CHEMICAL BONDING

Chapter -2

Prepared by Mamata Das

CHEMICAL BONDING

Chemical Bonding : Definition ,Types(Electrovalent, Covalent ans Co-ordinate bond with examples (Formation of NaCl, $MgCl_2$, H_2, Cl_2, N_2, O_2, H_2O, CH_4, NH_3, NH_4^+,SO_2)

Definition :Chemical bonding is the creation of chemical compound by forming a chemical

link between two or more atoms,molecules or ions.

Types of chrmical bond includes

a) Electrovalent Bond

b) Covalent Bond

c) Coordinate Bond

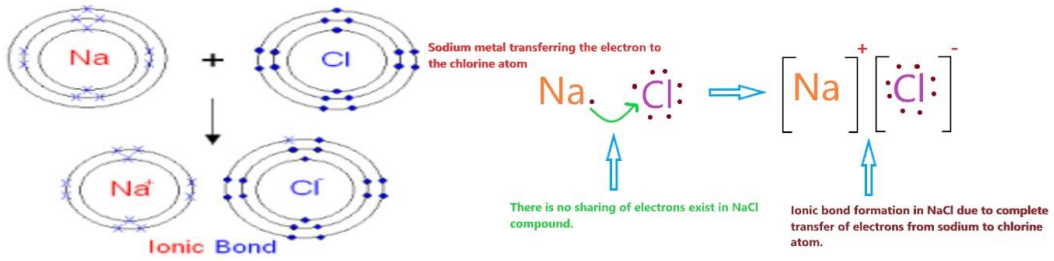
ELECTROVALENT BOND: Electrovalent bond is also called as ionic bond.It is an electrostatic attraction between two atoms.Bond is formed by completely transfer of electron from one atom to another atom.

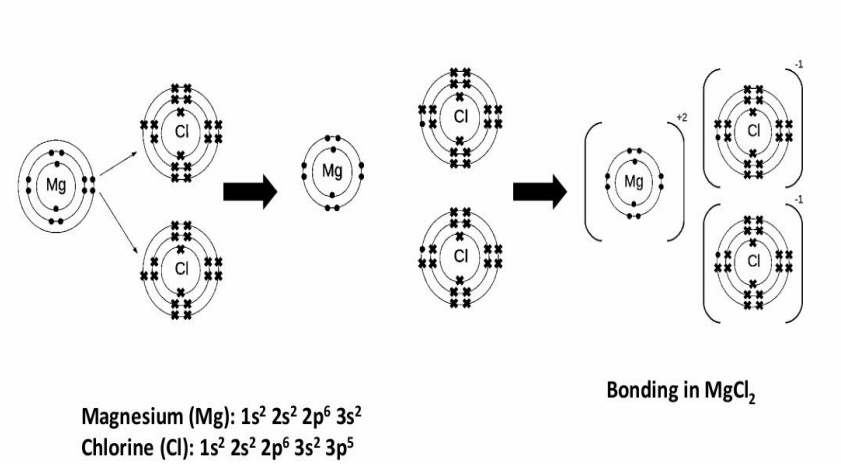
Example:NaCl,$MgCl_2$

Solubility :Polar solvent (water)

Boiling &melting point:High

Good conductor of electricity





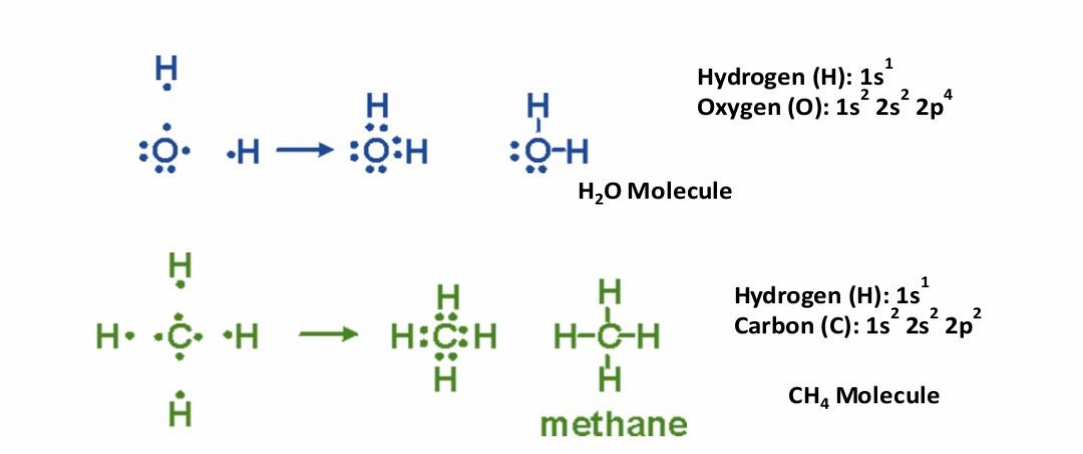
COVALENT BOND :Covalent bond is formed by sharing of electrons between two atoms.

