

CHM 2211

Lab Quiz (Mini-Lab Report)

(10 pts, due next lab period)

Background Reading

[PubChem](#) (for properties of organic compounds)

[APA Style](#) (for citing references)

CRC Handbook of Chemistry and Physics (see chapter on organic compounds)

McMurry, J. Organic Chemistry, 9th Ed. Sections 11.2 (S_N2 Reaction),
11.3 (S_N2 Characteristics), and 18-2 (Williamson Ether Synthesis).

Ebbing D. and Gammon S. General Chemistry, 11th Ed.

Section 3.8 (Limiting Reactant and Yields), including Examples 3.15 and 3.16.

Zanger M. and McKee J.R. Small Scale Syntheses. pp 9-11 (Yield Calculations),
pg 10-1 (Lab Notebook), and pp 545-9 (Appx II: Physical Properties).

Zubrick, J.W. The Organic Chemistry Lab Survival Manual.

Chapter 2, including Figures 2.4, 2.5, and 2.9 (Lab Reports).

Reaction Summary

An actual yield of 0.529 g of 1,2-dimethoxyethane (CH₃OCH₂CH₂OCH₃) is created from the reaction between 1.88 g of 1,2-dibromoethane (CH₂Br CH₂Br) and 1.00 g of methoxysodium (CH₃O⁻Na⁺), dissolved in 10 ml of methanol (CH₃OH).

Assignment

This exercise is essentially a mini-report for a hypothetical lab. It will have four sections: Substances, Reactions, Data, and References. Provide a heading (or caption) for each section of the exercise.

For your Substances section, create a table containing information for all of the substances involved, including the side product. The table must include their names, formulas (skeletal and empirical), molecular weights, and the moles and masses involved. Also, include the densities and boiling points of the liquids.

For your Reaction section, write the net chemical equation for the overall reaction. Include the side product in the equation. Use skeletal formulas and include each stoichiometric coefficient (even if it is 1). Then, provide the mechanism. Include the general mechanism type, as well as all intermediates and transition states. Include all applicable ionic charges.

For your Data section, determine the limiting reagent and the theoretical yield ([See pg 4 of link](#)). Show all of your calculations. Include conversions to moles as well as the mole/mole ratios. Next, determine the (actual) percentage yield from the amount of product obtained. Show that you get the same result whether you use masses or moles as the basis for your calculation.

Include a References section as well. Write your references in proper format, using the APA Style resource in the background reading above. Include all page numbers in your references.