

Factors affecting the stability of a complex ion.

① The nature of the central ion.

The greater the positive charge density, charge/size ratio also called ionic potential on the central ion, the greater is the stability of its complexes.

The Fe^{3+} ion carries a higher charge & has a smaller size than Fe^{2+} ion.

The greater the electronegativity of the central ion the greater is the stability of the complex.

② The nature of the ligand.

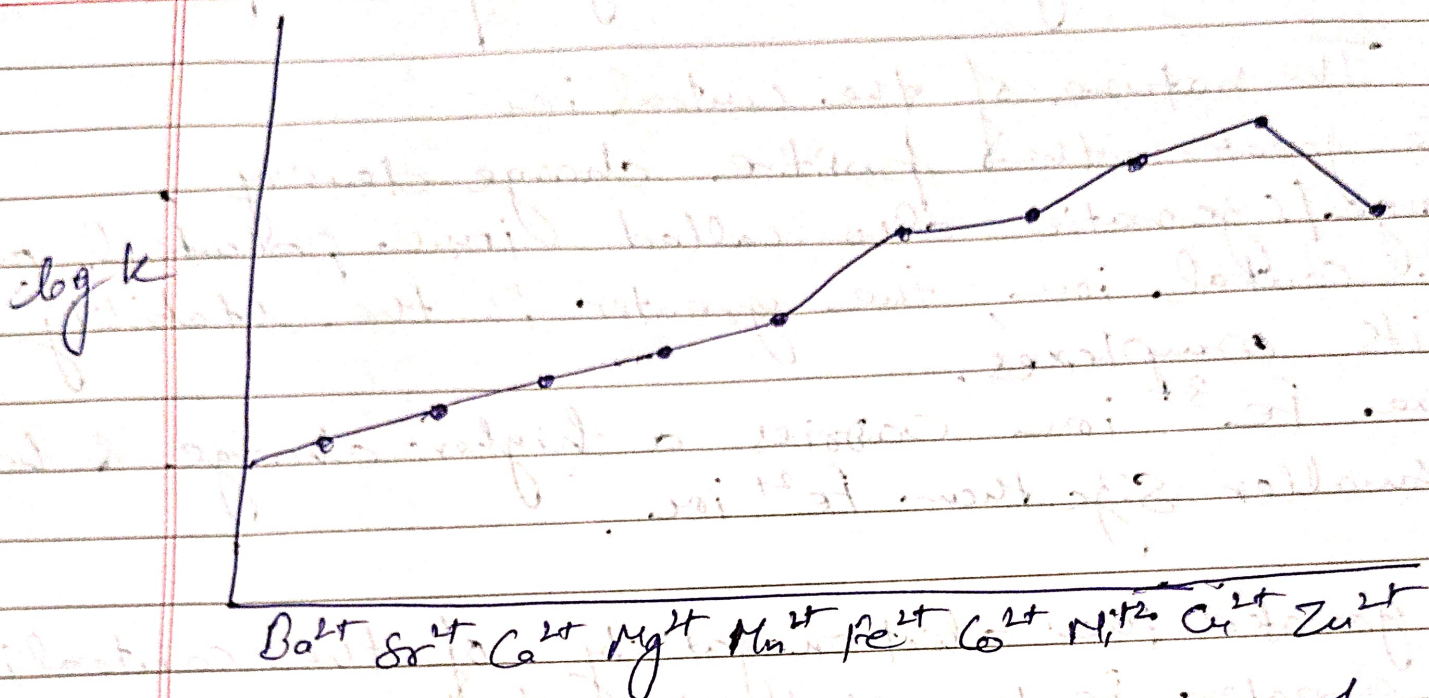
The more basic a ligand, the greater is the ease with which it can donate its lone pairs of electrons & therefore the greater the stability of the complexes formed by it.

③ The chelate effect.

The complexes containing chelate rings are known to be more stable than those containing similar but unidentate ligands. This effect is known as chelate effect.

Irving William Series.

A plot of $\log K$ for octahedral high spin complexes of some bivalent metal ions of the first transition series, formed with oxalate ion ligand.



Plot of $\log k$ for bivalent metal ions of Irving-Williams Series,

