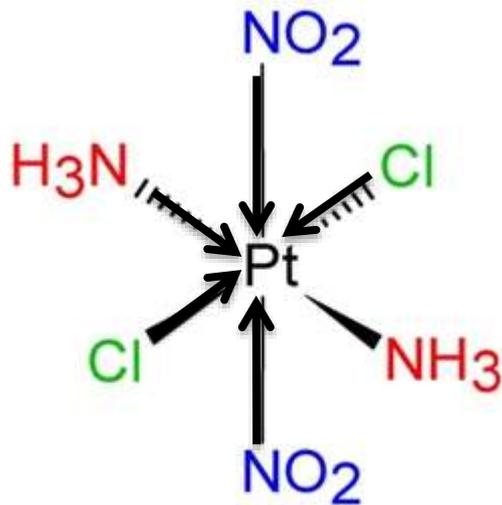


Sidgwick's electronic theory

- The ligand **donate the electron pair** to the central metal ion and thus **form a number** of **coordinate bond**.



Effective atomic number (EAN)

- $\text{EAN} = Z - X + Y$

Where,

Z = **atomic no. of the metal.**

X = no. of electron **lost during the formation** of the metal ion from its atom.

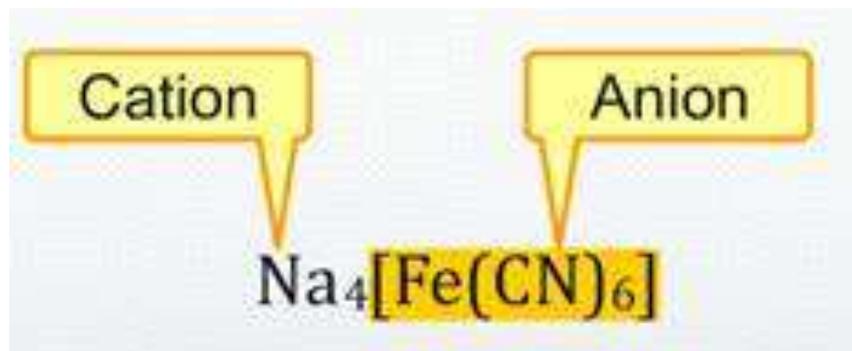
Y = no. of **electrons donated** by the ligands.

Eg. $[\text{Fe}(\text{CN})_6]^{-4}$, Fe oxidation = +2 & Z = 26

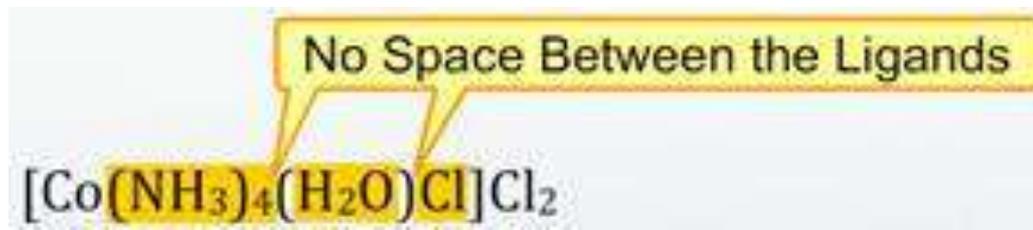
$$[\text{Fe}(\text{CN})_6]^{-4} = 26 - 2 + 6(2) = \mathbf{36}$$

Nomenclature writing complex compound

- The formula of the **cation**, whether it is simple (or) complex is **written first followed** by that of **the anion**.

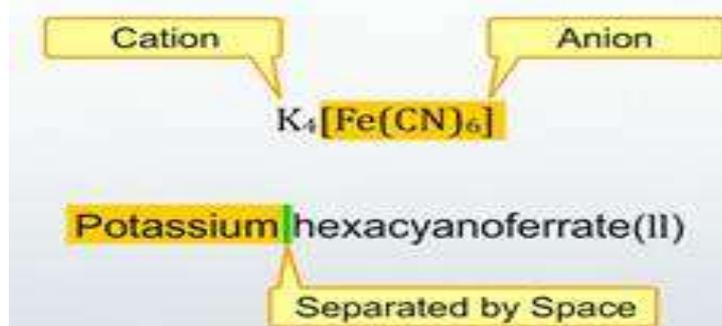


- Within a **coordination sphere** the **metal atom** as well as **the ligands** are listed **without any** space between them.



Nomenclature naming

- In **ionic coordination compounds** the **cation** is named first and **separated** by a space from **the anion**.



- If the **coordination entity is either neutral (or) cationic** then **usual name of the metal is used**. But, when the coordination entity is an **anion then name of the metal ends with the suffix 'ate'**.

