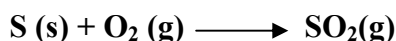


INORGANIC CHEMISTRY

Elements and compounds **react with** each other in numerous ways. Almost every inorganic chemical reaction falls into one or more of four broad categories.

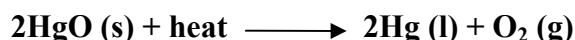
I. Combination Reactions

Two or more **reactants form** one **product** in a combination reaction. An example of a combination reaction is the formation of **sulfur dioxide** when sulfur is burned in air:



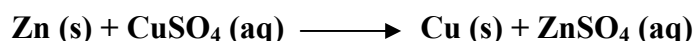
II. Decomposition Reactions

In a decomposition reaction, a compound **breaks down** into two or more substances. Decomposition usually results from **electrolysis** or **heating**. An example of a decomposition reaction is the **breakdown of mercury (II) oxide** into its component elements.



III. Single Displacement Reactions

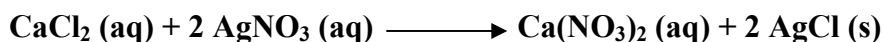
A single displacement reaction is characterized by an atom or ion of a single compound **replacing** an atom of another element. An example of a single displacement reaction is the displacement of copper ions in a **copper sulfate solution** by zinc metal, forming **zinc sulfate**:



Single displacement reactions are often subdivided into more specific categories, e.g., **redox reactions** - chemical reactions which involve oxidation and reduction.

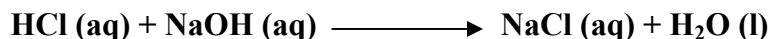
IV. Double Displacement Reactions

Double displacement reactions also may be called **metathesis reactions**. In this type of reaction, elements from two compounds displace each other to form new compounds. An example of a double displacement reaction occurs when solutions of **calcium chloride** and **silver nitrate** react to form **insoluble silver chloride** in a solution of **calcium nitrate**.



V. Neutralization reaction

A **neutralization reaction** is a specific type of double displacement reaction that occurs when an **acid** reacts with a **base**, producing a **solution of salt and water**. An example of a neutralization reaction is the reaction of **hydrochloric acid** and **sodium hydroxide** to form **sodium chloride** and water:



Remember that reactions can belong to more than one category. Also, it would be possible to present more specific categories, such as **combustion reactions** or **precipitation reactions**.

Work to do:

1. Read the following article.
2. What is the meaning of the words in bold?
3. What are the main types of inorganic chemical reactions?
4. What is the difference between: Chemical reaction and Chemical equation
5. What is the meaning of the following abbreviations? (s) (g) (l) (aq)