Chem 1210

PREPARATION AND ANALYSIS OF AN AMMINE NICKEL (II) CHLORIDE COMPOUND

NAME: _____ DATE: _____ STN #: __

OBJECTIVE: To prepare and analyze an amminenickel(II)chloride compound.

OBSERVATIONS:

Part A:

Part B:

Part C:

Part E:

DATA:

Part A: Mass of $NiCl_2.6H_2O$ used =

Mass of empty bag =

Mass of bag + product =

Mass of purple product =

Part B: Mass of $NiCl_2.6H_2O$ used =

Part C: Mass of ammine nickel compound used =

Part D:

Standard Solutions (mL)	**Conc of standard solutions**	**%T / Abs**	**%T / Abs**	**Average Absorbance**
5.00				
10.00				
20.00				
25.00				
Nickel ammine Solution (from part C)				

Show a sample calculation for the concentration of 5.00 mL standard solution

Part E:

Run #	Mass of sample + boat (g)	Mass of boat (g)	Mass of sample (g)	Vol $_{ini}$ (mL)	Vol $_{final}$ (mL)	Volume of NaOH used (mL)
1.						
2.						
3.						
4.						

CALCULATIONS:

Part A: Theoretical Yield

Experimental Yield =

Part D: Slope of Beer's Law plot =

Y intercept =

1. Calculate % Nickel by mass in Nickelammine complex

2. Calculate the molar mass of Nickelammine complex

3. Calculate mmols of Ni^{2+} / gram of Nickelammine complex

Part E:

1. Calculate the % ammonia (by mass) in Nickelammine complex

Run #	**% ammonia**	**Average % NH_3 (of only precise runs)**

2. Calculate the mmoles of NH_3 / gram of Nickelammine complex.

CALCULATION OF MOLECULAR FORMULA:

Now that you have calculated the mmols in Part D & E per gram of Nickelammine complex, so

1. Calculate the ratio of mmol of NH_3 to mmol of Ni^{2+}

2. Closest whole number ratio =

3. Use the whole number mole ratio and Experimental molar mass (part D) to determine the likely molecular formula for the Nickelammine complex.

QUESTION:

Explain, if a student unknowingly overtitrated the methyl red endpoint in the ammonia determination, how would that affect his/her NH_3/Ni^{2+} ratio?