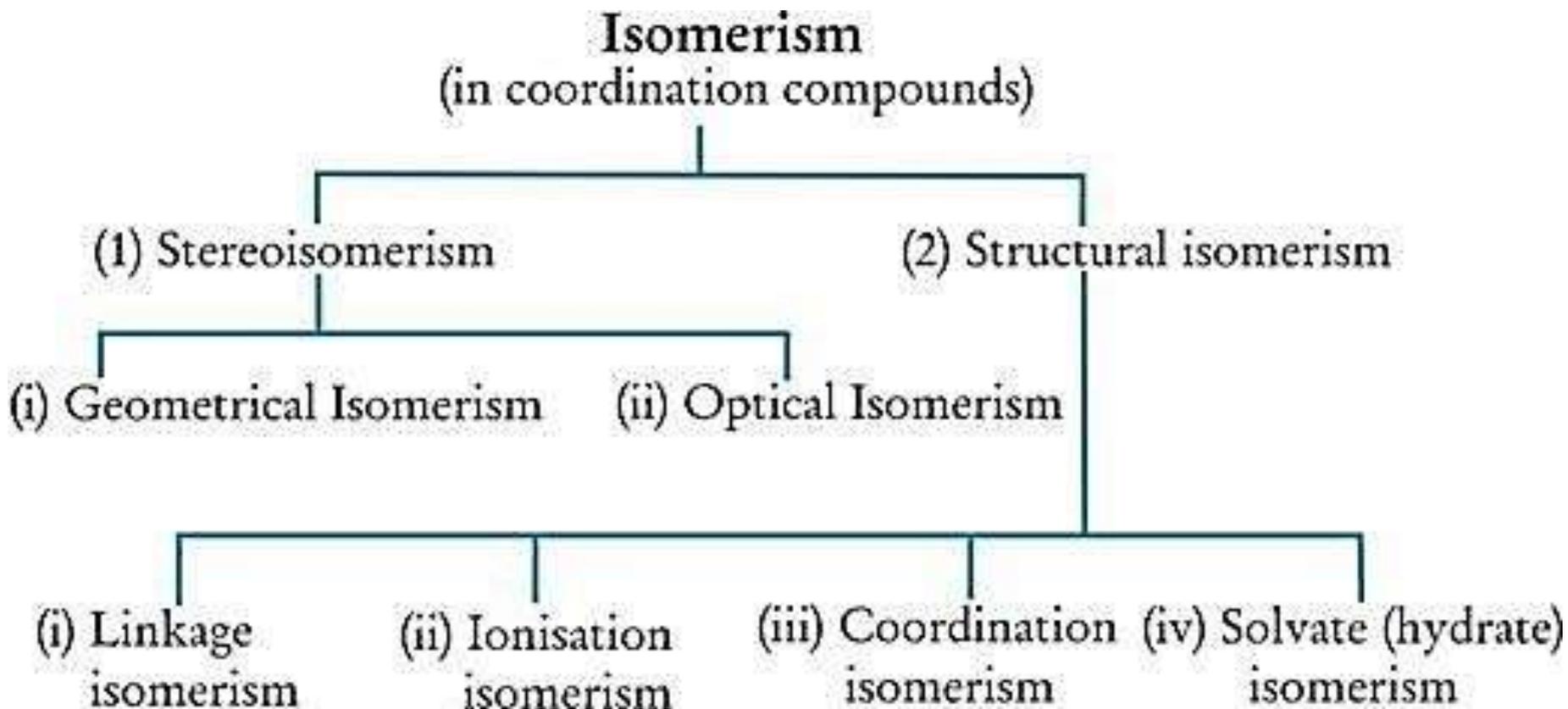


Sodium triamminetrichloridoplatinate (II)

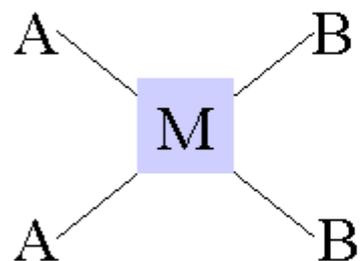
Nomenclature naming

- $\text{Li}[\text{AlH}_4]$ Lithium hydrido aluminate(III)
- $\text{Na}_3[\text{Co}(\text{NO}_2)_6]$ sodium hexanitrito–N cobaltate
- $[\text{Ag}(\text{NH}_3)_2]\text{NO}$ Diammine silver(I) nitrate
- $\text{K}[\text{Au}(\text{CN})_4]^-$ potassium tetracyanoaurate(III) ion
- $[\text{Ni}(\text{CN})_4]^{2-}$ tetracyanonickellate(II) ion

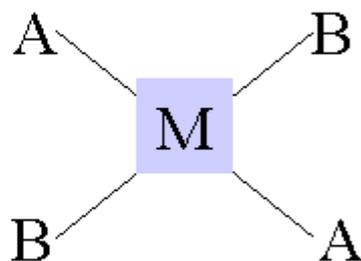
Isomerism in coordination compound



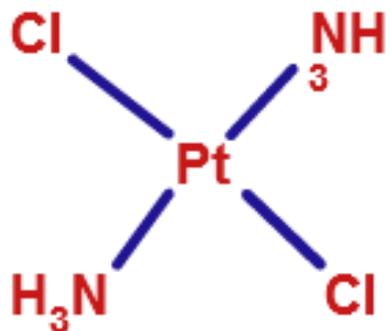
1. Geometrical isomerism



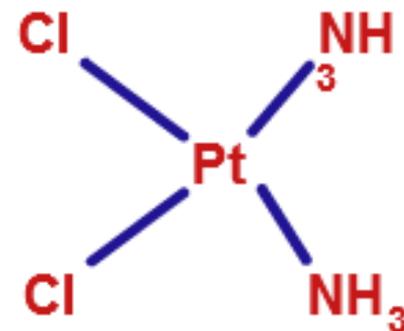
cis



trans



trans-Pt(NH₃)₂Cl₂



cis-Pt(NH₃)₂Cl₂

1. Geometrical isomerism

$[\text{Pt}(\text{NO}_2)_2(\text{NH}_3)_2\text{Py}]$ diamminebromo
chloroplatinum(II).

$(\text{Ma}_2\text{b}_2)^{n+}$

