

NIELS BOHR'S MODEL OF AN ATOM

In 1913 Niels Bohr proposed a shell model which explained the stable motion of electrons around the nucleus in discrete orbit. The atom is made of three sub-atomic known as **protons, neutrons and electrons**. In this model, the electrons revolve around the nucleus in defined orbits.

PROTONS: Protons are **positively charged particles**. They were discovered by Ernest Rutherford inside a nucleus.

ELECTRONS: Electrons are **negatively charged particles**. They were discovered by J.J Thomson.

NEUTRONS: Neutrons are **neutrally charged particles**. They were discovered by James Chadwick.

THE NUCLEUS: The nucleus contains positively and neutrally charged particles called **protons** and **neutrons** respectively

DISCRETE ORBITS: The discrete orbits in which electrons revolve around the nucleus is called **SHELLS**.

The shells are named in alphabets starting from the letter **K, L, M, N...** or in numbers **1, 2, 3...**



When the electrons revolve in these discrete orbits or shells, they do not radiate energy and therefore do not fall into the nucleus.

VALENCY: Valency refers to the number of electrons on the outermost shell. These electrons are called **Valence Electrons**.

NUMBER OF ELECTRONS IN SHELLS: Each shell has a certain number of electrons that it can accommodate. This certain number can be obtained by using the following equation: $2n^2$ where n = the shell number.

Ex: K shell = $2n^2$

$$2 \bullet 1^2 = 2$$

Therefore, the number of electrons in K shell is 2.