

Post-Lab Questions

Answer the following questions on a separate sheet of paper. Refer to a periodic table.

Part 1. Halide Salts

1. What effect does silver nitrate solution have upon each of the halide salt solutions?
2. Write the chemical equations for the reaction of silver nitrate with each of the three halide salt solutions. Label the solid product with (s) and write the name and color of each precipitate.
3. What effect does ammonia water (ammonium hydroxide) have on each of the precipitates? Write the chemical equations for any reactions that occur.

Part 2. Alkaline Earth Metals

4. Which Group II alkaline earth metal is more reactive, magnesium or calcium?
5. Look at the position of the two elements on the periodic table. Write a general statement about position of metals and reactivity.
6. Based on your observations, predict the order of reactivity of the following elements—strontium, barium, and beryllium.
7. Write the balanced chemical equations for the reactions of magnesium and calcium with hydrochloric acid. What is the gas in each case that causes the bubbling and fizzing?
8. In this lab, the oxidation reaction of two metals in acid is observed. When oxidation occurs, the solid metal loses electrons to form the aqueous metal cation. For example, in barium, $\text{Ba(s)} \rightarrow \text{Ba}^{2+} + 2\text{e}^-$. Energy is needed to cause this oxidation—it is directly related to the *ionization energy* of the compound. The higher the ionization energy, the harder it is to lose electrons. Based on this information, which metal (calcium or magnesium) do you predict has a higher ionization energy? Explain.

Families of Elements

Data Tables

Part 1. Halide Salts

Salt	Observations with AgNO_3	Observations with Ammonia water
NaCl		
NaBr		
NaI		

Part 2. Alkaline Earth Metals

Metal	Observations with HCl
Magnesium	
Calcium	