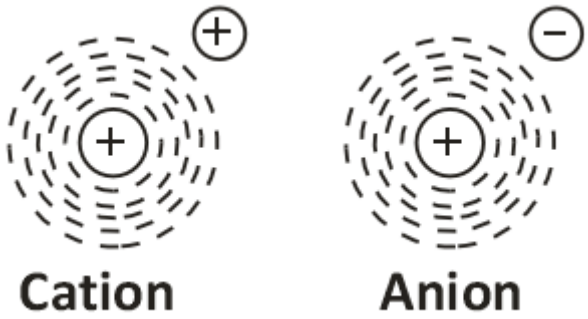
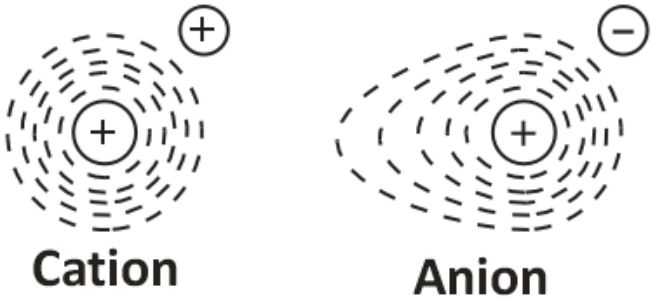
When cation and anion are apart from each other then electron cloud will remain symmetrical.



But when cation and anion approaches each other then the electron cloud of the anion elongated towards cation (anion gets polarized towards cation).



Tendency of cation to attract the electron cloud of anion towards itself is called polarizing power of cation and the phenomenon is called polarization of ion.

Factors affecting polarisation of ion:

$$\Phi_{cation} = \frac{q^{\oplus}}{r^{\oplus}};$$

$$q^{\oplus} = \text{Charge on cation}$$

$$r^{\oplus} = \text{size } of \text{ cation}$$

- **More is the polarisation power of cation more the cvalent character in salt & less ionic charcater.**

- **Polarisation effect introduces covalent charcter in ionic salt.**

- **No compound is 100% ionic or covalent, due to polarization some covalent character is developed.**

Q. which have highest polarizing power

A. Li^+

B. Na^+

C. K^+

B. Rb^+

Q. which have highest polarizing power

A. Be^{2+}

B. Mg^{2+}

C. Ca^{2+}

B. Sr^{2+}

Q. Arrange following molecule according to decreasing ionic character, LiCl, NaCl, KCl, RbCl, CsCl

Q. Arrange following molecule according to decreasing ionic character, $BeCl_2$, $MgCl_2$, $CaCl_2$, $SrCl_2$, $BaCl_2$

Q. Which is more covalent in nature LiCl or $BeCl_2$

Polarisability :

Q. Arrange according to decreasing order of Polarisibility:

F^-, Cl^-,Br^- & I^-

Q. Which have highest melting point

A. LiCl

B. NaCl

C. KCl

D. RbCl

Q. Which is most soluble in aqueous medium

A. PbF_2

B. $PbCl_2$

C. $PbBr_2$

D. PbI_2

[Note: also used to determine thermal stability of salt]

Inert pair effect:

The reluctance of ns electron pair of outermost shell of a heavy p block element to take part in bonding is called inert pair effect.

Due to this effect heavy p-block element show variable oxidation number.

On moving down the group of p block, stability of lower oxidation state is increases.

Stability: Ga^{3+} In^{3+} Tl^{3+}

Stability: Ga^{1+} In^{1+} Tl^{1+}

Stability: Ga^{3+} Ga^{1+}

Stability: In^{3+} In^{1+}

Stability: Tl^{3+} Tl^{1+}

Reducing Strength: Ga^{1+} In^{1+} Tl^{1+}

Oxidising Strength: Ga^{3+} In^{3+} Tl^{3+}