In Organometallic chemistry – alkene – alkene- Coordination Compd Containing one or more alkene ligands.

→ intermediates in Catalytic reactns.

↓

alkene → other Organic products.

→ bond bet C of Organic molecule and metal C-M → alkaline alkaline earth metalloid transition metals

alkene-ligand → π bond bet C atoms

↓

$\bar{e}$n pair donor in metal Complexes

→ alkene – M

↓

both $\bar{e}$n donation & acceptance.

allyl ligand → $-CH_2-CH=CH_2$

↓

bind to a metal in two Configurations

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acetylene → $HC \equiv CH$ has two π bonds → 4 ē donar

Substituted acetylene → Very stable Polymetallic Complexes

Ethylene, propylene, Olefins →

Pd(II), Pt(II), Cu(I) & Ag(I)

↓

Stable Complexes.

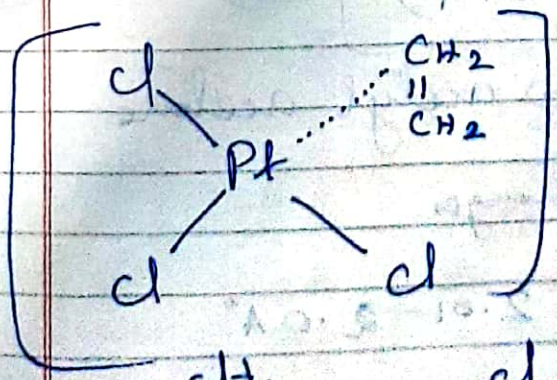
$K[Pt(C_2H_4)Cl_3]H_2O$, $[Pt(C_2H_4)Cl_2]_2$

$Pt(C_2H_4)Cl_2$ → trichloro ethylene platinate

↓

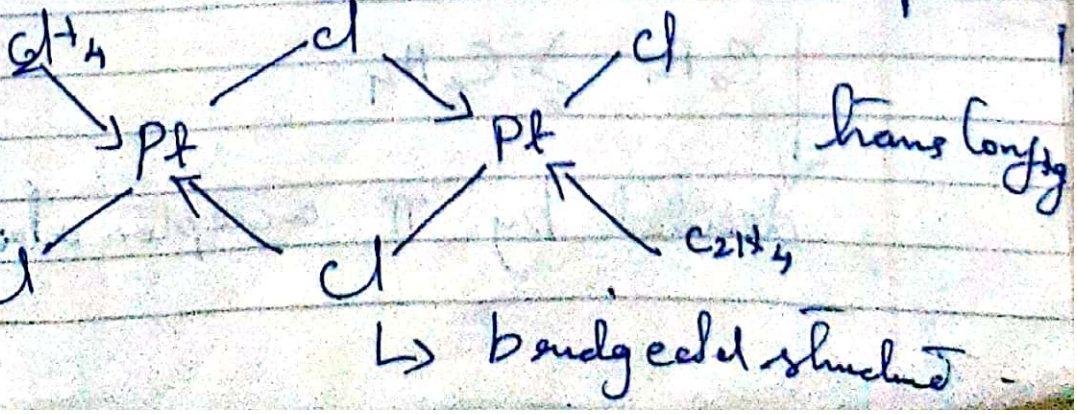
orange-Salt.

$K_2[PtCl_4] + C_2H_4 \longrightarrow K[Pt(C_2H_4)Cl_3] + KCl$



→ ethylene dimer

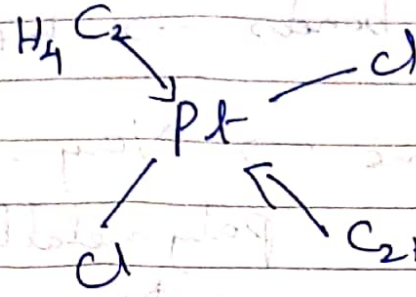
dimetric Complex.



trans config

↳ bridged structure.

In square planner structure



Pt — C_2H_4 → bond pointed towards center

C–C → ⊥r to $PtCl_2$ plane.

In Dewar – chatt model

C_2H_4 molecule donate π ēns → Pt

Vacant d sp^2 Orbital

C–M σ bond ← gives

2 ēns in Orbital → C_2H_4 molecule (ante bonding) Orbital → σ bond Strengthens.

