

## THE ATOM AND ITS STRUCTURE

An understanding of the structure of the smallest particle of matter, the atom, is very important to understanding how chemical bonds form. Remember that inside the nucleus of the atom, there are subatomic particles called *protons* and *neutrons*. Orbiting the nucleus is another type of subatomic particle, called *electrons*. Electrons are the parts of the atom that take part in chemical bonding. Chemical bonds occur when atoms gain, lose, or share electrons. Chemical reactions happen when these chemical bonds are formed or when they are broken.

Electrons move around the nucleus of an atom in **energy levels**, which are sometimes called *shells* or *orbitals*. The energy level of an electron is the area around the nucleus where the electron is most likely to be found. The energy level that is closest to the atom's nucleus is called the *first energy level*. The farther an electron gets from the nucleus, the higher the energy level it is on.

According to an early theory about the atom, the atom looks like a mini solar system. The nucleus of the atom would be the "Sun" and the electrons are the orbiting "planets." This model of the atom is called the *Bohr model*. It is named for the Danish physicist, Niels Bohr, who proposed electron shells in 1913. The Bohr model is very useful for understanding how atoms work, but it does not answer some questions about the behavior of all atoms.