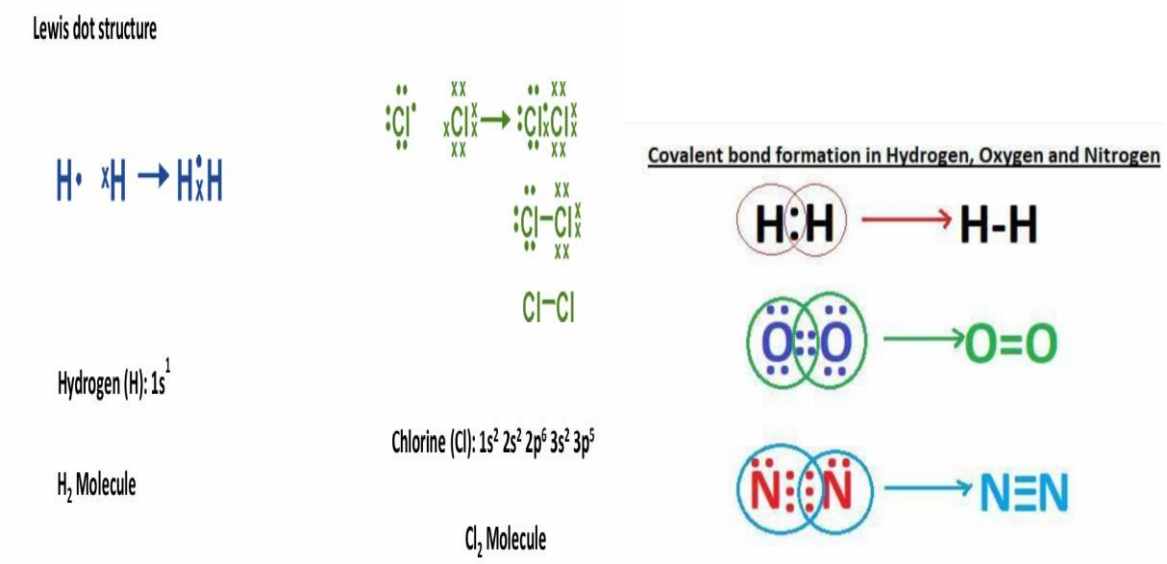
Example:N2,H2,CH4,H2O,O2,Cl2

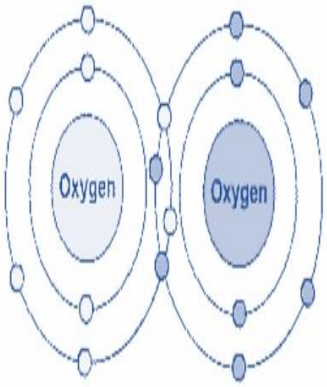
Solubility :Nonpolar solvents (benzene, chloroform, methane etc)

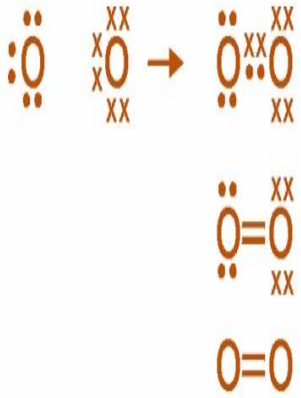
Boiling &melting point:Low

Bad conducter of electricity


Hydrogen (H): $1s^1$
Oxygen (O): $1s^2\ 2s^2\ 2p^4$
H_2O Molecule
Hydrogen (H): $1s^1$
Carbon (C): $1s^2\ 2s^2\ 2p^2$
CH_4 Molecule
methane


Lewis dot structure
Hydrogen (H): $1s^1$
H_2 Molecule
Cl–Cl
Chlorine (Cl): $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^5$
Cl_2 Molecule
Covalent bond formation in Hydrogen, Oxygen and Nitrogen
H-H
O=O
N≡N





Oxygen (O): $1s^2 2s^2 2p^4$

O_2 Molecule

IONIC BOND	COVALENT BOND
Occurs during the transfer of electrons	Occurs when 2 atoms share their valence electrons
Low or moderate electrical conductivity	Very low electrical conductivity
Non-directional bond	Directional bond
Present only in one state: solid-state	Present only in all 3 states: solid, liquid, gases
Unmoldable	Unmoldable
Higher melting point	Lower melting point
Higher boiling point	Lower boiling point
Example: NaCl, KCl, $MgSO_4$	Example: CH_4, NH_3, O_2

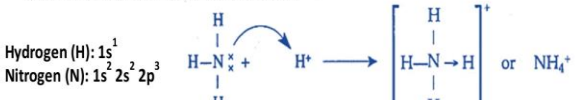
COORDINATE BOND :Co-ordinate bond is also called as covalent dative bond in which both the electrons come from same atom.Example :NH4+,SO2

Solubility :sparingly soluble in water but radily soluble in organic solvents

Boiling & melting point :Higher than covalent bond but lower than ionic bond

Poor conductor of electricity.

A coordinate bond (also called a dative covalent bond) is a covalent bond in which both electrons come from the same atom.



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