

## Solubility Test Tube Lab

**Introduction:** Chemists, like detectives, attempt to identify unknowns through a process of careful and creative analysis. This usually involves observing the colours, odours, and reactions of the unknown substances and comparing them with those of known substances.

**Purpose:** In this experiment, you will try to identify eleven different chemical compounds in solution by reacting them with each other, observing the results, and comparing the results with the known characteristics of some common chemicals.  
The eleven chemicals are (in no particular order):

- aluminum chloride ( $\text{AlCl}_3$ )
- sodium carbonate ( $\text{Na}_2\text{CO}_3$ )
- sodium acetate ( $\text{NaCH}_3\text{COO}$ )
- hydrochloric acid ( $\text{HCl}$ )
- sodium hydroxide ( $\text{NaOH}$ )
- ammonium hydroxide ( $\text{NH}_4\text{OH}$ )
- iron (III) nitrate ( $\text{Fe}(\text{NO}_3)_3$ )
- silver nitrate ( $\text{AgNO}_3$ )
- copper (II) sulfate ( $\text{CuSO}_4$ )
- nickel (II) chloride ( $\text{NiCl}_2$ )
- lead (II) nitrate ( $\text{Pb}(\text{NO}_3)_2$ ).

### Materials:

Each group will be given:

- solutions in test tube x11
- test tube rack x1
- disposable pipettes x11 (do not cross-contaminate your pipettes)
- spot plate x1
- wooden splints x18 (for flame tests)
- Bunsen burner x1
- striker x1
- pH paper x1
- distilled water (200 mL)
- periodic table
- solubility chart
- colour chart for solutions containing certain ions (note: this is different from the colour for flame test)
- lab data sheet (rough copy) x1
- solutions identification table

### Required Time:

Three days of lab time

Final Lab Report Due: \_\_\_\_\_ / (\_\_\_\_)