

Co-ordination Chemistry ^{1.}

17/06/2021 **Lecture-17** Deg-II Hons.

Paper-III Group-B Chapter-2

Topic :- Geometrical Isomerism Contd.....

Geometrical Isomerism in Complexes which

A. Tetrahedral complexes exhibit co-ordination no.4

* Tetrahedral complexes do not exhibit geometrical isomerism whether all the ligands are same or different because all the ligands in this geometry are at adjacent positions relative to each other, i.e; each ligand present at $109^{\circ}28'$ from each of the other three ligands.

B. Square Planar Complexes

(i) $[Ma_4]^{n\pm}$, $[Ma_3b]^{n\pm}$, $[M(AA)_2]^{n\pm}$, $[M(AA)ab]^{n\pm}$

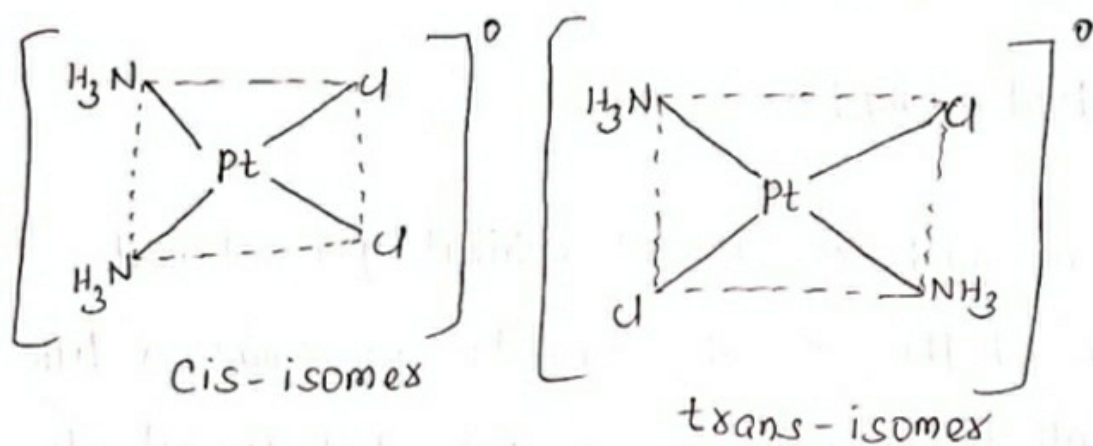
and $[M(AA)a_2]^{n\pm}$ type square planar complexes do not exhibit geometrical isomerism because all these possible spatial arrangement of the ligands round the metal cation is the same.

ii) $[Ma_2b_2]^{n\pm}$ type complexes :-

Examples of this type of complexes are: -

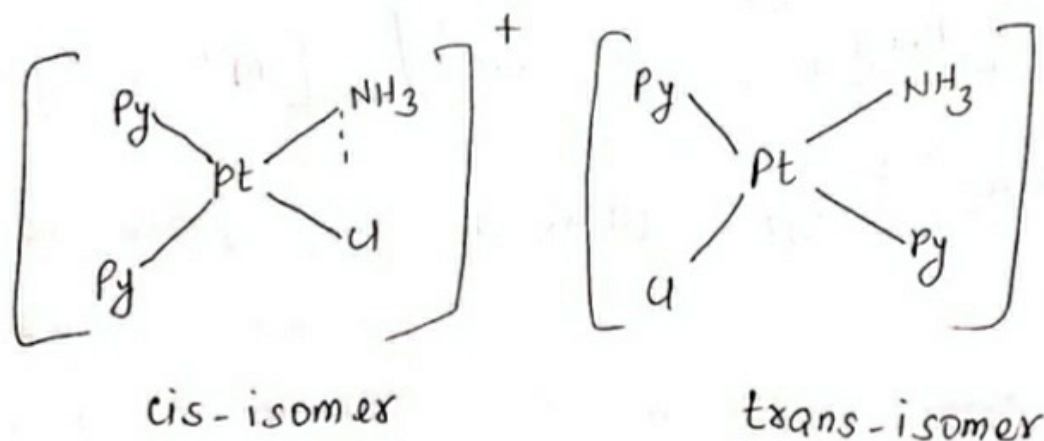
$[Pt(NH_3)_2Cl_2]$, $[Pt(Py)_2Cl_2]$ etc. which exhibit geometrical isomerism.

cis- and trans isomers of $[Pt(NH_3)_2Cl_2]$



iii) $[Ma_2bc]^{n\pm}$ type complexes :-

Ex: $[Pt(NH_3)_2PyCl]^+$, $[Pt(Py)_2(NH_3)Cl]^+$, $[Pt(NH_3)_2(NO_2)Cl]$ etc.



cis- & trans-isomers of $[Pt(Py)_2(NH_3)Cl]^+$ contd.-