|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| COVALENT  NONPOLAR  I.C < 0.4  SYMETRICAL  **BOND TYPE** | COVALENT POLAR  I.C. 0.4 – 1.7  ASYMETRICAL | IONIC  I.C. > 1.7  GROUP 1 METAL | METALLIC  **METAL ATOM FROM LEFT OF P TABLE** | COVALENT NETWORK CRYSTAL SOLID | HYDROGEN BONDING  DIPOLE ATTRACTION | NOBLE GAS AND OTHER UNCOMBINED ATOMS |
| COVALENT EVENLY SHARED | COVALENT UNEQUAL SHARING | TRANSFER OF ELECTRON FROM METAL TO NON-METAL. | METALLIC SEA OF MOBILE ELECTRONS | COVALENT | WHEN H IS DIRECTLY COVALENTLY (POLAR) BONDED TO F, O, N | NONE |
| **ATTRACTIONS**  VAN DER WAALS. LONDON DISPERSION  INSOLUBLE IN WATER  **M.P./B.P.** | DIPOLE ATTRACTION  SOLUBLE IN WATER | IONIC  SOLUBLE IN WATER | “STRONG” VAN DER WAALS  INSOLUBLE IN WATER | NONE…ACTUAL COVALENT BONDS CONNECT ATOMS  INSOLUBLE IN WATER | H-BOND…WHICH IS A VERY STRONG DIPOLE ATTRACTION  SOLUBLE IN WATER | VAN DER WAALS,  LONDON DISPERSION |
| VERY LOW  INCREASE WITH MOLAR MASS | LOW  INCREASE WITH MOLAR MASS | HIGH  INCREASE WITH IONIC CHARACTER | HIGH | VERY HIGH | LOW, HIGHER THAN OTHER DIPOLE AND VAN DER WAALS. INCREASE WITH IONIC CHARATER | LOW FOL LOW ATOMIC MASS, HIGHER FOR  HEAV Y ATOMIC MASS |
| NEVER | NEVER | AS (AQ) AND (L), (MOBILE IONS)  NOT AS (S) | AS A SOLID  AND ALL PHASES | NEVER | NEVER | NON-METALS NEVER.  METALS ALWAYS |

**CONDUCTIVITY**

EX—METALS-GROUP 1, 2 OTHERS LIKE Au, Ag, Fe, Mn,

Non metal..O2,F2,N2 ETC

EX—C(S) DIAMOND, C(S) GRAPHITE, SiO2

EX—C(S) DIAMOND, C(S) GRAPHITE, SiO2

EX-- Na, Ca, Mg, Fe, Ni, Au, Ag ETC

EX-- NaCl, CaCl2, MgO

EX-- NH3, H2O, HCl, HF, H2S

EX-- CO2, CH4, H2, N2, Cl2