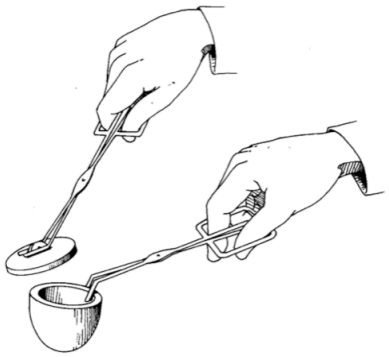
Chemistry
Tigard High
2017 - 2018

Name_____ Block_____Date_____

Quantitative Determination Of An Empirical Formula: Mg_xO_y



Data

a.) Mass of empty crucible and lid: _____

b.) Mass of magnesium metal, crucible and lid: _____

c.) Mass of crucible, lid, and magnesium-oxide product (after cooling for 5 minutes): _____

Calculations (Show ALL calculations, including correct units and sig figs!)

1.) Mass of magnesium metal used. (A simple subtraction problem.)

_____

2.) Moles of magnesium metal. (A mass to mole conversion problem.)

_____

3.) Mass of oxygen. (A simple subtraction problem.)

_____

4.) Moles of oxygen. (A mass to mole conversion problem.)

_____

5.) Calculate the mole ratio of the magnesium-oxide product (divide the larger by the smaller).

_____

6.) Determine the whole number mole ratio (for this lab, just round your ratio above to whole numbers).

_____

7.) Use the known ionic charges for magnesium and oxygen to write the most probable empirical formula for the magnesium-oxide product.

(over)

8.) Experimental Percent Composition:

From your data, calculate the experimental percent composition for your magnesium-oxide product:

% Mg = % O =

9.) Known Percent Composition:

From the empirical formula you determined in question #7, calculate the actual percent composition for this magnesium-oxide compound:

% Mg = % O =

10.) Comparing your answers to #8 and #9, calculate your percent error:

$$\text{Percent Error} = \left| \frac{\text{Known} - \text{Experimental}}{\text{Known}} \right| \times 100$$

- Magnesium: % error =

- Oxygen: % error =

Lab Procedures:

1. Record mass of crucible + lid
2. Cut ~9 in Mg and form into small coil
3. Record mass of Mg w/ crucible + lid
4. Get setup stamp! ☺
5. Heat crucible w/ lid on until glowing orange
6. Lift lid w/ tongs until Mg ignites… then put lid back on immediately
7. Repeat (remove + replace lid) every 2-3 min until Mg fails to ignite (for ~12 min)
8. Turn off burner and let crucible cool completely!
9. Record new mass of Mg w/ crucible + lid
10. Clean and return crucible (dispose of solids in trash and rinse + scrub w/ water)