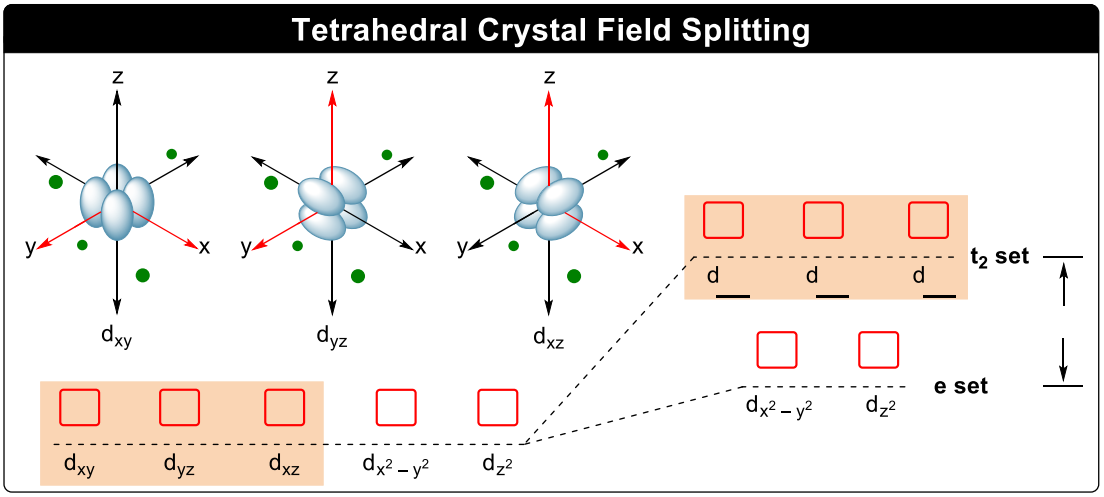
CONCEPT: CRYSTAL FIELD THEORY: TETRAHEDRAL COMPLEXES

- **Recall:** In tetrahedral complexes, ligand-orbital interactions in-between the axes are the strongest.



- Tetrahedral complexes have the _____ Δ.

EXAMPLE: Which one of the following complexes will have the smallest energy gap between the e set and the t_2 set of orbitals?

a) $[Co(NO_2)_6]^{3-}$

b) $[Cr(ox)_3]^{4-}$

c) $[Cu(EDTA)]^{2-}$

d) $[CuBr_4]^{2-}$

PRACTICE: For which of the following complexes, the energies of the $d_{x^2-y^2}$ and d_{z^2} orbitals will be lower than the other three d orbitals?

a) $[Co(en)_3]^{3+}$

b) $[Ni(CN)_4]^{2-}$

c) $[Zn(H_2O)_4]^{2+}$

d) $[AuCl_2]^-$