

Title Page. *Always required.*

Abstract. *Required.*

Introduction. *Required.*

Please address the following with regard to the lab (**Do not copy from the lab manual, use your own sources**):

1. Describe the Nernst equation. Be sure to describe all variables and explain what relationships can be determined from the equation.
2. Describe applications for electrochemical plating.
3. Describe how you could calculate the mass of metal plated onto an object, besides measuring the difference in masses (include equations).

Experimental. *Required.*

- *Parts A & B.* Describe the electrochemical setup for both parts. This includes the solution concentrations and appearances, the working and reference electrodes (if applicable), and the electrochemistry behind the experiment (identify anode & cathode, oxidation & reduction, etc.). Describe what reaction is occurring during the experiment, what is being measured, and what the final result is. **Do not simply copy the lab manual procedures!**

Results & Discussion. *Required.* Results and discussion will be combined for this experiment.

- **Part A:**
 - Plot E_{cell} versus $\log \frac{1}{[Ag^+]}$ and fit the data to a line to determine the Nernst equation for this experiment.
 - Determine the slope from the linear fit and report with the appropriate 95% CI.
 - What is the theoretical value of n in this reaction? What is the actual value of n in this reaction? Compare the two values.
 - Determine E_{cell}^0 from the linear fit and report with the appropriate 95% CI.
 - Compare your E_{cell}^0 to the literature value for the Standard Reduction Potential of silver. Why are the values different? (Hint: consider the reference electrode used in this experiment).
 - Discuss any sources of error.
- **Part B:**
 - Explain the purpose of the battery and the thermodynamics of the reaction.
 - Calculate the theoretical amount of zinc plated (using both methods) onto the Cu electrode for all three trials.
 - Calculate the percent error by comparing the theoretical amount of zinc to the experimental amount plated onto the Cu electrode and discuss any sources of error.
 - Calculate Avogadro's number for all three trials and the percent error. Discuss any sources of error.

Conclusion. *Always Required.*

References. *Always required.* Lab manual website must be cited.

Statistical Analysis. *Always Required.*