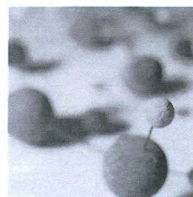


Solutions Bead Lab

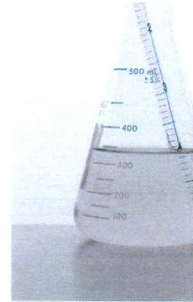


Purpose: In the following lab you will simulate making a solution using beads. The beads represent pure substances used to make the solution. This activity will help you better understand what is happening at the particle/molecular level as substances dissolve.



Dissolve

**To pass or cause to pass
into solution**



**Salt dissolves in water
and water has the
ability to dissolve salt**

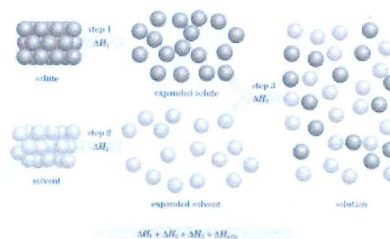


Solution

A mixture in which particles of one or more substances are distributed uniformly throughout another substance



The Solutions Song - Mr. Edmonds



Directions:

- 1. Obtain a Petri dish. Place some of the larger sized beads in the bottom of the dish. Add as many as you can so that they only make one layer. No beads should be overlapping, every bead must be touching the bottom of the dish.**



Can you see any part of the bottom of the Petri dish?

Why or why not? Explain.



Drop 4 or 5 of the smaller beads into the Petri dish with the beads.
The larger beads represent water molecules and the smaller beads represented salt molecules.



Questions:

- a. When you dropped in the beads, where did they go?**

- b. Could you fit more small beads in the Petri dish without beads overlapping or making a new layer? Why or why not?**



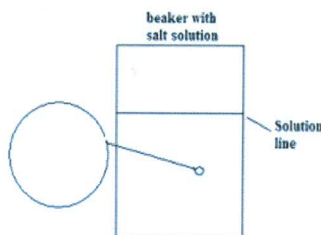
Disassociation of Salt



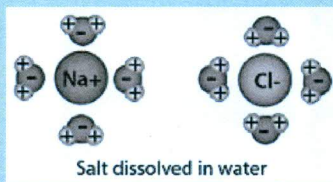
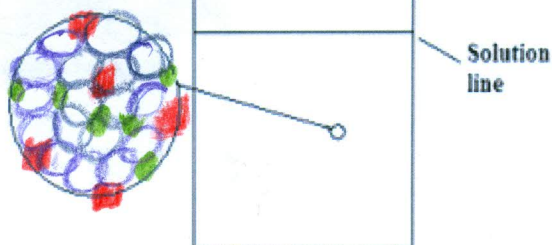
When salt dissolves in water it breaks apart into Na^+ and Cl^- . The large circle in the picture below represents a small area of a salt solution blown up. In the large circle draw a picture of what you think happens to the Na^+ and Cl^- atoms when they dissolve in water. Use the following symbols to draw your picture. Note in the questions above the larger beads represent the water molecule and the smaller beads could represent the Na^+ and Cl^- .

○ = Water molecule

■ = Na^+ atom
● = Cl^- atom

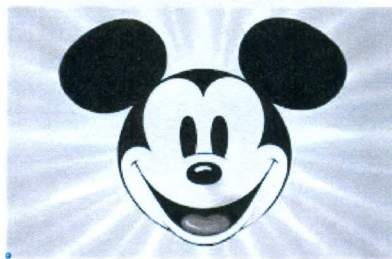


○ = Water molecule ⊙ = Hydrogen + Oxygen
Salt { ■ = Na⁺ atom ● = sodium
 ● = Cl⁻ atom ● = chlorine



How does salt dissolve in water?

How Water Dissolves Salt



- 1. Place a layer of marbles on the bottom of the Tupperware dish. Again do not add too many so they overlap.**
- 2. Add a layer of the larger size beads (water beads) on top of the marbles.**
- 3. Add another layer of marbles.**



Questions:

- a. Can you see the beads in between the marbles?**
- b. Where do most of the beads go in relation to the marbles?**
- c. This simulation is different than the first one in the Petri dish. This one is supposed to simulate the sand and water. Which object (marble or bead) do you think represents the sand and which represents the water? Explain.**



Suspension

A mixture in which small particles of a substance are dispersed throughout a gas or liquid. If left undisturbed, the particles are likely to settle to the bottom. The particles in a suspension are larger than those in a solution. Muddy water is an example of a suspension.

