



Lewis Kossel's Theory of Carbon Chemical Bonding

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DESCRIPTION

Living things on earth are formed mostly of carbon containing compounds and this type life was known as "carbon-based" life. Chemist's isolated substances from organisms (plants and animals) as in form of different type of matter that could not be synthesized artificially and these substances were thus known as organic compounds. Urea synthesis was an important discovery of biochemists because shows up that a compound was produced in nature only by using biological organisms could be produced in a laboratory conditions from inanimate materials.

Fermentation used to create wine and also making of soap, both of which have been used by society. Evidence has shown the Babylonians, as early as 2800 BC, were making soap by mixing animal fat and wood ashes. In 19th century the chemical compounds are used for preparing of soap and it was discovered by Eugene Chevreul. In this reaction now called as saponification where fats are heated in the presence of a strong base (KOH or NaOH) to produce fatty acid salts and glycerol. The fatty acid salts are soaps which improve water ability to dissolve grease.

Theories on chemical bonding

Kossel and Gilbert Lewis were first explained the theory of chemical bond formation in the year 1916 on the basis of inertness of the noble gases.

Lewis theory of chemical bonding

- The outer shell having a maximum of eight electrons which occupy the corners of a cube which surround by the 'Kernel'.
- Atoms can be stable by forming chemical bonds with other atoms. This chemical bonds can be formed either by gaining or losing an electron
- Electrons present in the outer shell are known as valence electrons which take part in the formation of chemical bonding.

Kossel's theory of chemical bonding

- Noble gases separate the electronegative halogens and electropositive alkali metals.
- Halogens form negatively charged ions through gaining an electron. Whereas in case of alkali metals they can form positively charged ions by losing an electron.
- Negatively charged ions and positively charged ions having noble gas configuration which contains 8 electrons in their outermost shell.
- Charges attract each other unlike charged particles which are held together by a strong force of electrostatic attraction existing between them.
- Chemical bond is an attraction between the atoms, molecules or ions which enables the formation of the molecules. The bond may results from either electrostatic force between the oppositely charged ions as in ionic bonds or by sharing of electrons as in covalent bonds.

Chemical bonds are typically classified following types:

- Ionic bonds obtained from electrostatic forces that exist in between the ions of opposite charges. These types of bonds typically involve with metal and a non-metal ions.
- Covalent bonds obtained by sharing of electrons between two atoms. These bonds typically involve 1 nonmetallic element with another.
- Metallic bonds are seen in solid metals such as copper, iron and aluminum. Along with each metal, atom bonded to several neighboring metal atoms and the bonding electrons and they are free to move throughout 3-dimensional structure.
- Molecular bonding is a type of bonding which involves in sharing of electrons by two adjacent atoms.
- Nucleus composed of two kinds of particles. Protons which carrier's positive electric charge in the nucleus and other nuclear particle is the neutron. As its name implies that the particle carries no electrical charge. Its mass is also almost

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same as that of proton. Most of nuclei contain equal numbers of neutrons and protons.

Atomic and mass number

Atomic number of an element in the periodic system is arranged in order of increasing number of protons in the nucleus. Number of protons, is equal to the number of electrons in the neutral atom, and is also called as atomic number.

The mass number equals to the sum of numbers of protons and number of neutrons in the nucleus. It is sometimes represented by a symbol A.

In today times, about 115 different elements have discovered. Each one is chemically unique in nature. To understand that why they are so unique, must need to understand the structure of an atom (fundamental, individual particle of the element) and characteristics of its components. Atoms which consist of electrons, protons, and neutrons.

- Proton and electron have electrical charge which is identical in magnitude but opposite in sign. Relative charges of -1 and +1 are given to the electron and proton.
- Neutrons having same mass as protons but without charge. They are electrically neutral in nature.
- Mass of the proton or neutron is 1836 times greater than mass of the electron. Protons and neutrons constitute to mass of atoms.

CONCLUSION

The discovery of the electron and the proton was important step to the development of model of the atom and provides a great case study in the application of the scientific method. In fact, the detection of the atom's structure is one of the excellent detective stories in the history of science.