Zoom Webinar
MSc Sem-2 Inorganic
- Navdeep Singh
11:00 Am

Orgal diagram (Revision)

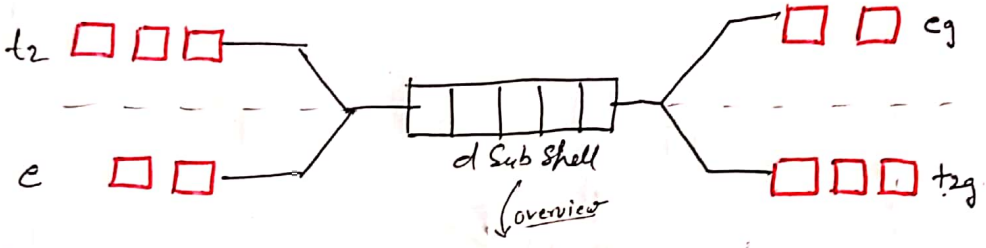
↓
term Symbol → Orgal dig. Create
d term / f term etc

Splitting

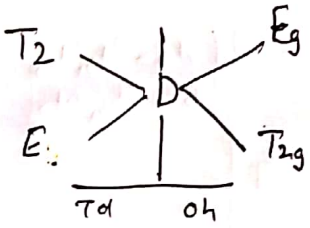
d1 → 2D d6 → 5D
d2 → 3F d7 → 4F
d3 → 4F d8 → 3F
d4 → 5D d9 → 2D
d5 → 6S d10 → 1S ⇒ S term Not Split.

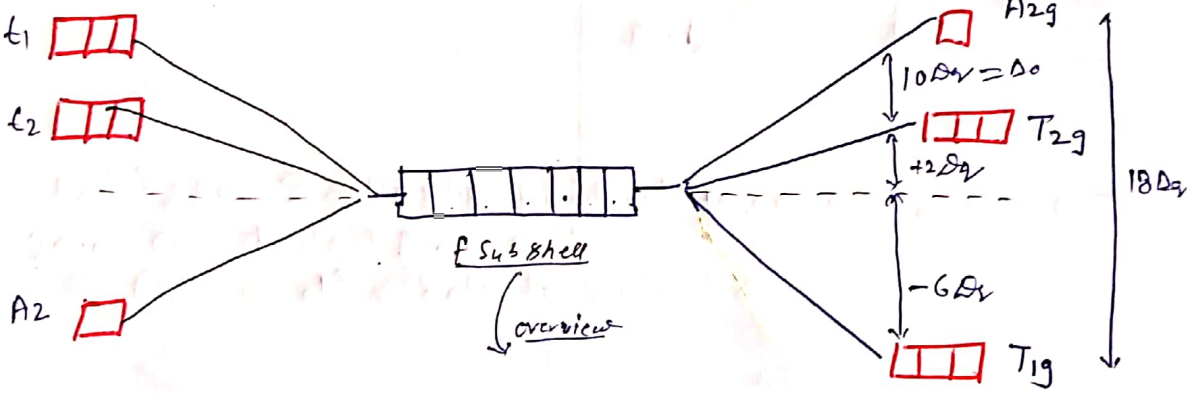
→ 4 Same Config for D [d1, d4, d6, d9)
→ 4 Same Config for F (d2, d3, d7, d8) splitting

* ⇝ dn and d10-n have same terms
eg (d1) or d10-1 = (d9)

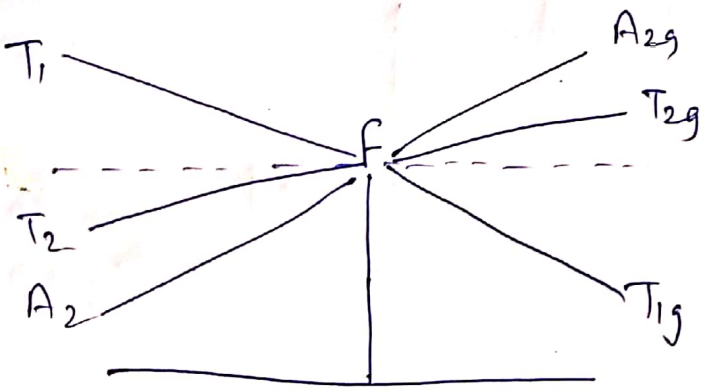


overview





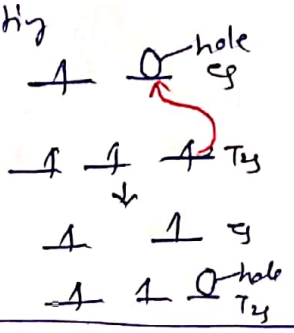
overview

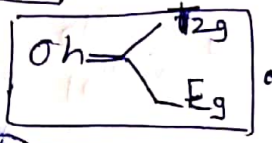


* d^1, d^2, d^3, d^4
d^6, d^7, d^8, d^9 — Tott d-config. of d, f term shows orgal diagram

