Co-ordination Chemistry

Degree-II (H) , Paper-III , Group-B

Lecture-7 ,By:-Dr.Rinky , 22-04-2021

Werner's Theory (Continued & Completed)

And

IUPAC Nomenclature Of Coordination Compound

Evidence in Favour of Werner's Theory

1. Electrical Conductance Measurement

* As the no. of ions and charge on substance increases, the molar conductance of the compound increases.

eg. Molar conductance

$[Co(NH_3)_6]Cl_3 > [Co(NH_3)_5Cl]Cl_2 > [Co(NH_3)_4Cl_2]Cl > [Co(NH_3)_3Cl_3]$

No. of ions 4 3 2 1

2. Cryoscopic Measurements

The depression in freezing point is a colligative properties depends upon the no. of particles in the solution.

Depression in f.p.

$$[Co(NH_3)_6]Cl_3 > [Co(NH_3)_5Cl]Cl_2 > [Co(NH_3)_4Cl_2]Cl > [Co(NH_3)_3Cl_3]$$

3. Precipitation Reaction

$$[Co(NH_3)_6]Cl_3 \xrightarrow{3\,AgNO_3} 3AgCl$$

$$[Co(NH_3)_5Cl]Cl_2 \xrightarrow{2\,AgNO_3} 2AgCl$$

$$[Co(NH_3)_4Cl_2]Cl \xrightarrow{AgNO_3} AgCl$$

Werner's Theory

Completed

IUPAC Nomenclature Of Coordination Compound

* The rules recommended by the International Union of Pure and Applied Chemistry (IUPAC) for naming of coordination compounds are as follows:----

1. If a coordination compound is ionic (ie; the coordination compound contains either a complex cation or complex anion or both) the cation is named first followed by the anion and the cation is separated by a space from the anion, just as in other simple salts. No space is used within the name of the complex ion.

For example, in

$K_4[Fe(CN)_6]$ and $[Co(NH_3)_6]Cl_3$

the cations K^+ and $[Co(NH_3)_6]^{3+}$ are named first followed by the names of anions $[Fe(CN)_6]^{4-}$ and Cl^- respectively.

To be continued in next lecture..