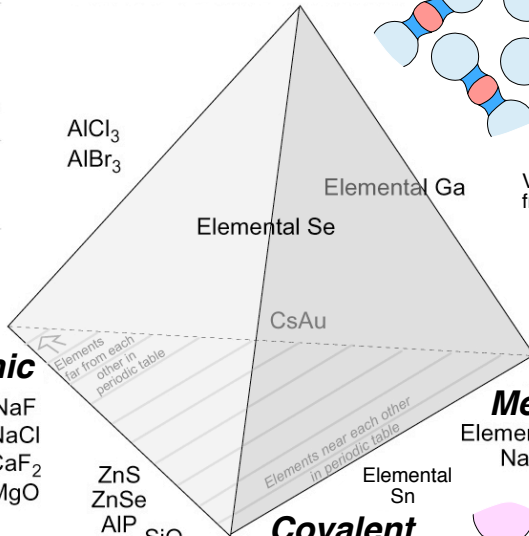
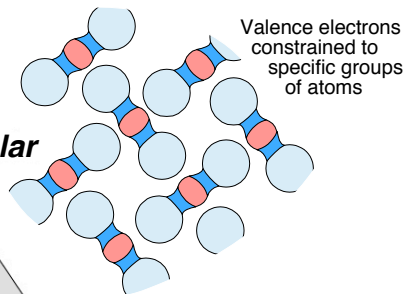


Chemical bonding II: sketches

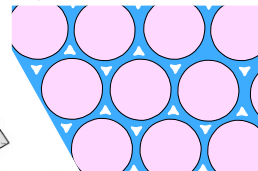
	<i>Nature of bond</i>	<i>Behavior of valence electrons</i>
Covalent bonding	Sharing of electrons between pairs of atoms (in a sense, overlap of atoms)	Valence electrons are constrained in pairs between pairs of atoms.
Ionic bonding	Electrostatic attraction of oppositely charged ions (cations and anions)	Valence electrons are constrained around each atom, some of which have gained electrons and thus have positive charge (and so are anions), and some of which have lost electrons and so have positive charge (and so are cations).
Metallic bonding	Sharing of electrons across entire solid	Valence electrons flow freely from atom to atom in all directions, so that the electrons are part of the entire solid, not of one atom.
van der Waals or molecular bonding	Weak attractions, often as result of slight localization of charge within individual molecules	Valence electrons are constrained to one group of atoms, which in some cases constitute a molecule.

Van der Waals or molecular

Solid H₂O (ice)
Solid CO₂
Solid I₂



Valence electrons flowing freely from atom to atom

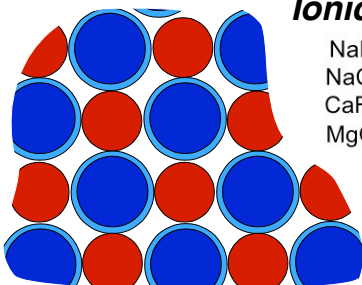


Metallic

Elemental Cu, Ag, Au
Natural Alloys

Ionic

NaF
NaCl
CaF₂
MgO



Valence electrons constrained to specific atoms, some of which have gained electrons (anions) and some of which (cations) have lost electrons.

Covalent

Diamond
SiC

Valence electrons constrained in pairs between pairs of atoms

