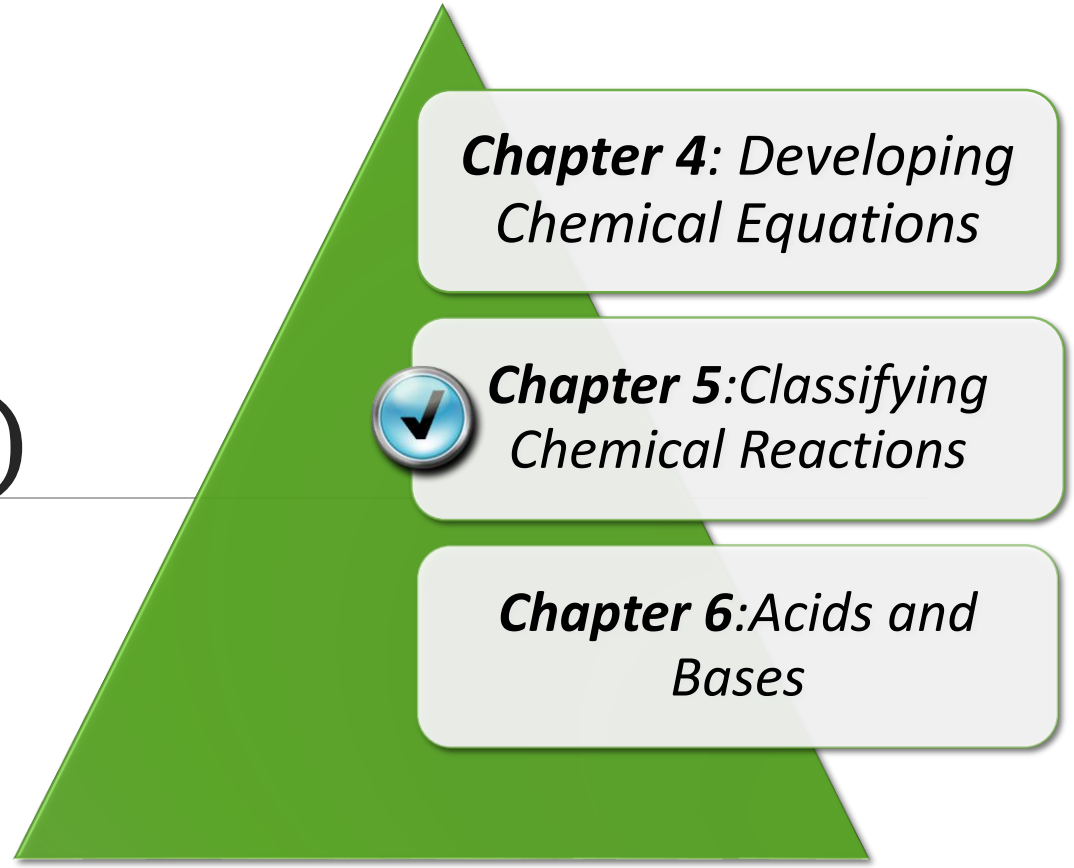
Unit 1: Chemistry (5.1)

