



Chemical Reactions Ws #3: Reactions in Aqueous Solutions

8 1

- There are several “tendencies” in reactants that drive them to form products. These are called “Driving Forces”. List the four main driving forces that pull reactants toward products.
 - formation of a solid
 - formation of water
 - transfer of electrons
 - formation of a gas
- Define a strong electrolyte.
A substance that dissolves in water by dissociating completely into ions.
- What is contained in the resulting solution when ionic compounds dissolve?
ions
- A solid ionic compound must have a zero net charge and they contain only 2 types of ions. One of these ions is a positively charged ion called a cation and the other ion must be a negatively charged ion called a(n) anion.
- What happens to the reactants that do not form a product?
They remain as ions in the solution.
- Do oppositely charged ions in water always react to form a solid?
No
- Define the following terms:
 - soluble solid A solid that readily dissolves in water
 - insoluble solid dissolves to such a small degree that it is not detectable to the naked eye
 - slightly soluble solid the same as insoluble
- Use the solubility rules to determine which of the following salts are soluble and which are insoluble in water. Circle all the salts that would form a precipitate in aqueous solution.

NaNO ₃	BaCO ₃	AgCl	KCl	LiOH
(NH ₄)SO ₄	CaSO ₄	NaBr	HgBr ₂	Ca(OH) ₂

- What is the name for the ions that do not participate directly in a reaction in solution? **Spectator ions**
- What is included in a net ionic equation? **Only those components that are directly involved in the reaction**

8 2 A

- Give the Arrhenius definition of Acid and Base.
Acid – A substance that produces H⁺ ions (protons) when it is dissolved in water
Base – A substance that produces hydroxide ions (OH⁻) in water.
- When strong acids and strong bases are mixed, the product is always water.
- Water is a very stable compound. The hydroxide ion has a high affinity for the Hydrogen ion.

8 2 B

- By what process do neutral atoms become ions? **An electron is transferred from the metal atom to the non-metal atom**
- The reaction of a metal with a nonmetal to form an ionic compound involves the transfer of one or more electrons from the metal.
- What is the name for the type of reaction that involves a transfer of electrons? **Oxidation-Reduction**

8 3 A

- Write an example of a chemical equation for each driving force.
Formation of a solid: $K_2CrO_4(aq) + Ba(NO_3)_2 \rightarrow BaCrO_4(s) + 2KNO_3(aq)$
Formation of water: $HCl(aq) + KOH(aq) \rightarrow H_2O + KCl(aq)$
Transfer of electrons: $2Li(s) + F_2(g) \rightarrow 2LiF(s)$
Formation of a gas: $Zn(s) + 2HCl(aq) \rightarrow H_2(g) + ZnCl_2(aq)$

8 3 B

- How can you tell if a reaction in aqueous solution produces a gas? **Formation of bubbles**
- What is a single replacement reaction? **A reaction in which a single**
- What is a combustion reaction? **A chemical reaction involving oxygen as one of the reactants that produces enough heat so that a flame results**
- What is another name for a synthesis reaction? **combination**
- What is the name for a reaction in which a compound is broken down into simpler compounds or all the way to the component elements? **Decomposition**