TOPIC 9 : # Groups 2

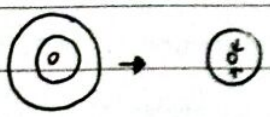
NO: DATE 06-10-18

- ATOMIC & IONIC RADII -

→ Ionic radii < Atomic radii

↳ lose outermost shell of e^- ∴ one shell less

↳ e^- more strongly held

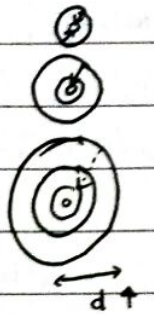


→ Down group, atomic & ionic radii ↑

↳ no. of e^- shells ↑ ∴ distance of outer e^- from nucleus ↑

↳ no. of e^- shells ↑ ∴ sheilding ↑

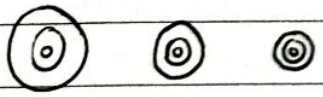
↳ nuclear attraction ↓ ← ∴



→ Across period, atomic & ionic radii ↓

↳ same no. of shells ∴ sheilding effect same.

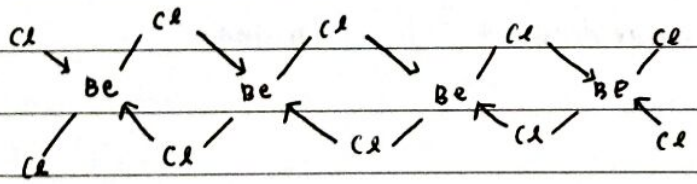
↳ but proton no. ↑ ∴ nuclear attraction ↑



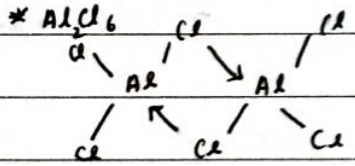
- REACTION W/ CHLORINE -

↳ only Be reaction differs

↳ forms linear molecule w/ dative covalent bond (not dimer)



* Be only has 2 outer e^-



- REACTIONS W/ WATER (OXIDES) -

↳ BeO, MgO insoluble

↳ basicity ↑ down the group.

- TEST FOR SULPHATES -

↳ acidify solution w/ HNO_3

↳ add BaCl

↳ (+ve) white ppt $BaSO_4$

NO DATE

- THERMAL STABILITY -

↳ polarisation ∴ e⁻ cloud of anion distorted ∴ less stable on heating.

↳ oxides stable ∵ O small & hard to polarise.

* Li small ∴ charge density ↑ ∴ behave like Grp 2.

→ **NITRATES** * NO_3^-

Grp 1 : $2NaNO_3 \rightarrow 2NaNO_2 + O_2$

Grp 2 : $2Ca(NO_3)_2(s) \rightarrow 2CaO(s) + 4NO_2(g) + O_2(g)$

→ **Carbonates**

Grp 1 : stable

Grp 2 & Li : $MgCO_3(s) \rightarrow MgO + CO_2$

→ **Hydroxides**

Grp 2 : $Mg(OH)_2(s) \rightarrow MgO(s) + H_2O(g)$

Grp 1 : stable

↳ going down the group, thermal stability ↑

↳ cation larger ∴ charge density ↓ ∴ less polarising.

- USES -

↳ $CaCO_3$, $Ca(OH)_2$ → liming (correct acidity of soil)

* $CaO + CO_2 \rightarrow CaCO_3$