

## Vocabulary: Ionic Bonds



### Vocabulary

- Chemical family – a vertical column in the periodic table of elements.
  - Elements in the same family have the same number of valence electrons and have similar chemical properties.
- Electron affinity – the tendency of an atom to attract electrons.
  - Electron affinity is a measure of the energy required to remove an electron from the atom. This value is also called *ionization energy*.
  - Nonmetals are characterized by a high electron affinity, while metals are characterized by a low electron affinity.
- Ion – an electrically charged atom that has gained or lost one or more electrons.
  - An atom with more protons than electrons is a positively charged ion, or *cation*.
  - An atom with more electrons than protons is a negatively charged ion, or *anion*.
  - In an element symbol, the electric charge is shown at the upper right.
- Ionic bond – a bond formed by the attraction between two oppositely charged ions.
  - Positively charged ions attract negatively charged ions and vice versa.
  - Positively charged ions repel positively charged ions.
  - Negatively charged ions repel negatively charged ions.
- Metal – an element that is malleable and usually conducts heat and electricity well.
  - Metal atoms tend to lose electrons when forming chemical bonds.
- Nonmetal – an element that is generally a poor conductor of heat and electricity.
  - Nonmetal atoms tend to gain or share electrons when forming chemical bonds.
  - Most nonmetals are gases at room temperature.
- Octet rule – a rule of thumb that states that atoms are most stable when surrounded by eight valence electrons.
  - Metals lose valence electrons to obtain a stable configuration.
  - Nonmetals gain or share electrons to obtain a stable configuration.
  - Elements with five or fewer electrons are exceptions to the octet rule because they become stable when they have two valence electrons.
- Shell – a particular region where electrons can orbit the nucleus of an atom.
- Valence electron – an electron in the outermost shell of an atom.