



EXPERIMENT 2

DENSITY
MYSTERY SOLUTIONS

*What is
density?*

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

Units: g/mL or g/cm³

Measuring Density

SOLIDS

Mass from a mini-balance
Volume using a cm/mm ruler

LIQUIDS

Mass from balance, but need container
Volume from ...

GASES

More difficult but can extract
from ideal gas law

Density of DI Water

Mass of a known volume of water from an analytical balance.

BURET METHOD →

Clean, rinse, and read to 0.01 mL
Remove any air bubbles or gaps

PIPET METHOD →

Clean and rinse
10 mL graduated pipet – good to 0.01 mL
Use the special pipet bulb
Be patient and practice

Calibrate temperature probe and measure room temperature to 0.1 °C.

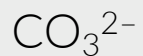
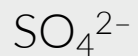
Types of Chemical Reactions

1. Precipitation reactions
2. Gas-forming reactions
3. Acid-base neutralization reactions
4. Redox (reduction-oxidation) reactions
5. Combustion reactions
6. Decomposition reactions
7. Complexation reactions

... and more

4 Mystery Solutions

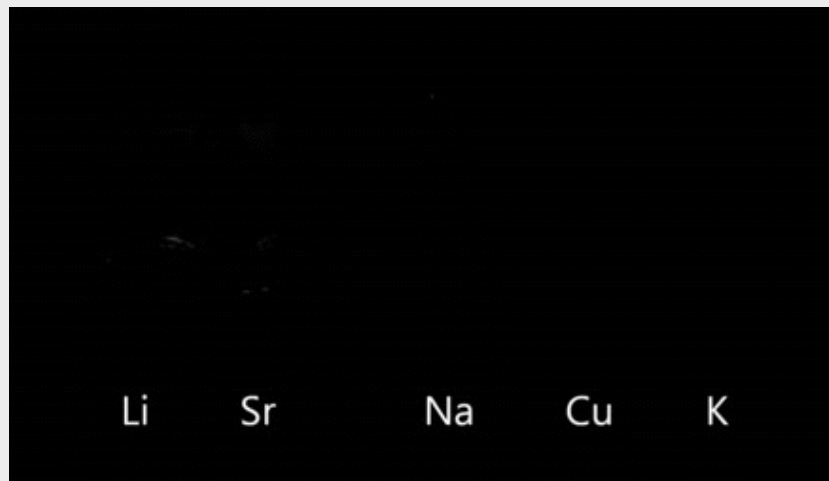
POSSIBLE
CATIONS



POSSIBLE
ANIONS

Identification Strategy:

FLAME TEST
Cation



4 Mystery Solutions

POSSIBLE
CATIONS



POSSIBLE
ANIONS

Identification Strategy:



Analyze one compound at a time. Use ~10 drops. Collect waste in beaker.

Notes

1. Lab safety & requirements; lab coat + safety glasses
2. Manual + lab notebook + calculator + pen
3. Pre-lab material in lab notebook:
 - Identification information
 - Purpose(s) in present or future tense
4. In-lab material in lab notebook:
 - Brief procedure in past tense
 - Then your observations and/or measurements
 - Always report measurements to correct sig. figs.
5. Lab report: due next week Tuesday/Wednesday