SNC2DP

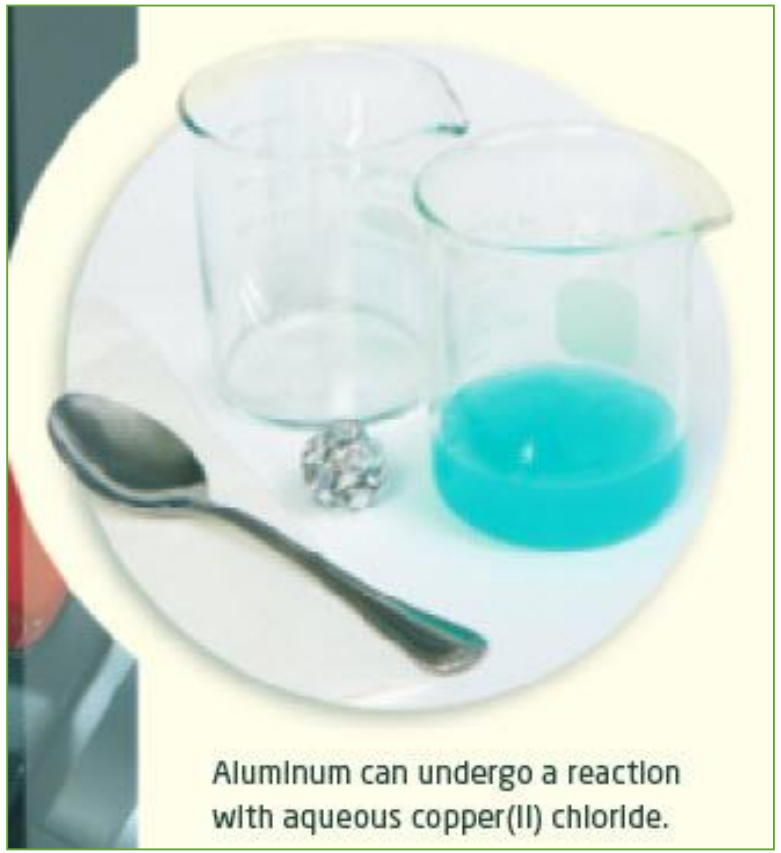


Classifying Chemical Reactions

In this chapter, you will:

- ***describe*** *evidence of chemical reactions*
- ***identify*** *reactants and products of the four reaction types*
- ***discuss*** *chemical reactions associated with environmental concerns*

Demo



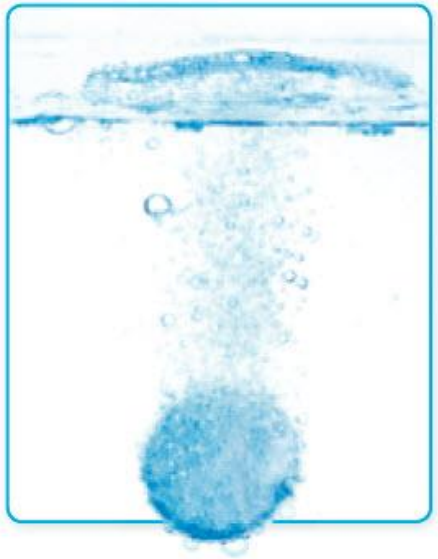
Aluminum can undergo a reaction with aqueous copper(II) chloride.

- What changes do you observe?
- Why is this a **chemical change**?
- What were the **reactants** and **products**?
- What happens to the mass of reactants and products during the reaction?

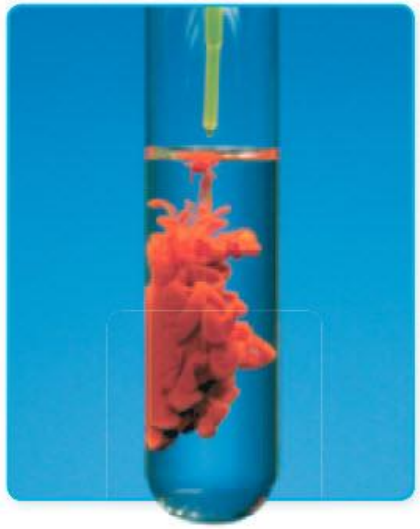
Identifying a Chemical Change

How do you know if a chemical change has occurred?

The formation of a gas



The formation of a precipitate and a change in colour



A change in odour

The production of light and heat

Types of Chemical Reactions

There are five main types of chemical reactions:

