

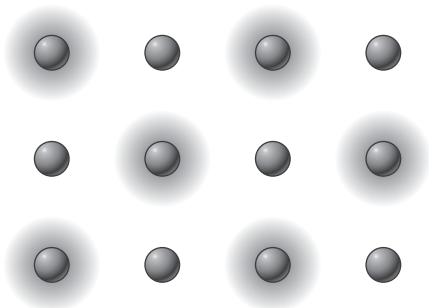
FOUR MODELS OF BONDING

Each sphere in the drawing represents an atom. The gray shaded areas represent places where the negatively charged valence electrons might be found with each type of bond.

Model 1: Ionic

Properties:

Dissolve in water
Conduct electricity when dissolved
Brittle solids
Made of metal and nonmetal atoms combined

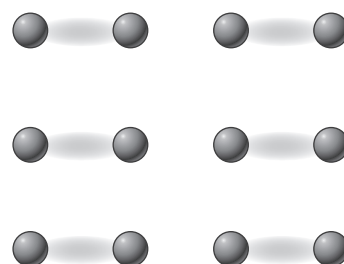


Metal atoms "give up" their valence electrons to nonmetal atoms.

Model 2: Molecular Covalent

Properties:

Some dissolve in water; some do not
Do not conduct electricity
Some are liquids or gases
Made entirely of nonmetal atoms

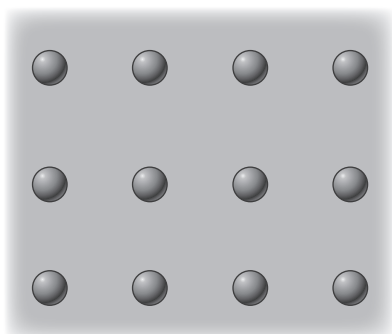


Valence electrons are shared between some atoms. This creates small stable units within the substance.

Model 3: Metallic

Properties:

Do not dissolve in water
Conduct electricity
Bendable and hard solids
Made entirely of metal atoms

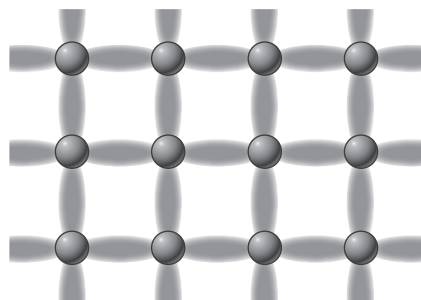


Valence electrons are free to move about the substance.

Model 4: Network Covalent

Properties:

Do not dissolve in water
Do not conduct electricity
Extremely hard solids
Made entirely of nonmetal and metalloid atoms



Valence electrons connect atoms with each other in all directions, like a grid or network.