Inspiring Greatness

ISD

INDEPENDENCE SCHOOL DISTRICT

High School Science Virtual Learning

College Chemistry At Home Labs

May 15th, 2020

High School College Chemistry
Lesson: May 15th, 2020

Objective/Learning Target:
The Learner will have the opportunity to reinforce concepts learned in previous lessons with simple labs they can perform themselves with things commonly found at home.

Bellringer

1. What causes surface tension in a liquid?

2. How is surface tension related boiling?

Bellringer Answers

1. The surface tension is caused by the intermolecular forces between the molecules.

2. Generally the stronger the intermolecular forces the higher the boiling point.

Lab

Materials needed:

Experiment #1
Plate or shallow bowl
Milk
Food coloring
Q-tip
Dish Soap

Experiment #2
Cup of coffee
Stirrer
Soap

Experiment #3
Bowl of water
Cardstock
Q-tip
Dish Soap

Experiment #4
Glass or mason Jar filled with water
Card Stock
Window screen for extra part

Experiment #5
Glass of H_2O
Paper Clip/pen spring
Q-Tip and dish soap

Lab (cont)

Experiment #6
Dropper
Water
Penny

Experiment #7
PARENT'S PERMISSION
Dropper
Water
Pan
Stove

Lab

If you are going to try experiment #7 MAKE SURE YOU HAVE YOUR PARENT'S PERMISSION
Watch the following Video and follow along, if you get good results of #1 take a picture and email your teacher.
Seven Science Experiments with Surface Tension-Physics Girl(3:27)

Dianna Cowern is Physics Girl. She has a Physics Degree from MIT and worked in research before becoming a full-time science communicator. Check out more here, PhysicsGirl.org

Cool example of Experiment #7

DO NOT TRY THIS AT HOME!

Dip your hand in molten lead without being burned!(5:52)

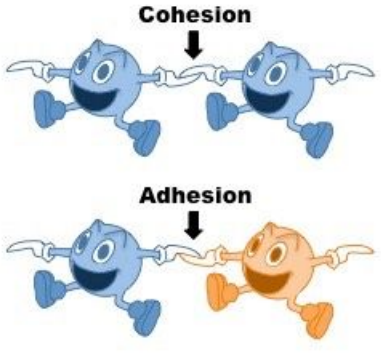
Questions

Use the internet to look up the and define the following which are related to surface tension.

1. Cohesion or Cohesive force
2. Adhesion or Adhesive force
3. Capillary action

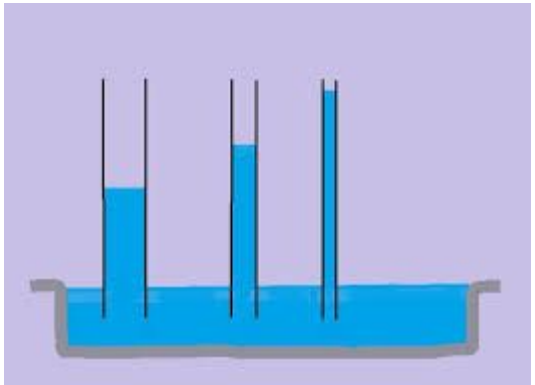
Answers

1. Cohesion is the intermolecular attraction between molecules of the same substance.
2. Adhesion is when the intermolecular attraction between a material (like Water) and another substance, like the wall of its container or surface, is stronger than the attraction to itself.



Answers

3. Capillary action occurs when the adhesive force causes the water or other liquid to climb up a small tube. The smaller the tube the higher it climbs. This is what causes the meniscus in a graduated cylinder, the opposite happens with mercury because it has greater cohesion than adhesion. Coloring has been added to the water to make it more visible.



More practice

Check out these questions from Khan Academy