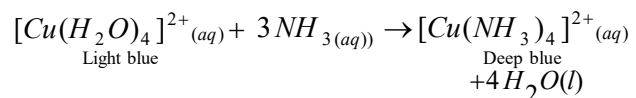


Preparation and Application of coordination compounds.

(1) **Preparation** : Coordination compounds are generally prepared by the application of the following methods,

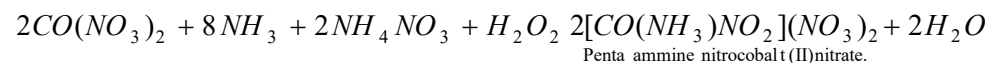
(i) **Ligand substitution reaction** : A reaction involving the replacement of the ligands attached to the central metal ion in the complex by other ligands is called a ligand substitution reaction.



(ii) **Direct mixing of reagent** : $PtCl_2 + 2H_2N - CH_2 - CH_2 - NH_2 \rightarrow [Pt(en)_2Cl_2]$

(en) (Dichloro bis
ethylene diam mine platinum (II))

(iii) **Redox reactions** : In these reactions, either oxidation or reduction is involved



Application

- (1) Estimation of hardness in water, as Ca^{++} and Mg^{2+} ions form complexes with EDTA.

- (2) Animal and plant world e.g. chlorophyll is a complex of Mg^{2+} and haemoglobin is a complex of Fe^{2+} vitamin B_{12} is a complex of Co^{2+} .

- (3) Electroplating of metals involves the use of complex salt as electrolytes e.g. $K[Ag(CN)_2]$ in silver plating.

- (4) Extraction of metals e.g. Ag and Au are extracted from ores by dissolving in $NaCN$ to form complexes.

- (5) Estimation and detection of metal ions e.g. Ni^{2+} ion is estimated using dimethyl glyoxime.

- (6) Medicines e.g. cis-platin*i.e.* cis $[PtCl_2(NH_3)_2]$ is used in treatment of cancer.