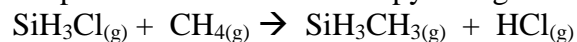


AP Chemistry – Nice Review Questions – 29

Name _____ Per ____

1. Use bond enthalpies to estimate the enthalpy change for the following reaction:



2. When a mixture of 10.0 g of C_2H_2 and 10.0 g of O_2 is ignited, it results in a combustion reaction. (a) Write the balanced chemical equation for the reaction. (b) Which is the limiting reactant? (c) How many grams of C_2H_2 , O_2 , CO_2 and H_2O are present after the reaction is complete?

3. Write a balanced equation for the reaction that occurs in each of the following cases:

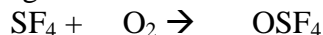
(a) Chlorine reacts with water

(b) Barium is heated in an atmosphere of Hydrogen gas

(c) Lithium reacts with Sulfur

(d) Fluorine reacts with Magnesium metal

4. Sulfur tetrafluoride reacts slowly with oxygen to form sulfur tetrafluoride monoxide according to the following unbalanced reaction:



The O atom and the four F atoms are bonded to the central S atom. (a) Balance the equation. (b) Write a Lewis structure of OSF_4 in which the formal charges of all atoms are zero.

(c) Use average bond enthalpies to calculate the enthalpy of the reaction.

(d) Is it endothermic or exothermic?

(e) Determine the electron-domain geometry of OSF_4 and write two possible molecular geometries for the molecule based on the electron-domain geometry.

(f) Which of the molecular geometries is more likely to be observed for the molecule? Explain.

5. Place the following gases in order of increasing average molecular speed at 25°C : Ne, HBr, SO_2 , NF_3 , and CO.

6. Calculate the rms speed of SO_2 molecules at 25°C .