

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Chemistry ~ Ms. Hart**      Class:      **Anions or Cations**



### **5.6 Ionic and Covalent Lab #13**

**PURPOSE:** The purpose of this lab is to compare the physical properties that substances may exhibit due to their bonding.

**SAFETY:** Goggles, lab coats, and gloves should be worn during this lab. Please be extremely cautious around the hot plates; they are HOT!

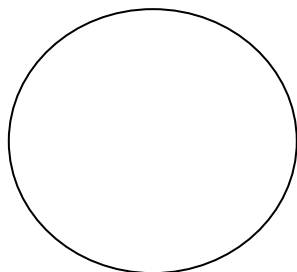
**PROCEDURE:**

**Station 1:** Microscopic observations

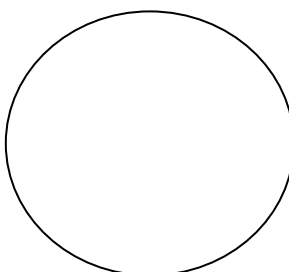
Place a small pinch of one substance onto a microscope slide, and observe under the microscope. Clean off, and repeat with the other substances. Record pictures of what you see, and observations below. Note you may need to adjust the lenses to see clearly.

Observations:

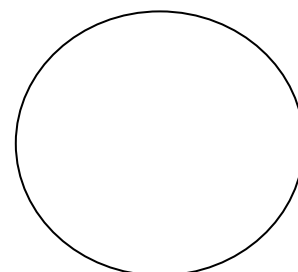
Sugar	
Salt	
Mystery compound	



SUGAR



SALT



MYSTERY

**Station 2:** Melting Point test

Place a small pinch of one substance onto a small piece of aluminum foil. Place aluminum foil on the heated hot plate. Observe for approximately thirty seconds, and record what you see below. CAUTION: Do not touch foil or plate with hands! Use the tweezers or tongs and allow foil to cool on lab table. Remove foil immediately once one substance starts to change phase.

Sugar	
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Salt	
Mystery compound	

Station 3/4: Solubility test & Conductivity in water - Complete solubility test before conductivity test

Solubility test:

Use the 4 beakers provided on the station. Fill each roughly half-way full with water. Place one small scoop of the substance into the first beaker labeled sugar and water. Stir gently with the stirring rod and observe below. Repeat for the other substances in the other 2 beakers; leave one with only water in it.

Sugar	
Salt	
Mystery compound	

Conductivity in water

The aluminum foil covered popsicle sticks are your electrodes. They are connected to a 9V battery. Place the two electrodes, NOT TOUCHING, BUT ABOUT A ½ INCH APART, in the beakers with the substances below. Bubbles indicate electricity is being conducted from one electrode to another. Record any observations below. *(Note for the mystery compound and water mixture, you may need to hold the electrodes close to the edge of the beaker to observe more clearly due to cloudiness).*

No Substance/ water	
Sugar and water	
Salt and water	
Mystery compound and water	

### **Lab Analysis and Conclusions:**

1.) How do the properties of each type of compound relate to their bonding?

	Salt (NaCl)	Sugar (C <sub>12</sub> H <sub>22</sub> O <sub>11</sub> )
Bond Type		
Appearance (under microscope)		
Melting Point (High/low)		
Conductivity		
Solubility		

2.) Is the mystery compound covalently or ionic-ally bonded? How did you come to your conclusion? (Use your evidence from the lab).

3.) Which bond type has a higher melting temperature? Thinking about bond strength, why might one bond type melt at a higher temperature than sugar?

4.) Why might one substance conduct electricity better than the other (think about electricity and charge)?

### Lab #13 Ionic Versus Covalent Bonds

<b>Data Collection</b>	<input type="checkbox"/> Observations are thorough <input type="checkbox"/> All observations are completed <input type="checkbox"/> Professional behavior during investigation <input type="checkbox"/> Asked peers before asking the teacher!	<input type="checkbox"/> Missing 1 out of 4	<input type="checkbox"/> Missing 2 out of 4	<input type="checkbox"/> Missing 3 out of 4
<b>Analysis Questions</b>	<input type="checkbox"/> All answers are completed and correct. <input type="checkbox"/> All answers are thoroughly explained and supported by the experimental data.	<input type="checkbox"/> 5 answers are completed/correct. <input type="checkbox"/> Most answers are thoroughly explained and supported by the experimental data.	<input type="checkbox"/> 4 answers are completed/correct. <input type="checkbox"/> Most answers are thoroughly explained and supported by the experimental data.	<input type="checkbox"/> Less than 4 answers are completed/correct.