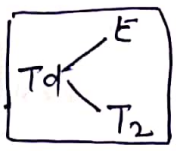
Hole formalism ⇒ half or full field (less 1 or 2 e^-)
shows opposite splitting

d^3 d^4
d^8 d^9 ⇒ follow hole formalism





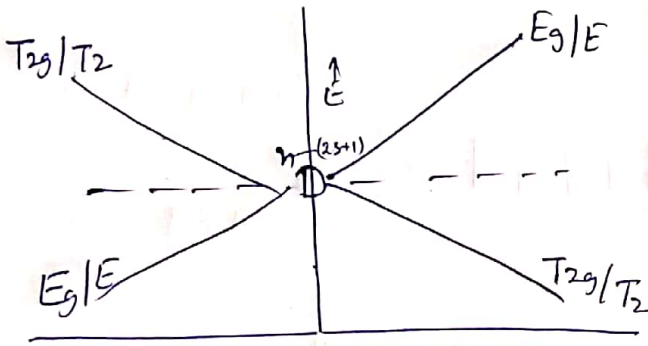
and



Transition $E_g \rightarrow T_{2g}$

(D)

$d^1 d^4 d^6 d^9$ ⇒ d^1, d^6 = Normal Oh
hole ⇒ d^4, d^9 = Td
hole formalism



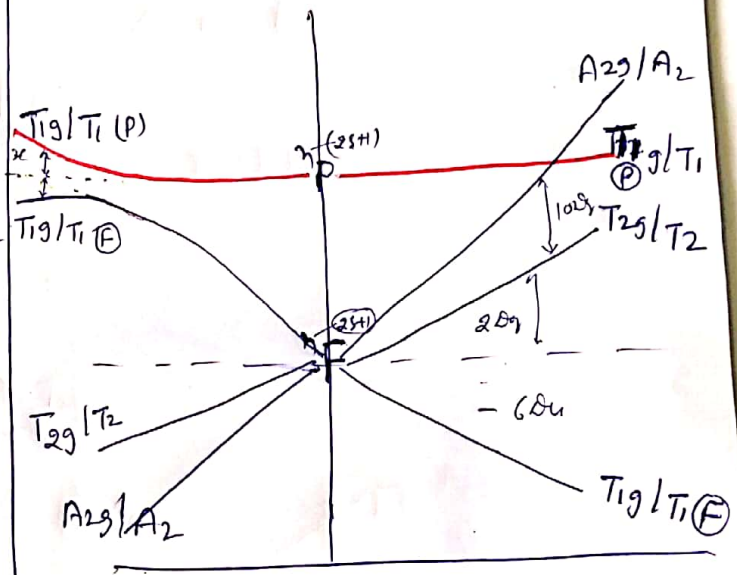
d^1, d^6 = Td
d^4, d^9 = Oh

Strength of ligand

d^1, d^6 — Oh
d^4, d^9 — Td

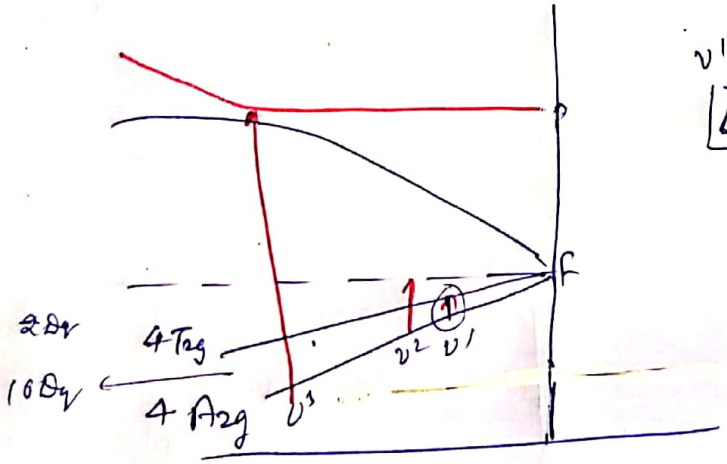
(F)

$d^2 d^3 d^7 d^8$ → d^2, d^7 ⇒ Normal Oh
d^3, d^8 ⇒ hole formalism
hole formalism



Q $[Cr F_6]^{-3}$ show 3 adsorption bands at 14,000 cm^{-1} 22,000 cm^{-1} and 34,000 cm^{-1} find out Δ_o in cm^{-1}

⇒ Cr^{+3} ⇒ d^3 ⇒ (hole formalism) Oh



$\nu_1 = 10Dq = \Delta_o$

Δ_o = 14,000 cm^{-1} Ans