**Purpose:**

To determine which elements have similar chemical properties through experimentation

**Procedure:**

1. Set up **six test tubes** in the test tube rack.
2. Add **8 drops** of the following solutions into separate test tubes (the list “Positive Cation”)

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Tube** | **Positive Cation** | **Carbonate (CO3)-2** | **Phosphate**  **(PO4)-3** |
| Test tube # 1 | Barium Nitrate **(Ba+2)** |  |  |
| Test tube # 2 | Calcium Nitrate **(Ca+2)** |  |  |
| Test tube # 3 | Lithium Chloride **(Li+1)** |  |  |
| Test tube # 4 | Potassium Chloride **(K+)** |  |  |
| Test tube # 5 | Magnesium Nitrate **(Mg+2)** |  |  |
| Test tube # 6 | Strontium Nitrate **(Sr+2)** |  |  |

1. To each test tube **add 6 drops** of the *carbonate ion* (CO3) and **record the results**. If a precipitate forms (if you see cloudiness) write an **I** indicating **I**NSOLUBLE, then describe the precipitate. If no cloudiness is observed, write an **S** for **S**OLUBLE.
2. Rinse all test tubes over a paper towel so that no solids go down the drain.
3. Refill the six test tubes with **8 drops** of each positive ion solutions (as in step 2) to the test tubes as indicated in the table.

Questions:

1. Which cations formed a precipitate with the carbonate ion?

2. Which cations formed a precipitate with the phosphate ion?

3. Give the Family name for the compounds that formed precipitates.

4. For the most part, would you conclude that Group I ions form compounds with phosphate that are soluble or insoluble, why?

5. Based off your general results from the lab, which pair of elements do you think would act more alike, *nitrogen and phosphorous* or *sulfur and chlorine*, why?

6. Using evidence from your lab, make a general statement on “which elements act alike” on the periodic table.