

### Electron-dot formulas

Metal + non-metal → **Salt** or **Ionic compound** (like NaCl)

An electron is transferred from one atom (the metal) to another (the non-metal)

This forms an IONIC BOND between the two nuclei

Non-metal + non-metal → **Molecular compound** (like water, H<sub>2</sub>O) (see Chapter 4)

A pair of electrons are shared between two nuclei

This forms a COVALENT BOND between the two nuclei

Chemical definition of a metal: a metal is an element that reacts by giving up its valence electrons

What is electricity?

**Formulas** of binary salts formed from MAIN GROUP metals with non-metals (nomenclature)

**Ions:** An ion is a atom that carries a net charge, either positive (electron-deficient) or negative (electrons in excess)

**Section 3.2.** Terms: **ionization energy:** removing an electron from a neutral atom requires energy, Group IA metals are much more easily ionized (less energy required) than other metals and non-metals.

**Electron affinity.** The energy required for a neutral atom to acquire an electron and take on a negative charge. Fluorine is the most easily ionized of all the elements.

The octet rule. Or, for hydrogen, lithium and beryllium, the duet rule.

Properties of ionic compounds: solids, high melting point, high boiling point.

Molecular model of NaCl: cubic, each sodium ion is surrounded by 6 nearest neighbor chloride ion; each chloride ion is surrounded by 6 nearest neighbor sodium ions.

Naming salts of the transition metals. Tricky.

Names and formulas of common polyatomic ions: Must know these: hydroxide, ammonium, sulfate, carbonate, nitrate, phosphate, cyanide, hydrogen carbonate, acetate.

**Section 3.11.** Defer to Chapter 10. For now, an acid is a compound that releases H<sup>+</sup> ion in aqueous solution; a bases releases hydroxide ion (OH<sup>-</sup>) in aqueous solution.

Homework: Due 9/9. First midterm covering Chaps 2-4 will be given 9/21. Last day to drop w/o a W: Saturday, 6 September, 11:59 pm.