Chem 1 Hour\_\_\_\_\_ Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Dr. Wexler
Lab: Heat Curve of Water
Date:

**Objectives:**
Determine how the temperature of ice water changes during heating.

**Materials:**
Glass beaker, water, ice, thermometer, bunsen burner, wire pad, ring stand

**Procedure:**1. Fill beaker half way with ice and half way with water.

2. Place thermometer in ice-water mixture. Stir **gently** with the thermometer.

3. When the temperature does not get any lower, place onto wire pad on ring stand.

4. While stirring gently, record temperature at time intervals, starting at 0 time. Stirring will help distribute added heat energy from the Bunsen burner.

5. Record temperature at 30 second (0.5 min) time intervals in the results table below. Once the ice is melted you no longer need to stir. Leave the thermometer in the beaker and continue taking temperature readings.

6. Record the timing of physical state transformations (when melting is almost complete and when full boiling occurs) in the notes section of the results table.

**Results:**Track temperature as a function of time:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Time (min) | Temperature (°C) | Notes |  | Time (min) | Temperature (°C) | Notes |
| 0 (before heating) |  |  |  | 7.0 |  |  |
| 0.5 |  |  |  | 7.5 |  |  |
| 1.0 |  |  |  | 8.0 |  |  |
| 1.5 |  |  |  | 8.5 |  |  |
| 2.0 |  |  |  | 9.0 |  |  |
| 2.5 |  |  |  | 9.5 |  |  |
| 3.0 |  |  |  | 10.0 |  |  |
| 3.5 |  |  |  | 10.5 |  |  |
| 4.0 |  |  |  | 11.0 |  |  |
| 4.5 |  |  |  | 11.5 |  |  |
| 5.0 |  |  |  | 12.0 |  |  |
| 5.5 |  |  |  | 12.5 |  |  |
| 6.0 |  |  |  | 13.0 |  |  |
| 6.5 |  |  |  | 13.5 |  |  |

Discussion Questions:

1. Based on your results, what is the melting (freezing) point of water? Explain why your results are slightly different from the ideal melting point of 0°C.
2. Based on your results, what is the boiling point of water? Explain why your results are slightly different from the ideal boiling point of 100°C.
3. How do you think your results for freezing point and boiling point would change if you dissolved salt in the ice water? Why do you think this? Try the experiment if you have time.
4. Create a graph plotting time vs. temperature