Pre-Lab quiz: Hess’s law & heat of formation of MgO1. What is calorimetry?

2. How does enthalpy of formation differ from enthalpy of reaction? (definitions)

3. What is Hess’s Law?

4. If the reaction shown here is run in reverse (to form A and B) what is the enthalpy of the reversed reaction?

A + B 🡪 C + D ΔH = 356 J5. Given the 2 thermochemical equations below, calculate the enthalpy of formation of CO:

C (s) + O2 (g) 🡪 CO2 (g) ΔH = -393.5 kJ/mol CO (g) + ½ O2 (g) 🡪 CO2 (g) ΔH = -283.0 kJ/mol

6. Why is it difficult to determine the enthalpy of formation of MgO directly using the equipment we have here?

7. Use Appendix C of your text to find the actual enthalpy of formation (a.k.a. heat of formation) of MgO.

8. Use this same appendix to find the enthalpy of formation of these elements in their standard (or ground) states; i.e. the lowest energy state:

Ca Fe O2 N2

H2

9. Use the same appendix to find the enthalpy of formation for water 2 states: H2O (g) H2O (l)

10. Why is more heat (or energy) released by the formation of liquid, than gaseous, water?