

## Investigation of Colorful Precipitates

### Introduction

When the elements are arranged in order of increasing atomic number, they exhibit a periodic recurrence of properties. This fact led to the grouping of elements as seen in the Periodic Table. Elements in the vertical columns of the Periodic Table form Groups with similar chemical and physical properties. These similarities are due, in large part, to the fact that all the elements within a group have the same outer shell electron configuration. You can also find periodic trends in certain properties, such as density, among the elements within a given group. In addition, compounds that contain elements from the same group can display trends in properties such as solubility.

### Purpose

In this experiment, you will investigate the variation in precipitates from metal salts of the Periodic Table and understand the precipitation reactions for each.

### Procedure

1. Write down the chemical compounds' names and formulas on the lab table.
2. Place five drops of each solution into the well plate.
3. Record the observations of the possible chemical reaction.
4. If no reaction occurs, write "no reaction".
5. At the completion of the lab, clean out the well plates with soap and water.
6. Place well plate on the lab table for the future classes.

### Conclusions/Analysis

1. For each of the reactions:
  - A. For each of the reactions, predict the products.
  - B. For each of the reactions, write the balanced chemical reaction.
  - C. For each of the reactions, use the Solubility Rules to determine the states of matter for the products.
  - D. If a reaction produces a solid (a precipitant), **please complete the following and show all charges, all states of matter, and balancing.**
    - a. Write the balanced molecular ionic equation,
    - b. Write the balanced complete ionic equation
    - c. Write the balanced net ionic equation
    - d. Write the spectator ions.
  - E. If a reaction produces no solid, write the balanced molecular ionic equation with states of matter.