

Summary of Bonding and Structure

Bonding			Covalent bond			Ionic bond		Metallic bond	
Structure			Simple molecular structure	Giant molecular structure		Giant ionic lattice structure		Giant metallic lattice structure	
Example			Chlorine gas (Cl_2)	Diamond (C)	Graphite (C)	Sodium chloride (NaCl)		Aluminium (Al)	
Forces of attraction			Weak intermolecular forces of attraction between molecules	Strong covalent bonds between atoms	Strong covalent bonds between atoms + weak forces of attraction between layers of atoms	Strong electrostatic forces of attraction between oppositely charged ions		Strong electrostatic forces of attraction between positive metal ions and sea of delocalised electrons	
Figure									
Physical properties	Melting & boiling point		Low	High	High	High		High	
	Solubility	Water	Insoluble	Insoluble	Insoluble	Soluble		Insoluble	
		Organic solvent	Soluble	Insoluble	Insoluble				
	Electrical conductivity		No	No	Yes	Solid	No	Solid	Yes
						Molten	Yes	Liquid	Yes
						Aqueous	Yes		
	Others							<ul style="list-style-type: none"> • Good conductor of heat • Malleable + ductile • (pure) Soft & weak 	