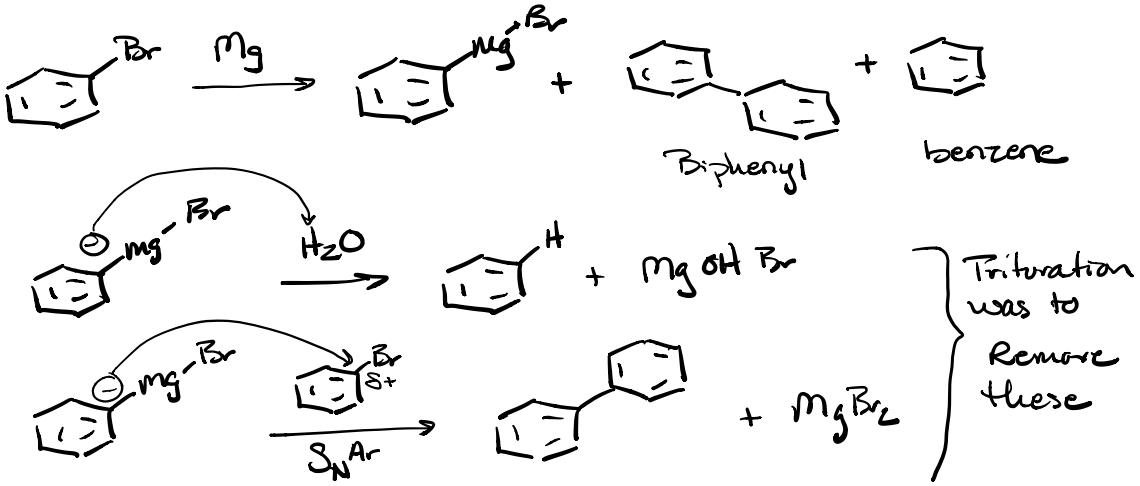
Methods
Materials
Data

Discussion

1) ~~mechanism~~ — This reaction mechanism not known exactly

2) Give 1 Paragraph to each Piece of data

% yield
MP
FTIR
} Is each Consistent or inconsistent w/ expectation



mp Could be smaller

mp was depressed & broad

Lit 162°C found 155.5 - 157.4 °C

Mp taken 20 min after recrystallization w/ 2-propanol. Product may still have had some solvent acting as impurity

% yield

Close 65% (moderate yield)

- lack of Control of H_2O
  - opened the Rxn to crush Mg
  - Huge rain Storm prior to Rxn w/ % humidity high
  - Loss in transfers, filtrations, Rotovap (mechanical loss)

< 50% poor

50-70% Moderate

70-90% Good

90-99 Excellent

>99% Quantative