Electronic Configuration ns^2np^3

Atomic/ionic Radii Increases down the group

Ionization Enthalpy Decreases down the group due to gradual increase in atomic size.

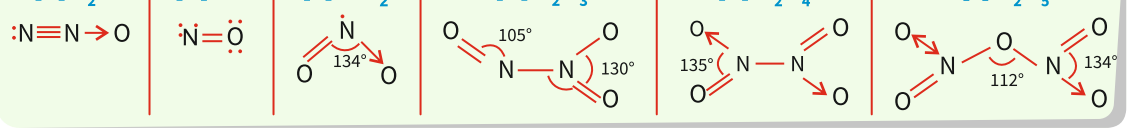
GROUP 15 ELEMENTS

PHYSICAL PROPERTIES

- **Melting point**: N < P < Bi < Sb < As
- **Oxidation states**: Common oxidation State -3, +3 & +5
- **Hydrides**: MH_3 (M = N, P, As, Bi, Sb)
- **Oxides**: M_2O_3, M_2O_4 & M_3O_5 (acidic character of oxides decreases down the group)
- **Halides**: They form EX_3 & EX_5
- **Reactivity towards metals**: All form primary compound i.e. -3 oxidation state.
- **Basic character**: $NH_3 > PH_3 > AsH_3 > BiH_3$
- **Melting point**: $PH_3 < AsH_3 < SbH_3 < NH_3$
- **Boiling point**: $PH_3 < AsH_3 < NH_3 < SbH_3 < BiH_3$
- **Reducing character**: $NH_3 < PH_3 < AsH_3 < SbH_3 < BiH_3$

OXIDES OF NITROGEN

[a] N_2O | [b] NO | [c] NO_2 | [d] N_2O_3 | [e] N_2O_4 | [f] N_2O_5



4. THE p - BLOCK ELEMENTS

PHYSICAL PROPERTIES

- O & S are non metals, Se & Te metalloids whereas Po is a metal.
- M.P & B.P increases down the group.

GROUP 16 ELEMENTS

Electronic Configuration ns^2np^6

Atomic/ionic Radii Increases down the group

Ionization Enthalpy Decreases down the group

Electronegativity Decreases with increase in atomic number

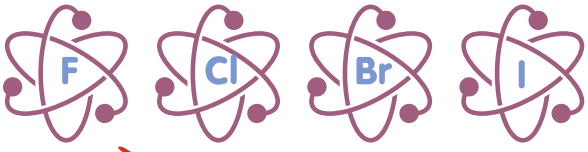
CHEMICAL PROPERTIES

- **Oxidation States**: O → –2, –1, 1, 2; S, Se, Te → 2, 4, 6; Po → 2, 4
- Oxides: EO_2 & EO_3
- Both type of oxides are acidic in nature.
- **Halides**: EX_6, EX_4, EX_2 & E_2X_2
- Stability of halides decreases in order $F^- > Cl^- > Br^- > I^-$
- Hydrides Forms H_2E
- B.P $H_2S < H_2Se < H_2Te < H_2O$
- **Reducing power**: $H_2Te > H_2Se > H_2S > H_2O$
- **Acidic character**: $H_2O < H_2S < H_2Se < H_2Te$

Electronic Configuration ns^2np^5

Atomic/ionic Radii Smallest in periods but increases from F to I.

Ionization Enthalpy Decreases down the group.



GROUP 17 ELEMENTS

CHEMICAL PROPERTIES

- **Oxidation state**: F show –1, Cl, Br, I also exihibit +1 to +7
- **Reactivity towards hydrogen**: H—F > H—Cl > H—Br > H—I
- **Reactivity towards metals**: MF > MCl > MBr > MI

GROUP 18 ELEMENTS

- **Occurence**: All except radon occur in atmosphere.
- **Electronic configuration**: ns^2np^6 except He configuration.
- **Atomic radii**: Increases down the group.
- **Physical properties**: Mono atomic, colourless, odourless and tasteless.
- **M.P. & B.P.**: Low