Lab Report Requirements, Week 6

Revised: 5/21/15

Title Page. *Required*.

Abstract. *Required*.

Introduction. *Required*.
Please address the following with regard to the lab:

1. Describe some applications of the titration that you will be performing.
2. Describe the electrochemistry relevant to the calculations. Be sure to include the following concepts/expressions:
    a. The shorthand notation for the electrochemical cell at the equivalence point
    b. The balanced electrochemical reaction corresponding to the cell
    c. The expression for the overall standard electrochemical potential
    d. The Nernst equation describing the electrochemical potential
    e. The chemical equilibrium expression between AgCl, Ag^+, and Cl^- before the equivalence point when there is an excess of Ag^+
    f. The expression for K_{sp}
    g. The expression for the cell potential in terms of K_{sp}, 0.100 M $CuSO_4$, and the overall standard electrochemical potential
3. Include a labeled picture of the entire set up and show the electron flow. Directly address points 2a-d.

Experimental. *Required*.

Results. *Required*.

1. Include titration curves and a first derivative plot of all titrations performed.
2. Include tables containing key pieces of the raw data (volume needed to reach the equivalence point, E_{cell} at the equivalence point, etc.)
3. Calculate the concentration of the silver nitrate solution using the data from the known concentration of NaCl.
4. Calculate the K_{sp} of AgCl two ways:
    a. Using the potential at the equivalence point of the titration of the ***known concentration*** of NaCl solution.
        i. Use five other students' data so that a 95% CI can be calculated.
        ii. Compare to known value of K_{sp} (1.8×10^{-10}) by calculating a relative error.
    b. Using the ***unknown concentration*** of NaCl solution.
        i. Use five other students' data so that a 95% CI can be calculated.
5. Calculate the concentration of chloride in the unknown two ways:
    a. Using the titration curve and the volume used to reach the equivalence point (similar calculation to an acid/base titration).
        i. Use five other students' data so that a 95% CI can be calculated.
    b. Using the initial E_{cell} and the known value of $K_{sp.}$
        i. Use five other students' data so that a 95% CI can be calculated.

Discussion. *Required*.
Conclusion. *Required*.

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References. *Always required*. Lab manual website must be cited.
Statistical Analysis. *Required*.