

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.
- 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.
- Ionization energy – the energy required to remove a valence electron from an atom.
 - The greater the ionization energy, the harder it is to remove an electron.
 - Metals are characterized by low ionization energy and tend to lose electrons easily. Nonmetals have high ionization energy and tend to gain electrons.
- 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.