

Student Worksheet

Mixtures and Nanotechnology

Introduction:

Mixtures do not always contain the same proportions of the substances that they are composed of. This makes them different from a substance. The classification of mixtures depends on the size of the particles that make them up and how these particles are distributed within the mixture.

Objective:

After completing the worksheet you will be able to produce a graphic representation of all the information gathered.

Materials

- Set of cards
- Painter tape
- Large sheets of paper
- Assorted markers

Procedure

Part A:

1. Separate the cards you have been given into groups based on a classification scheme that your group decides on. List below your groups and the characteristic on which the divisions were made.

Characteristic _____

Groups

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2. Using markers and a sheet of chart paper, list your classification groups and tape to the wall.
3. Look at other groups sheets taped to the wall. Discuss among your group differences that you see.

Part B:

1. Gather up cards and separate cards into two groups. One will be Homogeneous Mixtures and one will be Heterogeneous Mixtures. List the cards under each group below.

Heterogeneous

Homogeneous

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2. Using markers and a sheet of chart paper, list your classification groups and tape to wall.

3. After discussion with other groups make any changes in your groups that you feel are needed.
 4. Write a definition for Homogeneous and Heterogeneous Mixtures
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Part C:

1. Gather up cards from the Heterogeneous Mixture group. Do not disturb the cards in the other group. You will need them later. Separate the cards in your heterogeneous mixture into two groups, colloids and other heterogeneous mixtures.

Colloids	Other Heterogeneous Mixture

2. Using markers and a sheet of chart paper, list your classification groups and tape to wall.
 3. After discussion with other groups make any changes in your groups that you feel are needed.
 4. What characteristic did you use to separate the colloids from the other heterogeneous mixtures? _____
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5. Write a definition for colloids. _____
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Part D:

1. Complete the following chart by placing the terms below in the square where they belong: Beaten egg white, Blood, Butter, Cheese, Cloud, Colored gems, Dust in air, Floating soap, Fog, Gelatin, Marshmallows, Milk, Smoke, Spray deodorant, Whipped cream

Title of Chart: _____

Dispersed Particles	Dispersing Medium		
	Solid	Liquid	Gas
Solid			
Liquid			
Gas			

2. After placing all terms on the chart decide on a title for the chart.
3. Discuss with your group which substances above would the following terms go with: sol, emulsion, foam, aerosol.

Write a definition for each term:

1. Sol
2. Emulsion
3. Foam
4. Aerosol

Part E:

1. Look at the cards in the homogeneous group. What makes them different from the cards that are in the colloid or other heterogeneous mixture group? _____
- 2 Complete the following chart by placing the terms below in the square where they belong. Air, Antifreeze, Carbonated water, Dental amalgam, Ocean water, Steel, Vinegar
Title: _____

Solute	Solvent		
	Solid	Liquid	Gas
Solid			
Liquid			
Gas			

2. After placing terms on chart, as a group, decide on a title for the chart.

Analysis Answer the questions below

1. How is a compound similar to a homogeneous mixture? How is it different?
2. Distinguish between a substance and a mixture. Give two examples of each.
3. Describe the differences between colloids and suspensions.
4. Why do the words “Shake well before using” indicate that the fruit juice is a suspension?

5. In terms of suspensions and colloids, compare and contrast a glass of milk and a glass of fresh squeezed orange juice.
6. Do any classification schemes have anything to do with sizes? Explain.
7. Do the sizes of particles determine how substances behave? Explain.
8. Could the settling out of particles and the scattering of light be used to separate any of the cards?

Concluding Activity

Summarize the information that you learned today on this sheet incorporating the diagram below. Be sure to use terms correctly.

