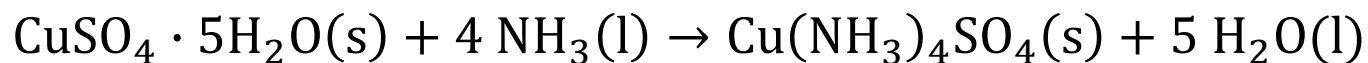


Module 2 Paper

Dr. Turner

Synthesis Equations

Model compound



Alanine complex



The paper (10-12ish pages)

- 7 Sections
 - ▣ Title Page (3 pts)
 - ▣ Abstract (10 pts)
 - ▣ Introduction (20 pts)
 - ▣ Experimental Procedure (15 pts)
 - ▣ Results and Observations (15 pts)
 - ▣ Discussion (20 pts)
 - ▣ Conclusion (7 pts)
 - ▣ Grammar and Spelling provide the remaining 10 points

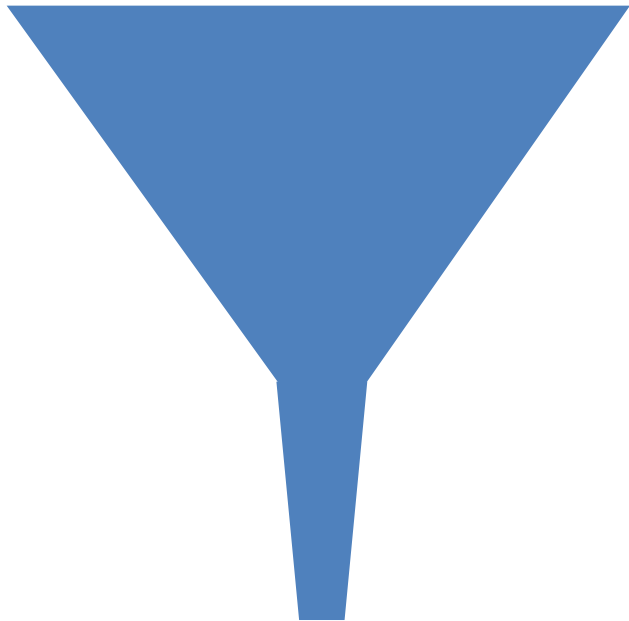
Title Page

- Same as last time. Must include:
 - ▣ Title
 - ▣ Lab section
 - ▣ Date (that you turn in the paper)
 - ▣ Names of all group members

Abstract (10 pts)

- ❑ One paragraph
- ❑ First, state the goal of the experiment
- ❑ Give a brief overview of the approach that you took to reach the goal
- ❑ Include the class results
- ❑ Only include your results if they differ from the class's
- ❑ Should be able to be read and understood independent of the paper

Introduction (20 pts)

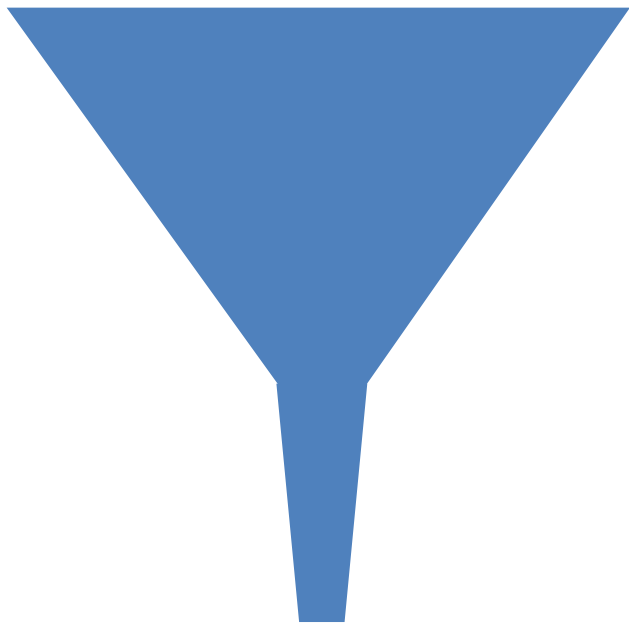


Start broad, and narrow to the focus of the study

- Part 1 – Supplements
- Part 2 – Your Project

(Don't label these as two different parts)

Introduction: Part 1 – Supplements



- ❑ Supplements are beneficial
- ❑ Supplements provide nutritionally important metals, but the bioavailability of these differs with source
- ❑ You chose copper because it has certain beneficial properties
- ❑ Polysaccharide complexes vs amino acid complexes are different ligand options that have pros and cons with affecting bioavailability
- ❑ You chose your amino acid because it has certain beneficial properties

Introduction: Part 2 – Your Project



- ❑ State the goal of your project.
- ❑ Define and explain empirical formulas.
- ❑ What is a model compound and why was it used?
- ❑ Describe the analytical techniques used to determine the empirical formula, and how they help determine it.
- ❑ Use our discussions of metal complexes, monodentate ligands, bidentate ligands, and chelation sites to hypothesize four candidate empirical formulas for the copper alanine complex.

Experimental Procedure (15 pts)

- ❑ Write the procedure in paragraph form including all material and reagents used
- ❑ Provide balanced equations for all performed reactions
- ❑ Provide data for synthesis such as masses of reactants and final products
- ❑ Should be a narrative of what was done in lab, not a recipe style rewrite of the lab manual
- ❑ Should be written in past tense and passive voice

Results and Observations (15 pts)

- ❑ Give the results of your experiments without an analysis of the results. This includes all your group's raw data from the analytical techniques. **Also include the portions that your lab partner did.**
- ❑ Include sample calculations for each of your analytical methods. You only need to show calculations for one sample of each analytical method.
- ❑ You don't have to explain or show the titration and spectroscopy calculations again when discussing the alanine complex. You should instead state that you used the same methodology as the model compound.
- ❑ Include the calibration curves for the spectroscopy analysis as well as all tables of the class data.
- ❑ Note any problems that your group encountered such as not producing product

Discussion (20 pts)

- Since the empirical formula of the model compound is known, did your group get the correct empirical formula?
- If not, identify sources of error in the synthesis and analysis of the model compound that led to your incorrect formula.
- Perform a similar analysis on the class results for the model compound.
- Based on the determined empirical formula of the amino acid complex, is alanine monodentate or bidentate, and does the copper have 4 or 6 chelation sites in the complex.

Discussion cont.

- Utilize the class percent yield data to discuss which compounds were easier/harder to make.
- Utilize the deviations of your individual and class calculated mass percents from the true mass percents to discuss the effectiveness of each of the analytical techniques.
- If you could synthesize any other metal-ion amino acid combination, what would you choose and why?

Conclusion (7 pts)

- State the determined alanine copper complex empirical formula.
- Summarize the key factors leading to this outcome.
- Discuss any modifications that you would make to the experimental design to improve the results.

Grammar and Spelling (10 pts)

- ❑ Use appropriate syntax and grammar
- ❑ Avoid first and second person pronouns
- ❑ Avoid awkward phrasing and language
- ❑ Your paper should be clear and concise
- ❑ Avoid flowery or unnecessary wording
- ❑ Cite at least 3 sources