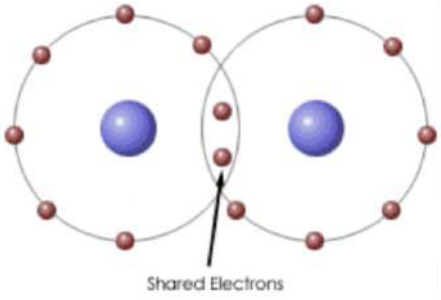
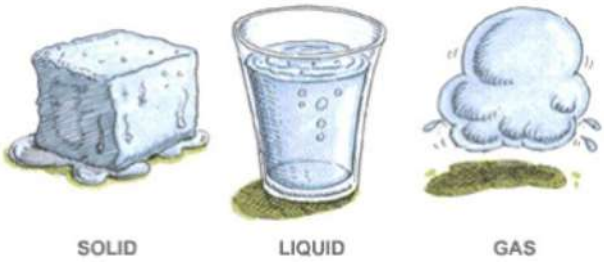
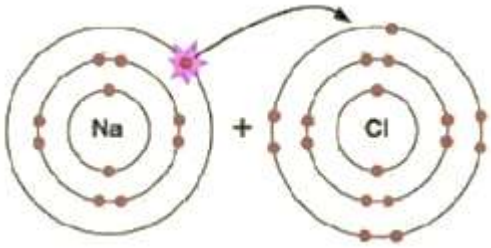
Soluble in water



Share electrons

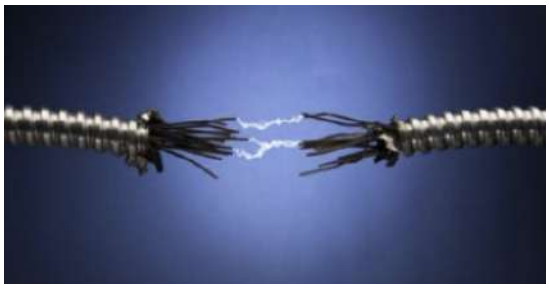


Solid at room temperature



Electrons transferred (stolen)

Forms a shiny substance



Always conducts electricty

Low melting point

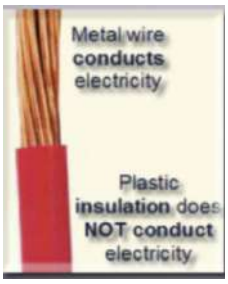
Liquid or gas at room temperature

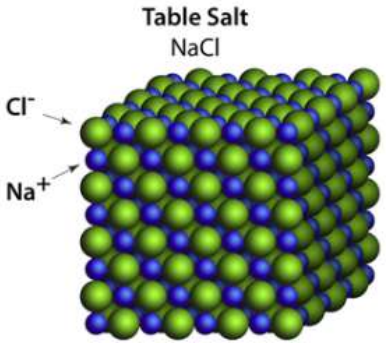
Usually not soluble in water

Very high melting point

Substance is brittle

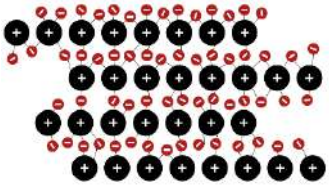
Does not form molecules or formula units, considered a single unit held together by metallic bonds

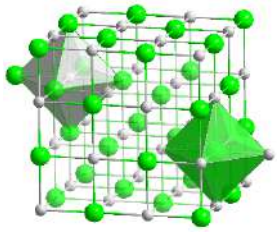




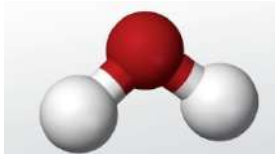
Does not conduct electricity

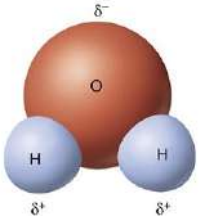
Electrons held tightly in place between atoms





