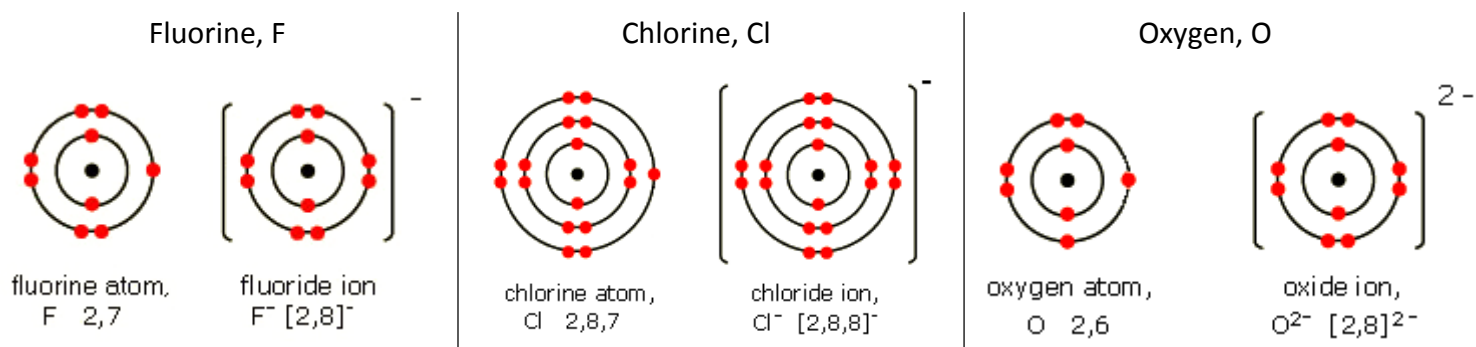




- Fluorine is in Group 7. It has seven electrons in its highest energy level. It gains an electron from another atom in reactions, forming a fluoride ion, F⁻. Note that the atom is called fluorine, but the ion is called fluoride.
- Chlorine is in Group 7. It has seven electrons in its highest energy level. It gains an electron from another atom in reactions, forming a chloride ion, Cl⁻.
- Oxygen is in Group 6. It has six electrons in its highest energy level. It gains two electrons from one or two other atoms in reactions, forming an oxide ion, O²⁻.

When metals react with non-metals, electrons are transferred from the metal atoms to the non-metal atoms, forming ions. The resulting compound is called an ionic compound.

Consider reactions between metals and non-metals, for example:

- sodium + chlorine → sodium chloride
- magnesium + oxygen → magnesium oxide
- calcium + chlorine → calcium chloride

In each of these reactions, the metal atoms give electrons to the non-metal atoms. The metal atoms become positive ions and the non-metal atoms become negative ions.

There is a strong electrostatic force of attraction between these oppositely charged ions, called an ionic bond. The animation shows ionic bonds being formed in sodium chloride, magnesium oxide and calcium chloride.

Ionic Compounds

Group 1 and Group 7 - The elements in Group 1 of the Periodic Table are called the alkali metals. They form ionic compounds when they react with non-metals. Their ions have a single positive charge. For example, sodium forms sodium ions, Na⁺. The elements in Group 7 of the Periodic Table are called the halogens. They form ionic compounds when they react with metals. Their ions have a single negative charge. For example, chlorine forms chloride ions, Cl⁻.

Sodium chloride - Ionic lattice of sodium chloride, showing positively charged sodium ions bonded to negatively charged chloride ions. Sodium chloride, NaCl, forms when sodium and chlorine react together. It contains oppositely charged ions held together by strong