**Honors Chemistry- Thermochemistry Podcast 2: Thermochemical Equations and Stoichiometry**

1. Nitrogen reacts with hydrogen according to the following equation.

   **$N_2 + H_2 \rightarrow NH_3 + 231\ kJ$**

   How much energy will be released when 13.0-g of nitrogen reacts?

   How much energy will be released when 2.5L of hydrogen reacts?

2. Carbon disulfide is an important industrial solvent. It is prepared by the reaction of carbon with sulfur dioxide. The other product is carbon monoxide. The reaction is endothermic and requires 23.5 kJ of energy.

   How much energy will be required when 32.4-g of Carbon disulfide is produced?

   How much energy will be required to react 21.1-L of sulfur dioxide?

3. Silver nitrate reacts with calcium in a single replacement reaction. The reaction is exothermic and produces 18.7 kJ/mol of energy.

   How much energy will be produced when 12.3-g of silver nitrate react?

   How many grams of silver nitrate reacted if 13.7 kJ of energy is released?

4. Magnesium reacts with hydrochloric acid in a single replacement reaction. The value of $\Delta H$ =-221 kJ/mol.

   How many grams of magnesium will be made if 365-kJ is released?

   How much energy will be released if 9.45-g of magnesium reacts?

5. Ammonium sulfate reacts with barium hydroxide endothermically. $\Delta H$ = + 127 kJ/mol.

   How much energy will be required to react completely 34.5-g of barium hydroxide?

   If 395-kJ of energy is absorbed, how many grams of precipitate will be formed?