Science for Kids
The Atom

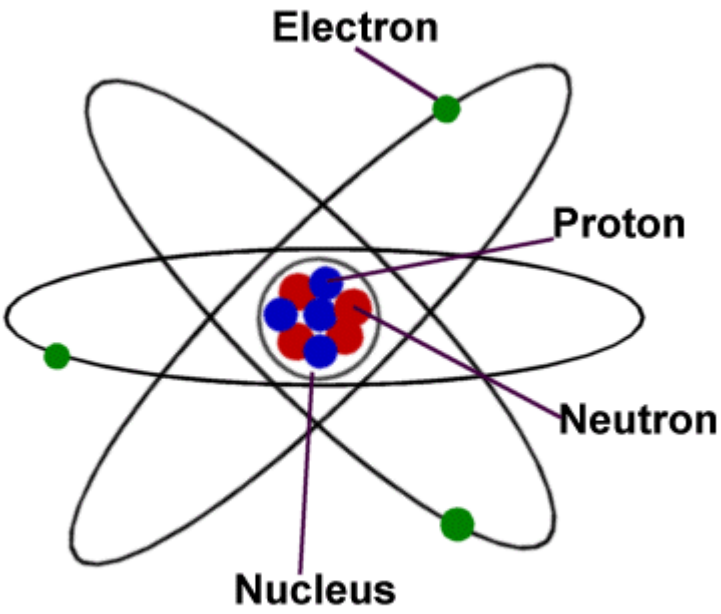
The atom is the basic building block for all matter in the universe. Atoms are extremely small and are made up of a few even smaller particles. The basic particles that make up an atom are electrons, protons, and neutrons. Atoms fit together with other atoms to make up matter. It takes a lot of atoms to make up anything. There are so many atoms in a single human body we won't even try to write the number here. Suffice it to say that the number is trillions and trillions (and then some more).

There are different kinds of atoms based on the number of electrons, protons, and neutrons each atom contains. Each different kind of atom makes up an element. There are 92 natural elements and up to 118 when you count in man-made elements.

Atoms last a long time, in most cases forever. They can change and undergo chemical reactions, sharing electrons with other atoms. But the nucleus is very hard to split, meaning most atoms are around for a long time.

Structure of the Atom

At the center of the atom is the nucleus. The nucleus is made up of the protons and neutrons. The electrons spin in orbits around the outside of the nucleus.



The Proton

The proton is a positively charged particle that is located at the center of the atom in the nucleus. Thehydrogen atom is unique in that it only has a single proton and no neutron in its nucleus.

The Electron

The electron is a negatively charged particle that spins around the outside of the nucleus. Electrons spin so fast around the nucleus, scientists can never be 100% sure where they are located, but scientists can make estimates of where electrons should be. If there are the same number of electrons and protons in an atom, then the atom is said to have a neutral charge.

Electrons are attracted to the nucleus by the positive charge of the protons. Electrons are much smaller than neutrons and protons. About 1800 times smaller!

The Neutron

The neutron doesn't have any charge. The number of neutrons affects the mass and the radioactivity of the atom.

Other (even smaller!) particles

- **Quark** - The quark is a really small particle that makes up neutrons and protons. Quarks are nearly impossible to detect and it's only recently that scientists figured out they existed. They were discovered in 1964 by Murray Gell-Mann. There are 6 types of quarks: up, down, top, bottom, charm, and strange.
- **Neutrino** - Neutrinos are formed by nuclear reactions. They are like electrons without any charge and are usually travelling at the speed of light. Trillions and trillions of neutrinos are emitted by the sun every second. Neutrinos pass right through most solids including humans!

Activities

Atoms and Compounds Crossword Puzzle
Atoms and Compounds Word Search
Take a ten question quiz about this page.