

A Scientific Exploration

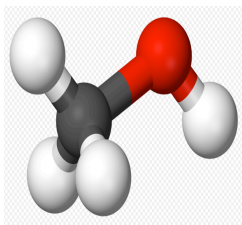
Materials: methanol, ethanol, propanol, NaCl, CaCl₂, Temperature Probe, Paper Towels, Computer, Ice, beaker(s)

QUESTION ONE: What is the relationship between size and how well molecules attract each other?

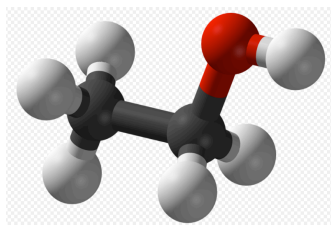
Procedure: Use the materials listed to determine the relationship between molecular size and how much they attract each other.

CONSIDER THE MOLECULES. NOTICE that all have similar polarities.

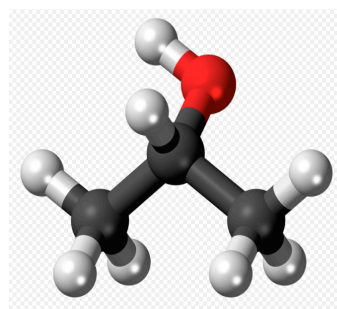
Methanol



Ethanol



Propanol



CONCLUSION QUESTION.

1. What was your conclusion in regard to the relationship between size and intermolecular attraction?
2. Why did you come to this conclusion? Attach EVIDENCE.
3. Plastics are made largely of non-polar molecules. Based on your results, would you say that plastics are made of large, or small molecules?

(OVER)

QUESTION TWO:

A: How does adding solute to solvent (like salt to water) affect freezing point?

B: Does the type of salt make a difference?

Procedure: Using the materials provided, determine how adding a solute to ice affects the freezing point of the solvent.

USE .2 moles of each salt and about 300 ml of ice.

MAKE THREE LINES ON YOUR GRAPH BECAUSE YOU WILL NEED A CONTROL.

CONCLUSION QUESTIONS

1. How did adding a solute (NaCl or CaCl₂) affect the freezing point of the ice?
2. Were the results the same for both salts?
3. Which salt had the greater effect?
4. Which salt breaks into more pieces when it dissolves?
5. Why might the road crews use calcium chloride in the winter when the temperature is exceptionally low?

TURN IN: THIS SHEET AND TWO GRAPHS