Frayer Models

Terry Blanch & Jeff Spraggins: Physical Science
Concept Word

Definition

Examples

Characteristics

Non-Examples
Chemical Properties

Framework for Learning
**Def:** the ability of a substance to transfer energy from one place to another.

Typically think of conductivity in terms of heat or electricity.

- How well a substance can allow charge to move through it (current).
- Substance can transfer electrical or thermal energy efficiently.

<table>
<thead>
<tr>
<th>Conductivity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Examples</strong></td>
</tr>
<tr>
<td>Copper (Cu)</td>
</tr>
<tr>
<td>Solution of NaCl</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Non-Examples</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass (SiO₂)</td>
</tr>
<tr>
<td>Pure H₂O</td>
</tr>
</tbody>
</table>
**Def:** the state in which a substance becomes evenly distributed throughout a solution

Think of sugar in water.

- Solvent molecules are attracted to the substance being dissolved.
- Substance spreads out and becomes surrounded by solvent molecules

**Examples**
- Sugar in water.
- Solution of NaCl

**Non-Examples**
- Glass (SiO₂)
- Oil
Chemical Bonding

Framework for Learning
**Def:** A type of chemical bond between atoms that gained or lost electrons; a bond between ions.

- Metal atoms ‘give up’ their valence electrons to non-metal atoms.

**Ionic Bonding**

<table>
<thead>
<tr>
<th>Examples</th>
<th>Non-Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>NaCl</td>
<td>O₂</td>
</tr>
<tr>
<td>CaBr₂</td>
<td>CO</td>
</tr>
</tbody>
</table>

- Made of metal and non-metal atoms.
- Dissolves in water.
- Conducts electricity when dissolved but not when solid.
**Def:** A type of chemical bond that is formed when valence electrons are shared between some atoms.

- Creates small stable units within the substance.
- Made of nonmetal atoms
- Some dissolve in water, some don’t
- Do not conduct electricity
- Tend to be liquids, gases, or soft solids

**Examples**

<table>
<thead>
<tr>
<th>Molecular Covalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
</tr>
<tr>
<td>H₂S</td>
</tr>
</tbody>
</table>

**Non-Examples**

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>KBr</td>
</tr>
<tr>
<td>MgCl₂</td>
</tr>
</tbody>
</table>
**Def:** a type of chemical bond that is formed when valence electrons are shared between all surrounding atoms.

Atoms are covalently connected with each other in all directions-like a grid or network.

- Made entirely of nonmetal atoms
- Does not dissolve in water
- Do not conduct electricity
- Very hard solids

**Examples**

- SiO₂
- Diamond (C)

**Non-Examples**

- CO₂
- NaI
**Def:** A type of chemical bond that is formed when valence electrons are shared between all atoms in the substance.

Valence electrons are free to move throughout the substance like a ‘sea’ of electrons.

- Made entirely of metal atoms
- Does not dissolve in water
  - Conducts electricity
  - Bendable Solids

**Examples**
- Copper (Cu)
- Bronze (Cu and Sn)

**Non-Examples**
- Graphite (C)
- H₂O