

Atoms & the Periodic Table

Section I: Atomic Structure

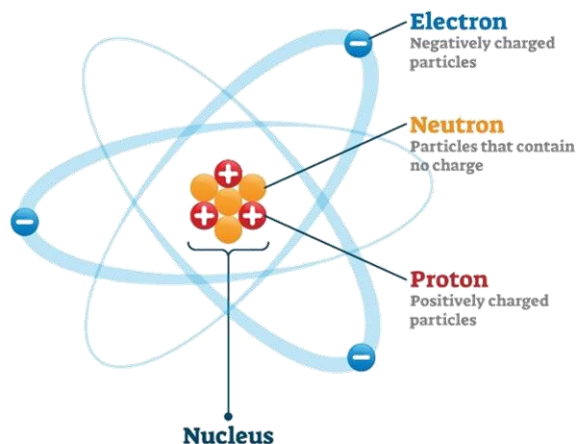


An **element** is matter that is composed of one type of atom. It cannot be broken down into smaller parts. Each element is made up of building blocks called atoms. All elements exist as solid, liquid, or gas under normal conditions. Elements are abbreviated in scientific shorthand with either a letter or a pair of letters called a chemical symbol. For example, Fe is the chemical symbol for iron.

An **atom** is the smallest piece of matter that still has the element's properties. Atoms are too small to be seen and consist of small particles called protons, neutrons, and electrons. Every element has a unique number of **protons** with a positive electric charge. Protons attract negatively charged **electrons**. A **neutron** is neutral or has no charge. It weighs the same as a proton but more than an electron. The **nucleus** is located at the center of the atom and consists of protons and neutrons. Electrons surround the nucleus. Protons and neutrons are made up of smaller particles called **quarks**. Six quarks are known to exist.

The **electron cloud** model shows electrons traveling in specific energy levels around a nucleus in a fuzzy cloud. Electrons closest to the nucleus have low energy, and electrons farther away have high energy. The last energy level can hold a maximum of 8 electrons except in helium and hydrogen.

ATOMS



Review:

1. Identify three characteristics of elements.
2. Define proton, neutron, and electron.
3. What is the electron cloud model?