

REPORT GUIDELINES: CHEMISTRY 2283g

EXPERIMENT 2: The Grignard Reaction – Synthesis of 1,2-diphenyl-1,2-propanediol

Include the following in your report:

1. Title, Date, Name
2. Objective: purpose of lab
3. Introduction: brief description of concepts studied
4. Reaction Equation:
 - a. Include proper structures for reactants and products
 - b. Include all reagents used
 - c. Include data for reactants and products (i.e. molar mass, mass, mol, etc.)
5. Procedure:
 - a. Cite lab manual with proper reference, note any changes
6. Results:
 - a. Yield—must show sample calculation
 - i. Crude Yield (mass and percent)
 - ii. Purified Yield(s) (mass and percent)
 - b. Physical Properties
 - i. Appearance – liquid/solid, crystalline character, colour
 - ii. Melting Points – crude, recryst-1, recryst-2, literature
 - iii. TLC – at least 2 TLC plates (crude, recryst. vs. benzoin) drawn, labelled and R_fs calculated
 - iv. IR Spectra – (benzoin, diol) label important peaks with respect to functional groups present
 - v. NMR Spectra – label ¹H and ¹³C spectra (benzoin, diol)
7. Discussion:
 - a. Discussion of yield (crude and purified)
 - b. Discussion of physical properties (**evidence that correct product was obtained**)
 - i. Discussion of Melting Points
 - ii. Discussion of TLC Plates
 - iii. Discussion of IR Spectra – benzoin vs. diol
 - iv. Discussion of NMR
 - c. Mechanism
 - i. a full mechanism for the **stereoselective** synthesis of 1,2-diphenyl-1,2-propanediol
 - ii. explain the formation of ethane (Grignard reagent synthesis) and methane (diol synthesis)