

Module 4: Bonding, Formula Writing, and Nomenclature

Topic 1 Content: Properties of a Metal Notes



Malleability

The atoms in metals can freely move and stay in contact with each other. Think of the atomic arrangement of a metal as a box of marbles. If you put something in the middle of the marbles, they move apart to allow an object to go into their midst. The row of marbles next to the object just slides around to adjust. This concept is similar to metals having the ability to change shape quite easily.



Shine

Metals have only one or two valence electrons, so they have lots of available unused orbitals. This empty space allows for movement. There are many different frequencies of energy that result in metal electrons being excited and moving into a higher energy level. When the electrons fall back to their ground state, they emit energy in the form of light. This process is responsible for the shiny appearance of metal.



Conductivity

In metals, the valence electron or electrons are very loosely held to the nucleus of their atom and so they can move to the next atom fairly easily. Each atom has a valence electron nearby. These electrons can move easily from one place to another and this movement of electrons allows for the movement of heat or electricity.