Name_____ Period _____ Date _____

Solutions

STEM Sims

Lesson 2: Mixing Different Phases

Solvents dissolve solutes. If a solid solute dissolves in a liquid solvent, the solid looks like it "disappears" into the liquid. However, the liquid merely breaks up the solid into pieces too small to be seen to form a solution. If the solid remains undissolved, the system is a heterogeneous mixture.

Doing the Science

1. Start the Solution Simulation by clicking on the "Sim" tab.
2. Click on the bottle containing H_2O to add the liquid to the beaker.
3. Note that all of the solids are in white containers on the top shelf.
4. Click on the bottle containing I_2 to add the solid to the water in the beaker. Click the "Stir" button.
5. A solution has a uniform composition with no solid remaining, while in a heterogeneous mixture the solid remains undissolved on the bottom of the beaker. Record in Table 1 whether the system in the beaker is a solution or heterogeneous mixture.
6. Click the "Reset" button to begin your next mixing.
7. Repeat the process and mix H_2O with each of the solids, one at a time. Make sure to record your results in Table 1.
8. Repeat the process again, this time mixing CCl_4 with each of the solids, one at a time. Make sure to record your results in Table 1.

Table 1.

Solvent	Solute	Results (Circle your response)	
H_2O	I_2	Solution	Heterogeneous Mixture
H_2O	KCl	Solution	Heterogeneous Mixture
H_2O	KNO_3	Solution	Heterogeneous Mixture
H_2O	NaCl	Solution	Heterogeneous Mixture
H_2O	Na_2CO_3	Solution	Heterogeneous Mixture
H_2O	$CaCO_3$	Solution	Heterogeneous Mixture
H_2O	Mystery Solid	Solution	Heterogeneous Mixture
CCl_4	I_2	Solution	Heterogeneous Mixture
CCl_4	KCl	Solution	Heterogeneous Mixture
CCl_4	KNO_3	Solution	Heterogeneous Mixture
CCl_4	NaCl	Solution	Heterogeneous Mixture
CCl_4	Na_2CO_3	Solution	Heterogeneous Mixture
CCl_4	$CaCO_3$	Solution	Heterogeneous Mixture
CCl_4	Mystery Solid	Solution	Heterogeneous Mixture

Do You Understand?

1. A general "rule of thumb" in investigating solutions is that "like substances dissolve other like substances." If this is the case, which of the substances you tested are most alike? Which substances are most different?