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Experiment 2.2- Lab Write-up

Research question:

How can we experimentally determine the difference between ionic and covalent compounds?

Introduction:

Ionic bonds can only form between metals and non-metals, and generally have very high melting/boiling point. On the other hand, covalent bonds generally have very high melting/boiling points. Ionic compounds are a solid at room temperature, while covalent compounds are a liquid or a gas.

Procedures:

First, pour approximately 100-150mL of distilled water into each beaker. Then, mix 1 spatula of baking soda into one of the beakers and, using the other spatula, 1 spatula of sugar into the other beaker. After that, prepare the battery with the lead attachment. Next, insert the leads into the sugar water, observe and record. Lastly, insert the leads into baking soda water, observe and record.

Observation:

We poured the 120mL of distilled water into both beakers. We put the sugar in one beaker and baking soda in another beaker. We mixed them until both were dissolved. Here were our observations for the experiment:

The Sugar Water- After the sugar was all dissolved in the water, we put in the leads. We waited for a little bit, but nothing happened. The wire's tips were not different, and nothing happened to the sugar water. We then moved to the baking soda water.

The Baking Soda Water- After we were done with the sugar water, we moved to the baking soda water. Shortly after we put the lead in, we saw bubbles starting to appear from the tips of the wires. After a little bit, we added a little bit more water to the beaker. The water was starting to fizz more where the wire was. We let the leads sit in the water for a while longer. When we took them out of the water, the red lead tip was dis-colored. It was now a greenish color.

Conclusion:

We looked at the wires and where the wires were connected to the battery. The red wire was connected to the positive side of the battery, while the black wire was connected to the negative side of the battery. Water in made up of 2 hydrogens and 1 oxygen. By putting the wires in the baking soda water, we were

splitting the water. All the oxygens went to the red wire (the positive wire) and the all the hydrogens went to the black wire (the negative wire). Here, we see that opposites attracts. The negative oxygen went to the positive wire and oxidized the copper tip, and the positive hydrogens went to the negative wire. In this experiment, the baking soda was the ionic compound that conducts electricity, and the sugar was the covalent compound that does not conducts electricity.

Vocabulary:

A compound is a substance that can be decomposed into elements by chemical means. A chemical reaction is a process by which one or more substances change into one or more different substances. An ionic compound is a compound formed by ions. On the other hand, a covalent compound is a compound formed by atoms that share electrons. Electrolysis is the chemical decomposition produced by passing an electric current through a liquid or solution containing ions. A mixture is a substance that contains different compounds and/or elements. And lastly, a solution is the result of one or more solutes being dissolved in a solvent.