

The Chemistry of Life



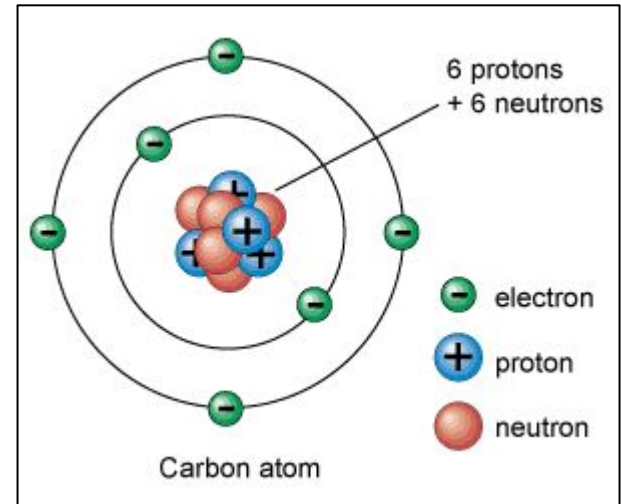
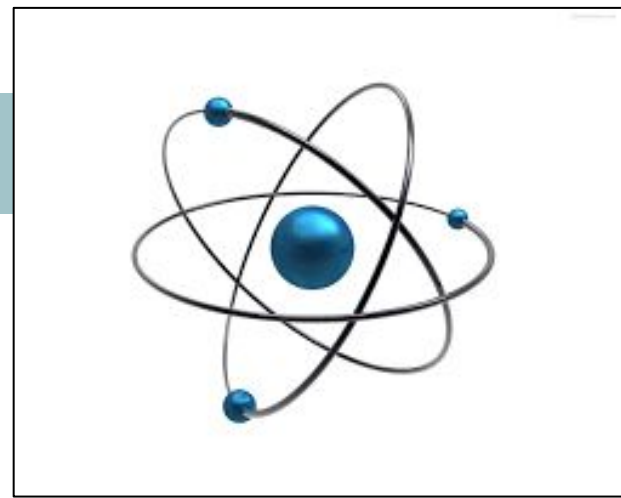
Chapter 2

The Nature of Matter

Atoms: the basic units of matter.
Greek *atomos* “unable to be cut”

Subatomic particles: parts that make up an atom.

- Proton- positive (+) charge
- Neutron- neutral (\pm) charge
- Electron- negative (-) charge



Elements & Isotopes

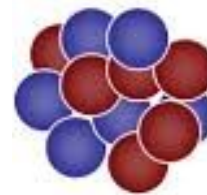
A chemical element is a pure substance that consists entirely of one type of atom.

Periodic Table of the Elements

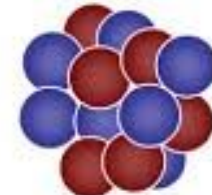
Legend:

- Alkali Metal
- Alkaline Earth
- Transition Metal
- Basic Metal
- Metalloid
- Nonmetal
- Halogen
- Noble Gas
- Lanthanide
- Actinide

Atoms of the same element that have different numbers of neutrons are called isotopes.



carbon-12
98.9%
6 protons
6 neutrons



carbon-13
1.1%
6 protons
7 neutrons



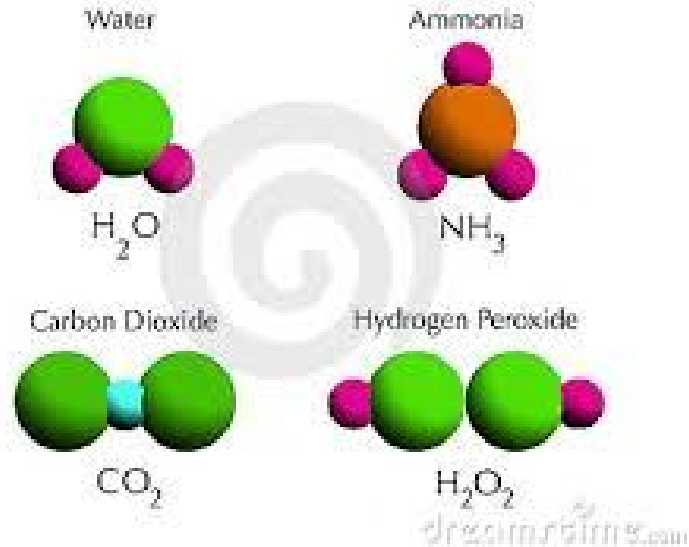
carbon-14
<0.1%
6 protons
8 neutrons

Chemical Compounds

In nature most elements are found combined with other elements.

A chemical **compound** is a substance formed by the chemical combination of two or more elements.

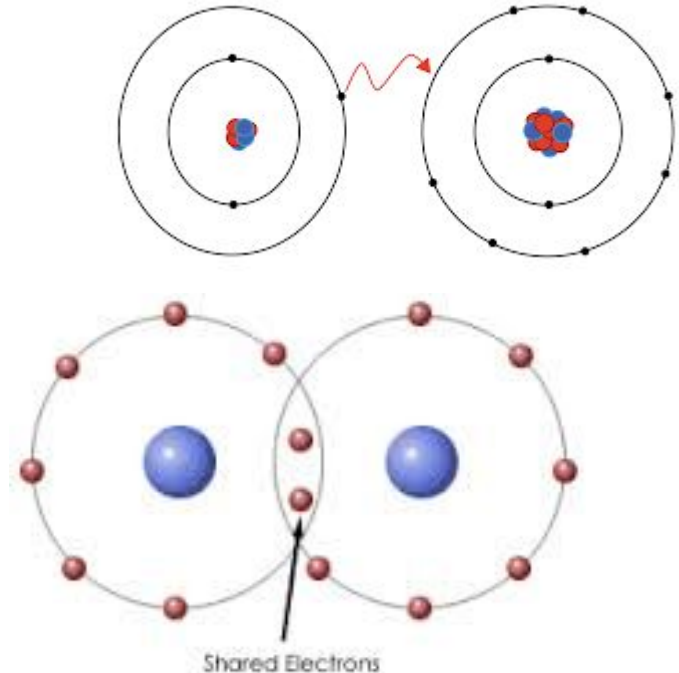
Common Chemical Compounds



Chemical Bonds

Atoms in compounds are held together by chemical bonds.

An ionic bond is formed when one or more electrons are transferred from one atom to another.



A covalent bond forms when electrons are shared between atoms.

<https://www.youtube.com/watch?v=AfXxZwNLvPA>