

Introduction to Chemistry 1 : Notes-10

Some basic definitions:

Matter - It is anything that has mass and volume.

Mass - It is the quantity of matter.

Atom - These are the smallest indivisible components of matter.

Element - It is made up of one type of atom.

Molecule - It is a particle made up of more than one type of atom.

Compound - It is a substance composed of two or more atoms in a definite proportion.

Chemical Reaction - This occurs when one or more compounds react to form one or more new compounds. Energy is released or absorbed when a chemical reaction happens.

A Brief History of Chemistry.

Democritus first suggested that matter was made up of small indivisible particles which he called atoms.

Aristotle suggested that matter was composed of the four elements; earth, air, fire, and water.

Alchemists were the first chemists. They made many discoveries in chemistry. At this time (before 1700), it was believed that chemistry was more magic than science. They tried to find the "philosopher's stone" which could turn base metals (lead, iron, copper) into gold.

Robert Boyle used the scientific method in his investigations. He distinguished between elements and compounds.

Henry Cavendish prepared hydrogen gas by adding metals to an acid.

Joseph Priestley prepared oxygen gas from a mercury compound.

Antoine Lavoisier explained combustion (burning). Combustion is a chemical reaction where a substance combines with oxygen. He first stated the Law of Conservation of Mass.

Alessandro Volta invented the battery. He used it to break apart water into hydrogen and oxygen.

Humphry Davy discovered several elements including sodium and potassium.

John Dalton published his "Atomic Theory". He stated that:

- 1) Matter is composed of small indivisible particles called atoms.
- 2) Atoms of the same element are similar. They have the same mass. Atoms of different elements have different masses.
- 3) Compounds are formed when atoms combine in a certain ratio.
- 4) Atoms cannot be created or destroyed.

Dimitri Mendeleev arranged the elements in a table in which elements in a column have similar properties. This is the periodic table. The Periodic Law is:

If the elements are arranged according to their atomic masses, then similarities occur in the properties of the elements periodically. That is columns of atoms in the periodic table have similar properties.