Forms crystals

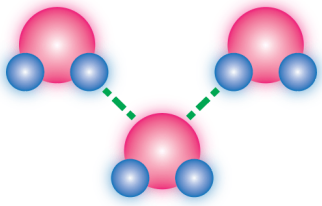




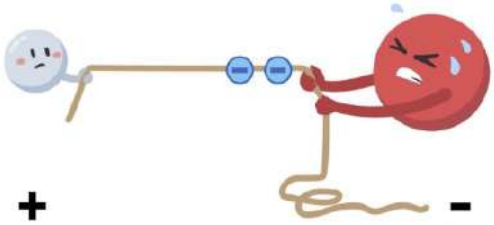
Electrons are “locked” in place between atoms

Distinct positive and negative ions are held together by electrostatic attractions

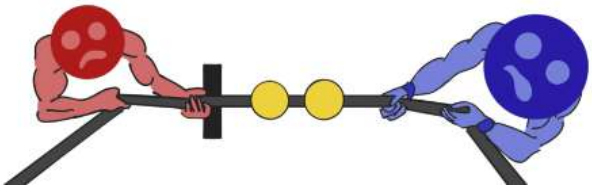
Does not form molecules, forms "formula units"



Weak Inter-molecular bond (between atoms)

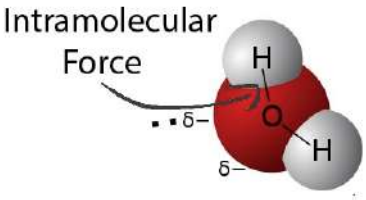


Atoms with higher electronegativity will take electrons

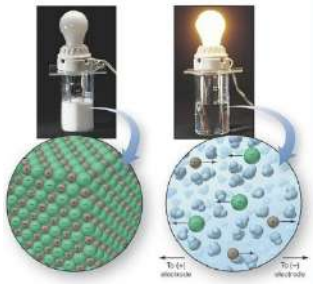


Atoms with equivalent electronegativity will share electrons

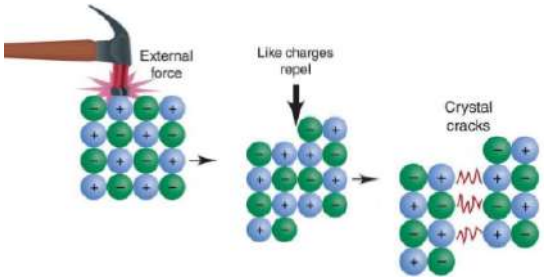
Substance formed is ductile



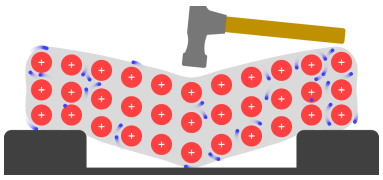
Strong Intra-molecular bond (within atoms)



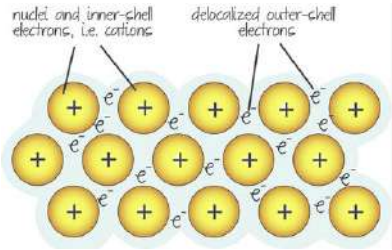
Does not conduct electricity when solid, but conducts when dissolved



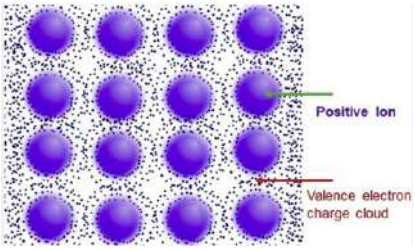
Substance can be shattered along cleavage lines



Substance formed is malleable. It deforms instead of breaking



electrons are delocalized and can move freely throughout the metal lattice

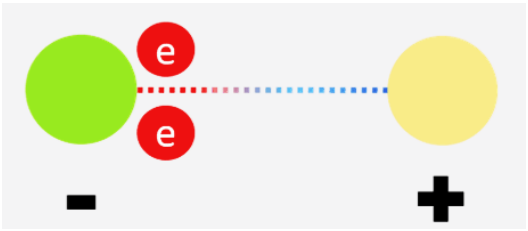


Free moving electrons easily conduct electricity

Electrons are “locked” in place between atoms

distinct positive and negative ions are held together by electrostatic attractions

High, but not the highest, melting points



When 2 non-metals bond

When a metal and non-metal form a bond

When 2 metals form a bond

Substance is strong, but brittle, can be shattered

Ionic Bond

Substance is strong, but pliable. Does not shatter, but bends

Covalent Bond

Metallic Bond

Forms molecules