

Experiment 2.2

Research Question:

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

Introduction:

Ionic bonds generally have very high melting and boiling points. Covalent bonds generally have very low melting and boiling points.

Procedures:

First, I pour somewhere close to one hundred or one hundred and fifty milliliters of water into each beaker. Second, I pour and mix one spatula's worth of sugar into one beaker and using a second spatula, I pour and mix one spatula's worth of baking soda into the other beaker. Third, I prepare the battery with the lead attachment. Fourth, I insert the leads into the sugar H_2O , observing and recording what I see. Fifth, I insert the leads into the baking soda H_2O , observing and recording what I see.

Observation:

When I placed the leads into the H_2O with sugar in it, nothing happened. Sugar is covalent (non metal) so it does not conduct electricity meaning no reaction happens. When I placed the leads in the H_2O with baking soda in it, the leads slowly started to have bubbles forming and rising from the ends. This happened because baking soda is ionic (metal) and therefore conducts electricity, forming a closed circuit back to the battery. The baking soda and electricity separated the Hydrogen molecules and the Oxygen molecules from each other, causing the visible bubbles I saw during the experiment. The Oxygen molecules, having a negative charge, was attracted to the positive charge lead, since opposite charges attract. The same thing happened with the positively charged hydrogen molecules, being attracted to the negative lead.