LECTURE # 6: MAKING SOLUTIONS: SOLUTES AND SOLVENTS

When you mix two substances and they form a solution, you say that one substance dissolves in the other substances.

Solutions have 2 parts:

Solute – the substance that dissolves (found in less amounts)
Solvent – the substance in which the solute dissolves (found in the greatest amounts)

Dissolving – to mix completely: the solute dissolves into the solvent

Different States of Solutes and Solvents (Examples)

<table>
<thead>
<tr>
<th>Solutions</th>
<th>Solutes</th>
<th>Solvent</th>
<th>State (solute)</th>
<th>State (solvent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>Oxygen, carbon dioxide</td>
<td>nitrogen</td>
<td>Gas</td>
<td>Gas</td>
</tr>
<tr>
<td>Soda water</td>
<td>Carbon dioxide</td>
<td>Water</td>
<td>Gas</td>
<td>Liquid</td>
</tr>
<tr>
<td>Vinegar</td>
<td>Acetic acid</td>
<td>Water</td>
<td>Liquid</td>
<td>Liquid</td>
</tr>
<tr>
<td>Filtered ocean water</td>
<td>Sodium chloride</td>
<td>Water</td>
<td>Solid</td>
<td>Liquid</td>
</tr>
<tr>
<td>Brass antifreeze</td>
<td>Zinc</td>
<td>Copper</td>
<td>Solid</td>
<td>Solid</td>
</tr>
<tr>
<td></td>
<td>Alcohol</td>
<td>Water</td>
<td>Liquid</td>
<td>Liquid</td>
</tr>
</tbody>
</table>

Properties of Solutions

Homogeneous. It is a mixture of one phase only. The components are well mixed that all parts of the solute appear the same. Solutions have the same composition and properties throughout.

- The solute cannot be separated from solvent through filtration
- A solution is often clear and transparent.

Soluble

- If the particles of the solute are more attracted to the particles of the solvent.
- Dissolving occurs.
- The solute is said to be soluble in that solvent (i.e. Solution)

Insoluble

- If the particles of the solute are more attracted to their own particles than the solvent particles.
- Dissolving does NOT occur.
- The solute is said to be insoluble in that solvent (i.e. Mechanical)