Phase change lab

Environment, Water

We have worked with hot plates and thermometers in other labs before, so we know how to be safe. I wonder what a graph of the changing temperatures over time between the phases would look like. Hypothesis Based on prior learning, I predict that the graph of the water phase changes will not be one straight slope, but instead will plateau, or be flat, and then slope between the change of ice to water, plateau and slope once more between the change of water to steam, and then plateau once more.

If we record the temperature of the H2O at regular Intervals, then we will be able to make the predicted graph. Procedure List of Materials: 1 thermometer (Tot 100 OIC 1 beaker (250 or 400 ml), 1 hot plate, CE (enough to fill the beaker), tap water (about 25 ml 1 graduated cylinder (optional), safety goggles, lab apron, at least 1 rag (to clean up spills), pencil/pen, notebook/paper, graph paper, and access to an electrical outlet. Steps: 1. Prepare a data table to collect measurements from the lab.

Make sure to put the dependent and independent variables in the correct place. 2. Fill the beaker with ice and add a small amount of water (about 25 ml) 3. Place the beaker on the hot plate with the hot plate TURNED OFF. 4. Take two temperature measurements of the Ice/ water slurry 30 seconds apart. 5. Do not let go of the thermometer. 6. Do not let the thermometer touch the beaker's sides or bottom. 7. Turn the hot plate on to about 6 (about halfway). 8. Collect temperature measurements every 30 seconds.

The plateaus were not completely flat and fluctuated between 2 degrees of temperature. We didn't get to record measurements after reaching 100 co because we ran out of time and our outlet wasn't working. Analysis 2. Phase

changes are happening to the water during the " flat" areas of the graph. 3. The water is heating up during the slanted areas of the graph. 4. More than one phase of water is present in the " flat" areas of the graph. 5. The heat from the hot late is converted to energy when the water is changing from ice to liquid. 6.

The heat from the hot plate is changing the temperature of the water when it is only liquid. 7. The graph would have a slower change in temperature over time if we had twice the amount of water, so the graph would be longer horizontally. My hypothesis was confirmed because our data that showed minuscule fluctuating temperatures for the plateaus and the rise/Jump in temperature for the slopes. However, I had not initially accounted for the slight drop of temperature in the beginning due to the ice lolling the water because the water was room temperature.

I learned that plateau points on the graph do not stay only one temperature but instead fluctuate. We did have a possible margin of error due to possible inaccurate temperature readings, not exact temperature readings, inconsistent time, and not exact time intervals. If we do this experiment again, we can try changing the temperature of the initial water added or the amount of water added to see if we produce any noticeable differences. Watching H2O change phases took longer than I though!