

Fajan's Rules:

Covalent Character in Ionic Bond

Polarisation: When a cation distorts the electron cloud of anion, then the effect is called polarization.

Polarising Power of Cation: It is the extent to which a cation can polarize an anion.

Polarisability of Anion: It is the extent to which an anion can be polarized.

Postulates of Fajan's Rules

➤ **Size of the cation:**

Smaller the size, more polarising power, more covalent character. As the size decreases, charge density increases, greater its polarizing power. More the distortion of the anion

Example: $\text{Li}^+ > \text{Na}^+ > \text{K}^+ > \text{Rb}^+$

➤ **Charge on the cation:**

Larger the charge on the cation, greater is its polarising power.

Example: $\text{Na}^+ < \text{Mg}^{2+} < \text{Al}^{3+}$

➤ **Pseudo Noble Gas Electronic configuration of cation:**

For cations with same charge and same size, the one with

$(n-1)d^{10}ns^0$ have more polarising power than the cation with ns^2np^6 . e.g. CuCl has more covalent character than that of NaCl.

➤ **Size of anion:**

Larger the anion, greater is its polarisability.

e.g. the order of covalency $\text{NaF} < \text{NaCl} < \text{NaBr} < \text{NaI}$

➤ **Charge on anion:** Greater the charge on the anion, more easily it gets polarised. e.g. $\text{Mg}_3\text{N}_2 > \text{MgF}_2$