Name: Section: Tu   Th   Fam   Fpm

Experiment 4 Post-Lab Sheet

Data: (6 pts)

mass of crucible and cover	
mass of crucible, cover and Mg	
mass of crucible, cover and product	
mass of Mg	
mass of O	
mole ratio (mol Mg/mol O) as decimal	

Show how you calculated the mass of O, starting from the raw data off the balance (include units):

Show how you calculated the moles of O (include units):

Discussion

1. (1 pts) How many significant figures does your **mole ratio** have? What error range does this imply?

2. (1 pt) The accepted value of the mole ratio is exactly 1 (1:1). Does this match your result, within the uncertainty implied by the significant figures?

3. (1 pt) What is the average value of the mole ratio for the class? What is the uncertainty for the class? Include all the data provided. (Use a spreadsheet to speed this up! See instructions in Lab Manual page A-9.)

4. (2 pts) List any outliers (data points you should exclude when calculating the average) in the class data. Explain how you decided which points were outliers, and give the class average and uncertainty calculated without these outliers.

5. (2 pt) Compare the class results to the accepted value; without and without outliers. Is the accepted value within the uncertainty range for the class data? Does excluding the outliers make a difference?

6. (4 pts) For each of the following errors, say whether it would cause the calculated mole ratio (Mg/O) to be >1 or <1:

    Not heating long enough after adding water   <1   >1

    Not adding enough water   <1   >1

    Not weighing the cover with the crucible and product at the end   <1   >1

    Letting a lot of smoke escape the crucible during the reaction   <1   >1

7. (3 pts) What sources of bias in the experiment might explain the difference between the class average and the accepted value? Make sure the bias you suggest would cause the average to be off in the direction it actually was off.