TA: Leslie Tiensvold
Tuesday, September 5, 2006

General Chemistry Lab

Welcome Back!
Today we will start with Chemist for Hire and then while waiting for the salt to dry, we will work on Kandimonium.

Thing to know about Chemist for Hire:

1. All salts are of the formula "AgX", with silver in a 1:1 ratio with the anion.
2. The solutions will precipitate 0.01 moles of AgX.
3. Weigh your filter paper before filtration and then wet it with DI water before filtration.
4. Dry samples in the oven.
5. Write results on the board.
6. Precipitates go in the red trash can.
7. You will want to arrange the anions in some sort of "logical grouping".

Things to know for Kandimonium:

1. Don't eat the samples. ☺
2. Wear gloves.
3. Weigh out more than one individual piece of candy and find the average weight to determine the ratio. (repeated weighing minimizes error)
4. Only use top loading balances.

Due next week:

1. Calculations from Kandimonium with a short summary to explain your results.
2. Typed lab report of Chemist for Hire.
3. Typed concept question #2.
4. Prelab #3.
5. Proceedure for experiment #3.
6. Look over the class material lab #3 deals with.

General Reminders:

1. Makes sure you are checking the website before you come to class: http://www.vanderbilt.edu/ans/chemistry/courses/chem104/index.html
2. After you write anything, skim over your answer and make sure your answer makes sense and fully explains the question.

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General Chemistry
10-03-06

Lab Reminders

Hints for Lab #5:

1. Take 1 mL Aliquots of the colored cleaners and dilute to approximately 20 mL in order to keep the color of the product from interfering with your ability to determine the end point of the titration.
2. Pay attention to the labels on the bottles.
3. You will be performing multiple titrations on each cleaner, so prepare all your samples at one time and then titrate them at once to save time.

All of your lab reports were good, but here are some things to work on:

1. Pay attention to significant digits: Is it 0.1000M NaOH or 0.1M NaOH?
2. Always put a number before the decimal point: Instead of using .89g of your unknown, you used 0.89g of your unknown.
3. Never start a sentence with a number.
4. Avoid using "it" whenever possible, could lead to confusion.
5. Discussion section: Be more thorough with your answers. The way the concept questions are written they kind of direct you as how to write a discussion section. When it says to "interpret your results", it means to explain your results using current knowledge. So instead of the titration showed my compound was NaCl, it would be better to explain the chemistry behind the titration leading to the determination of the results. This is the section where you prove to me that you understood the concepts behind the lab and understand the goal of the lab. Answer the questions: Do the results make sense? Why? How? **So for next week it would be good to look on the labels of the household products, see what acid they contain, and explain the Acid/Base reaction pertaining to that chemical.**

Due Next week:

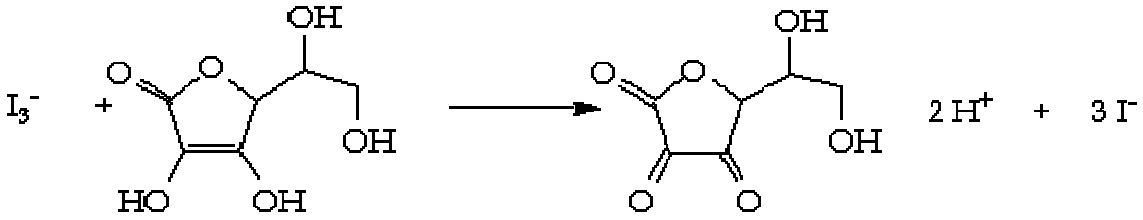
1. Lab report including all three parts of Lab #5
    a. Determination of the pH of household products
    b. Preparation and standardization of Sodium Hydroxide
    c. Titration of the acid household products
2. Concept Question #5
3. Procedure for Lab #6
4. Pre-Lab #6

Title- Name, experiment title, date, TA name...
Introduction- Short explanation of the purpose of the Lab (answer the questions: What, Why and How?)
Experimental (also called procedure) - You can actually use the same procedure you bring to class for the lab. This needs to be detailed enough so that anyone could take your report and duplicate the experiment using only the info found in the pages of your report. You can list the data you collected under this heading if you want. I have seen it done both ways.
Results- This is the data you collected, with correct significant digits and units, nothing else. Place recorded data in neat tables.
Calculations- This is the only part of the lab that does not need to be typed. Clearly lay out the calculations so I can identify your answers and see your work at a glance. Also list all important equations.
Discussion- Place your calculated data in pretty little tables. (If you placed your collected data under experimental then the calculated data tables will go under results. I actually almost prefer to place the calculated data there, even though that is not really how the example for lab report one was done, but it is how scientific journals normally do it.) *Interpret the results*. Use your calculated results to prove your conclusions. Error analysis goes here as well.
Conclusion- Summary of important data that clearly answers the goals stated in the introduction.
References- Place the citation for any source you refer to here. Remember to cite sources properly in your paper as well. You should really never quote more than one sentence at a time and summaries of a source are almost always better.

Handout Experiments 7 & 8:

Lab #8
Oxidized: Lost a proton
Reduced: Gained a proton

In this experiment the two hydroxyl groups of Vitamin C are being oxidized by the I_3^-.



You must first create the Iodine in the form needed (tri-Iodide) for this oxidation reaction to occur. Two simultaneous reactions occurring to produce I_3^-:

(1) $5I^- + IO_3^- + 6H^+ \rightarrow 3I_2 + 3H_2O$

(2) $3I_2 + 3I^- \rightarrow 3I_3^-$

Where do the starting products come from?
Write the molecule that each ion comes from next to its ion below:
I^-

IO_3^-

H^+

These two reactions work together to produce one final balanced equation:

$\_\_I^- + \_\_IO_3^- + \_\_H^+ + \_\_I^- \rightarrow \_\_I_3^- + \_\_H_2O$

Lab #8
Remember to pour the H_2O_2 slowly and while it is hot!!

Hello All!

You all did wonderfully on the Vitamin C lab and I know you will do just as good on this next lab.

Just a few reminders:

1. Lab reports, make sure when you are calculating the mL it took to titrate for potassium and iron analysis that you consult your titration curve. The volume for potassium should be measured from the initial reading to the first endpoint. The volume for iron should be measured from the first endpoint to the second endpoint.
2. When calculating the percent yield of your salt, you must first calculate the theoretical yield. Start with the # of grams you weighed of $Fe(NH_4)_2(SO_4)2*6H_2O$ and end with grams of your salt, $K_3Fe(C_20_4)_3*3H_20$.
3. Makes sure you include the following in your report for lab #8
    a. Theoretical yield of the salt
    b. % yield of the salt
    c. % error
    d. Table of % by mass of (You can even do the % error for each of these by using the actual as the calculated values off of pre-lab 8, #3.)
        i. Oxalate ion (53.7%)
        ii. Potassium ion (23.9%)
        iii. Iron (11.4%)

Here is the point breakdown for Lab#8:

Intro- **1** point
Experimental- **2** points (3^{rd} person past tense, passive voice)
Results-
Correct Calculations- **4** points
Accuracy of Results- **2** points
Discussion- **2** points – (Convince me that you understand how the titration curve allows us to identify the percents of each part of the salt. Include error analysis as well.)
Conclusion- **1** point

Lab #8 is not due until the Tuesday after Thanksgiving break (November 28) BUT if you want to turn it in by noon the Friday before Thanksgiving break (Nov 17), I would really appreciate it! ☺ Remember my office hours are from 9:30-10:30 Tuesdays and Thursdays, you can stop in and get help. I will grade the reports and return them to you during our last lab session.

Have a great week!

Leslie Tiensvold