

## LABORATORY PRACTICE

### ELEMENTS, COMPOUNDS AND MIXTURES

#### Purpose:

1. To improve student's skills of observation and interpretation of those observations.
2. To verify text material concerning the properties of elements, compounds and mixtures.

#### Prelab assignment:

Prior to your lab time, answer these questions on a separate sheet of paper and hand them in at the beginning of the class.

1. Define element.
2. Define compound.
3. Define mixture.
4. How could a compound and a mixture be differentiated in the laboratory?

#### Equipment and supplies:

1. Vials containing the following substances:

	Mercury
Set 1	Oxygen
	Mercury (II) oxide
	Iron
Set 2	Sulphur
	Iron sulphide
2. Calcium carbonate powder,  $\text{CaCO}_3$ ; 1g.
3. Sodium chloride,  $\text{NaCl}$ ; 1g.
4. Hydrochloric acid,  $\text{HCl}$ ; 1ml.
5. Distilled water.
6. Watch glasses.
7. Filter paper and glass funnel.
8. Test tubes, 18 x 150 mm.
9. Solid rubber stoppers.
10. Eye dropper.
11. Evaporating dish.
12. Support stand and iron ring.
13. Wire gauze
14. Bunsen burner.

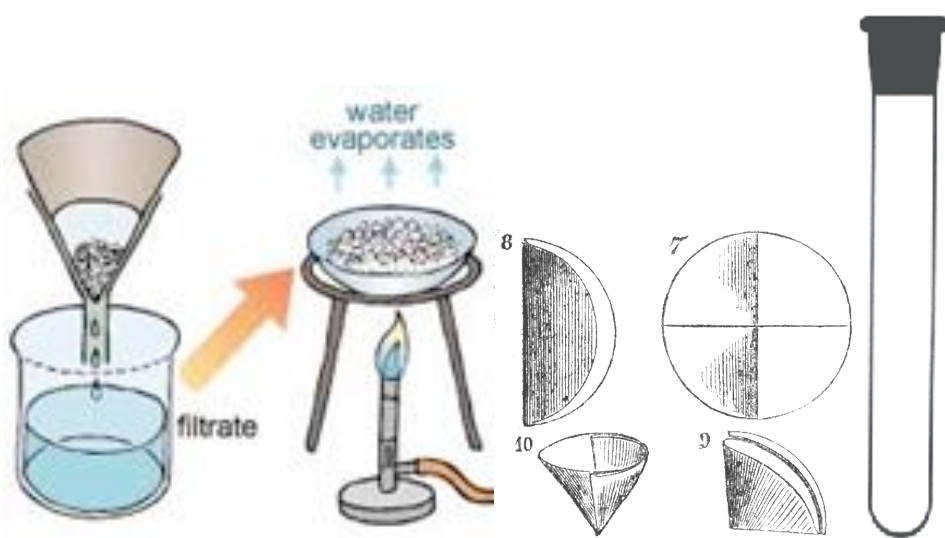
## Procedure:

### 1. Element or compound?

Observe the contents of each of the vials carefully. Complete the chart on your report sheet with as many properties as you can of each without opening the vials- colour, density, state, appearance. Is there a connection between the properties of the elements and the compound in each set?

### 2. Mixture or compound?

- a. Place separately on a watch glass small amounts of  $\text{CaCO}_3$  and  $\text{NaCl}$ . Test the solubility of each by adding a few drops of water with an eyedropper. Discard in the wash basin. Record your observations on your report sheet,
- b. Repeat a. using  $\text{HCl}$ . Record your observations.
- c. Mix a small amount of  $\text{CaCO}_3$  and  $\text{NaCl}$  on a clean watch glass. Do you see any change? Do the properties appear different?
- d. Divide the simple in two and place each half in a different test tube. Add 10 ml. of acid to one test tube and 10 ml. of water to the other. Stopper and shake. Does the simple dissolve? What do you observe?
- e. Discard the test tube with the acid in the wash basin.
- f. Filter the contents of the test tube with the water contents. Collect the filtrate in an evaporating dish.
- g. Place the dish on a wire gauze supported by an iron ring. Heat gently to evaporate the water. Allow to cool and examine the residue. Test with a few drps of acid.
- h. Examine the residue on the filter paper. Test with acid.



## REPORT SHEET

### 1. Element or compound?

	Colour	state	appearance	Relative density	m.p. (°C)	b.p. (°C)	Elect. Conduct.
<b>Hg</b>							<b>Yes</b>
<b>O</b>							<b>No</b>
<b>HgO</b>							<b>When molten</b>
<b>Fe</b>							<b>Yes</b>
<b>S</b>							<b>No</b>
<b>FeS</b>							<b>When molten</b>

State your conclusion here about the properties of elements and the compounds they form:

### 2. Mixture or compound?

a. b.	Solubility		acid	Water	Observations:
		NaCl			
		CaCO <sub>3</sub>			
c.	Appearance NaCl+ CaCO <sub>3</sub>				
d.	Solubility of NaCl+ CaCO <sub>3</sub> in water:				
d.	Solubility of NaCl+ CaCO <sub>3</sub> in acid:				
g.	Solid from filtrate + acid				
h.	Solid from residue + acid				

State your conclusion here about the mixture of substances: