Molar Mass Determination of a Group 1 or 2 Metal Carbonate

Name: _____   Date: _____   Section:_____

Objective

Procedure

Refer to CHEM 1110 lab manual, p. ____

Observations

Data

Table 1. Mass of unknown sample

Mass of boat + unknown sample (#_____) (g)	
Mass of empty boat (g)	
Mass of unknown metal carbonate (g)	

Table 2. Back-titration data for metal carbonate samples

Concentration of HCl: _____   Concentration of NaOH: _____

	Run 1	Run 2	Run 3
Volume of unknown solution (mL)			
Volume of HCl added (mL)			
Initial buret reading (mL)			
Final buret reading (mL)			
Volume NaOH delivered (mL)			
Endpoint colour and shade			

Calculations

Calculate the percent difference between:

Run 1 & Run 2   Run 2 & Run 3   Run 1 & Run 3

The good runs (within 1% difference) are: _____

Balanced chemical equation for the reaction between CO_3^{2-} and HCl:

Calculation for the number of moles of HCl added to each Erlenmeyer flask:

Choose one of the runs and show the following calculations based on the data from that run only.

The following calculations are for (circle one):   Run 1   Run 2   Run 3

Sample calculation for the number of moles of NaOH used for back titration:

Sample calculation for the number of moles of metal carbonate present in the 20.00 mL portion of the metal carbonate solution:

Sample calculation for the molar mass of the unknown metal carbonate in the sample:

Average molar mass for the metal carbonate:

Molar mass and identity of the unknown metal:

Chemical formula for the metal carbonate:

Results

Unknown #:	Run 1	Run 2	Run 3
Molar mass of metal carbonate			
Runs included in average molar mass calculation			
Average molar mass of metal carbonate from "good runs"			
Chemical formula of unknown metal carbonate			

Discussion

Briefly explain your reasoning for choosing the chemical formula of your metal carbonate.

Conclusion

Questions

Attach any questions assigned by your lab instructor.