Physical Science
Physical Science Sample Lab Report

Objective or Purpose:

Learn about the difference between atoms and molecules

Hypothesis:

Molecules will be broken down in order to observe the difference between atoms and molecules

Materials:

- A small, clear glass
- Baking soda
- Tap water
- A 9-volt battery
- Two 9-inch pieces of insulated copper wire
- Scissors
- Electrical tape
- A spoon
- Safety goggles

Procedure:

A glass was filled ¾ full of tap water. A teaspoon of baking was added and dissolved. Two 9 inch lengths of insulated copper wire were prepared by removing a ¼ inch of the insulation from each end of both wires. Then one end of each wire was connected to the two terminals on the battery and secured with electrical tape. The other ends of the wires were immersed in the baking soda/water solution so that the bare end of each wire was completely submerged. After allowing the experiment to run for about 10 minutes noting what occurred to each wire, the wires were removed from the solution. Then it was noted which wire had changed colors and to which battery terminal it was connected. Changes to the color of the solution was also noted.

Data and Observations:

(Draw or describe how wire 1, wire 2 and the solution looked at the beginning of the experiment)

(Draw or describe how wire 1, wire 2 and the solution looked at the 10 minute mark of the experiment)

Results:

When the ends of the wire were put into the glass, bubbles formed on the wires. The bubbles formed on both wires. After 10 minutes, the wire hooked to the positive

end of the battery turned blue-green. In fact, the whole solution in the glass had a faint blue-green tint to it. The wire hooked to the negative end of the battery did not turn colors at all.

Discussion and Conclusion:

In this experiment, two wires were hooked up to the two sides of a battery. When those wires were put in a solution of baking soda and water, bubbles formed on the wires. As time went on, the wire hooked to the positive side of the battery turned a blue-green color. Eventually, the whole solution turned blue-green. The wire hooked to the negative side of the battery did not turn colors.

Two things went on during the experiment which caused these results. First, the electricity from the battery broke water molecules down into their constituent atoms, hydrogen and oxygen. The bubbles were the hydrogen and oxygen forming. The other thing that happened was the formation of the blue-green color. That happened because copper atoms in the wire were linking up with oxygen, carbon, and hydrogen atoms in the solution to form copper hydroxycarbonate, which is the same stuff that turns copper statues (like the Statue of Liberty) green.

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