π back bonding

↓

reduce C–C bond order.

doubly filled d orbital of Pt → Depending upon the substituents they vary.

$[L\ Rh(C_2H_4)(C_2F_4)]$ →

L → L' → acetyl acetone

C_2F_4 → Stronger

bond distance 2.01 – 2.0 A°

$C_2F_4 > C_2H_4$

↓

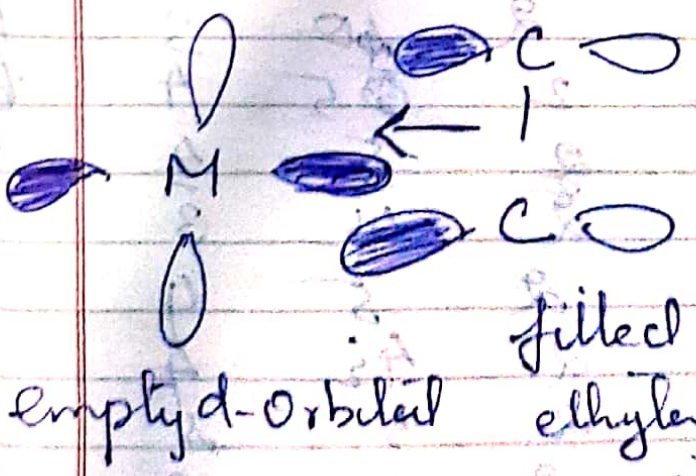
decided by π acceptor ability.

σ dative bond ($C_2H_4 \rightarrow M$)
back bond ($M \rightarrow C_2H_4$) } → both single bond

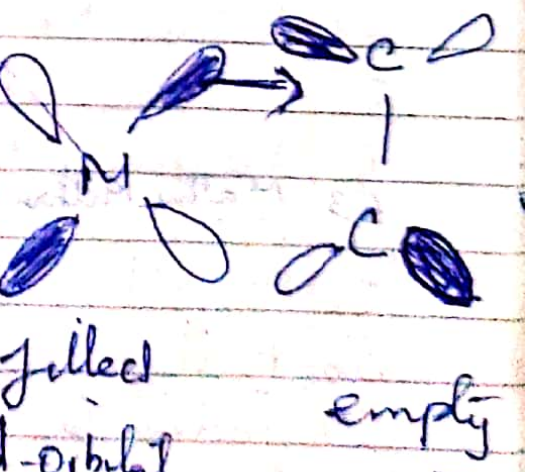
ex Tetra halo ethylene → Metal
dative bond

Mixing of σ & π orbitals →
2 σ bonds bet M — substituted ethylene

σ bond



π back bond



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Gravimetric Analysis and Thermo analytical Mds

→ estimate the amt of subs present in a given Sample. → determine the wt of ppt.

ex chloride estm.

Cl sample + $AgNO_3$ → Cl_2 ↓ (AgCl)

From the wt of AgCl ppt ← weighed ← dried ← filtered

↓ wt of Cl_2

Gravimetric factor = $\frac{a}{b}$ × $\frac{\text{F.wt of Subs estimated}}{\text{F.wt of Subs weighed}}$

a, b → integers.

$Cl^- + AgNO_3 \longrightarrow AgCl\downarrow + NO_3^-$

As per eqn → One gm of Cl^- → One mole of AgCl

So here a = 1 b = 1

F.wt of Subs. estmt = F.wt of Cl^- = 35.45

F.wt of the subs weighed = F.wt of AgCl

= 107.87 + 35.45 = 143.32

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Estimation of Cl⁻ gravimetric factor = $\frac{1 \times 35.45}{1 \times 145.32} = 0.2473$

G.F = 0.2473

$0.2473 = \frac{35.45}{145.32}$

Characteristic of precipitating agent:

Soln of substance → ppt.

↓ precipetating agent.

~~K_2CrO_4~~ Ba estim

$K_2CrO_4 + BaCl_2 \longrightarrow$ ppt↓

(i) ppt – low solubility.

(ii) readily filtered → free with Contaminants

(iii) unreactive – Known Compos after drying

Choice of precipitant:

→ maybe inorganic or Organic.

↓ ↓

$BaCl_2$, H_2SO_4, DMG

K_2CrO_4, HCl, $AgNO_3$ Oxine