**Exploring Heat and the Motion of Particles**

**Purpose**: To demonstrate the motion of particles

**Materials**: 3 small beakers, ice, hot water, room temperature water, dark food coloring, 2 thermometers

**Procedures**:

1. Fill a small beaker about 2/3 full of water at or near room temperature
2. Place one drop of dark food coloring on the surface of the water.  **Do Not Stir!** Make observations below (observations 1 and 2)
3. Fill a second beaker about 2/3 full of water. Add an ice cube to the water. Leave it in the water for 2-3 minutes, then remove it. Use a thermometer to find the temperature of the water and record it in degrees C below (observation 3)
4. Fill a third beaker about 2/3 full of hot water, use a thermometer to find the temperature of the water and record it below (observation 3)
5. Remove the thermometers from the water.
6. Place the beakers side by side.
7. Wait until the water movement stops, then add one drop of food coloring to the hot water and one drop of food coloring to the cold water. Make observations and record them below (observations 3 and 4).

**Observations**:

1. How does the food coloring behave in the beaker with room temperature?
2. Write a hypothesis that tells what effect you think hot or cold water would have on the rate at which the coloring mixes?
3. What is the temperature of the cold water in degrees C?

What is the temperature of the hot water in degrees C?

1. In which beaker (hot or cold water) are the particles moving faster?

In which beaker did the mixing appear to take place faster?

**Conclusion**: In your own words, explain your observations.