Solubility Stations

# Soluble? Why?

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| *Take necessary notes for this station in this box.* |

Directions: Diagram and describe your observations for the following solutes, solvents, and solutions. Then determine if the molecules are polar or nonpolar and if the two substances form a solution or not.

1. Oil and Water

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| --- | --- | --- | --- |
|  | **Solute: \_\_\_\_\_\_\_\_\_\_\_\_\_** | **Solvent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **3 Observations each** |  |  |  |
| **Particle diagram** |  |  |  |
| **Solubility…** | **Polar or Nonpolar?** | **Polar or Nonpolar?** | **Solution Formed: yes/no?** |

**2.** Salt and Water

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| --- | --- | --- | --- |
|  | **Solute: \_\_\_\_\_\_\_\_\_\_\_\_\_** | **Solvent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **3 Observations each** |  |  |  |
| **Particle diagram** |  |  |  |
| **Solubility…** | **Polar or Nonpolar?** | **Polar or Nonpolar?** | **Solution Formed: yes/no?** |

**3.** Your choice of 2 substances

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Solute: \_\_\_\_\_\_\_\_\_\_\_\_\_** | **Solvent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **3 Observations each** |  |  |  |
| **Particle diagram** |  |  |  |
| **Solubility…** | **Polar or Nonpolar?** | **Polar or Nonpolar?** | **Solution Formed: yes/no?** |

# Energies of Solution Formation (Do station 1 first)

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| *Take necessary notes for this station in this box.* |

1. Decide whether liquid hexane (C6H14) or liquid methanol (CH3OH) is the more appropriate solvent for the substances grease (C20H42) and potassium iodide (KI).

2. Choose one of the mixtures from station 1 and…

a. ..describe (words and/or drawings) the intermolecular forces of the two substances separately

b. …describe (words and/or drawings) the IMF of the two substances interacting when mixed

c. …predict the amount of energy of solution formation required (high/low) and explain why.

# Solubility Factor- Structure

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| *Take necessary notes for this station in this box.* |

1. Compare and contrast vitamins C and A in terms of molecular structure, polarity, and solubility in water and fats. Provide supporting particle diagrams.

# Solubility Factor- Pressure

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| *Take necessary notes for this station in this box.* |

1. Why does shaking a bottle of soda cause the soda to fizz/explode when opened? (Include the relationship between solubility and pressure, as well as a particle diagram to support your answer)

# Solubility Factor- Temperature

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| *Take necessary notes for this station in this box.* |

1. Why does using water as an industrial coolant cause problems for the aquatic life, especially the organisms living closer to the surface of the water? (Include the relationship between temperature and solubility and at least 1 environmental issue that could arise in this scenario.)