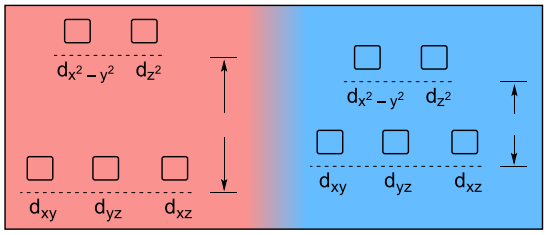
CONCEPT: STRONG-FIELD VS WEAK-FIELD LIGANDS

- The **Δ** of the octahedral complexes depends on the _____.

  1) **Strong-field ligand**: _____ Δ

  2) **Weak-field ligand**: _____ Δ



Strong-field and Weak-field Ligands

CN^- > NO_2^- > en > NH_3 > H_2O > F^- > Cl^- > Br^- > I^-

_____ Δ _____ Δ

MEMORY TOOL ____ry __a__ ____t ___ter the __eighbor__ood

EXAMPLE: Identify the complex with the largest crystal field splitting energy (Δ).

a) $[Fe(H_2O)_6]^{3+}$

b) $[Fe(NH_3)_6]^{3+}$

c) $[Fe(CN)_6]^{3-}$

d) $[CuCl_4]^{3-}$

PRACTICE: Arrange the following complexes in an ascending order of the magnitude of Δ.

a) $[Cr(NH_3)_6]^{2+}$

b) $[Cr(en)_3]^{2+}$

c) $[Cr(NO_2)_6]^{4-}$

d) $[Cr(H_2O)_4Cl_2]$