

Scientific method(diffusion lab)

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Experiment: At this experiment we are investigating does the temperature affect how quickly the particles diffuse to an even concentration throughout the water, we are going to do this experiment by using food coloring to see how quick the food coloring diffuse in hot water and cold water. Materials: • • • • • • One beaker Hot plate Ice Water Food coloring Thermometer Timer Eye dropper Hypothesis: I think the food coloring will spread faster, because the particle in the hot water have more kinetic energy than the cold water, so it will spread faster.

Particles at a higher temperature are moving faster than particles at a lower temperature, that is one of the law in particle theory. It spread slower in cold water, because the particles is moving slower than the hot water, when the water cool down the particles start to lost kinetic energy and they slowly clump together and vibrate. Procedure: First gather all the materials we need for the experiment, then pour 40ml cold water into the beaker.

Wait for the temperature even out, then measure and record the temperature. After that use the eye dropper to collect some food coloring drip 4 drops into the beaker, record the amount of time needed for the food coloring to reach an even concentration throughout the cold water beaker. After the food coloring reach an even concentration, write what much time it takes to reach that. Next empty the beaker and add 40ml room temperature water from the tap into the beaker. Measure and record the temperature.

Repeat the steps where we start using the eye dropper to drip 4 drops of food coloring into the beaker to where the food coloring spread evenly. Empty the beaker and heat up some water on the hot plate at level 2. After ? ve minutes of heating on the hot plate, pour 40ml of hot water into a beaker.

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Repeat the steps where we start using the eye dropper to drip 4 drops of food coloring into the beaker to where the food coloring spread evenly. Last step, empty the beaker and replace all lab materials.

Observation: When I start to drip 4 drops of food coloring, I saw the food coloring spread faster in the hot water, it take eight minutes and 45 seconds to reach equal concentration through the beaker. I pull the food coloring after the water is boiled, and I can feel the heat was coming in the air, that mean it got many energy in the water to make the food color spread faster, it take three minute and ten second to reach an equal concentration. For the cold water it take eleven minutes and 48 seconds to an reach equal concentration with the temperature 9 Celsius. It take eight minute and 45 second for the room temperature water to reach an equal concentration. Conclusion: After this experiment I found that the food coloring spread faster in hot water, and it spread slower in the cold water, because the hot water had more energy and molecular movement in the warm water, particles at a higher temperature are moving faster than particles at a lower temperature, that is one of the law in particle theory.

Diffusion is a process by which particles move from an are of high concentration to an area with low concentration, to explain why this happen because particles are always bouncing off each other, and an area witha high concentration of particles would be harder for a particle to bounce into than the one with very few particles.

When I come up with the hypothesis I think of everything that we learn inscienceclass, and I do research on the internet, so I came up that the particles inside the hot water is moving faster, and I thought that the cold

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water will spread slower, because when state change liquid to solid the particles start to lose energy and they slowly clump together and vibrate , as the particle theory said the higher temperature the faster it moves.

Water Temperature Time Cold Water 9 Celsius 11: 58 min Hot Water 60 Celsius 3: 10 min Room Temperature Water 20 Celsius 8: 51 min Does Temperature affect how quick the food coloring to reach an equal concentration?