1) Synthesis Reaction

2) Decomposition Reaction

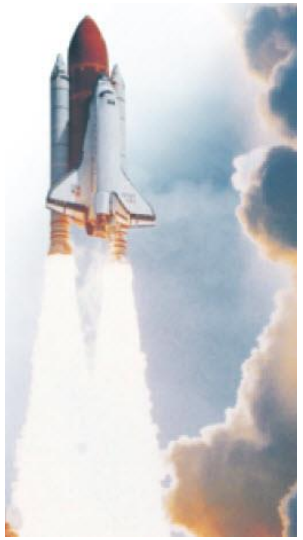
3) Single Displacement Reaction

4) Double Displacement reaction

5) Combustion reaction

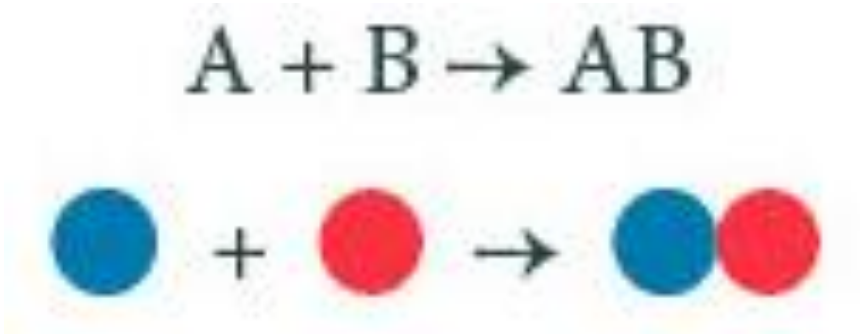
Synthesis Reaction

Synthesis reaction:



The shuttle "blast off"

$2H_2(l) + O_2(l) \longrightarrow 2H_2O(g)$



The production of "smog"

$N_2(g) + O_2(g) \longrightarrow 2NO_2(g)$

Solving a Synthesis Reaction

Rules for Solving a Synthesis Reaction:

1. Determine the charges of both reactants.
2. Cross-over method between the reactants to determine the chemical formula of the product.
3. Write the skeleton equation with all appropriate subscripts.
4. Balance the chemical equation by using coefficients.

Complete the following chemical reaction:

Let's Practice!

Complete and balance the following synthesis reaction:

1) $Ca\ (s) + N_2\ (g) \longrightarrow$

2) $Cs\ (s) + P_4\ (s) \longrightarrow$

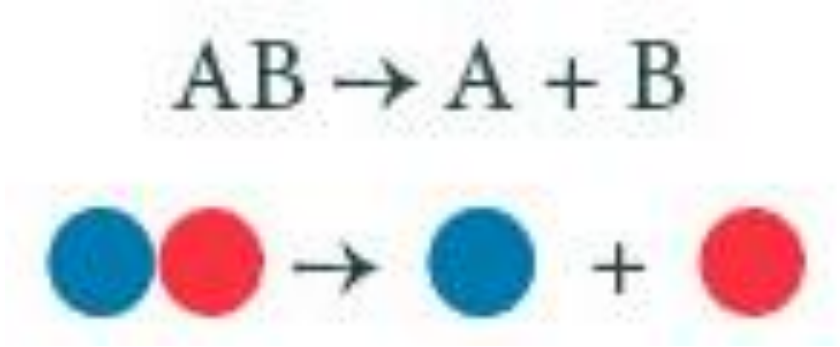
3) $Al\ (s) + F_2\ (g) \longrightarrow$

Decomposition Reaction

Decomposition reaction:

The electrolysis of water

$$2H_2O(l) \longrightarrow 2H_2(g) + O_2(g)$$



Decomposition of sodium azide

$$2NaN_3(s) \longrightarrow 3N_2(g) + 2Na(s)$$

Solving a Decomposition Reaction

Rules for Solving a Synthesis Reaction:

1. Separate the reactant into separate elements. DO NOT include their subscripts. .
2. Determine if there are any diatomic molecules. If so, represent those elements with a subscript of 2. (e.g Cl_2)
3. Write the skeleton equation with all appropriate subscripts.
4. Balance the chemical equation by using coefficients.

Complete the following chemical reaction:

$MgF_2(s) \longrightarrow$

Let's Practice!

Complete and balance the following decomposition reactions.

1) $AuCl_3$ (s)

2) Li_2O (s)

3) CsCl (s)

HOMEWORK

- Complete the worksheet given in class
- Textbook: p.189 # 7 & 8