LITERATURE REVIEW:

Coordination polymers can be prepared by a number of routes, the three most common being:

a) Preformed metal complexes polymerized through functional groups, where the actual polymer forming step may be a condensation or addition reaction.

b) Coordination of metal ion by a polymer containing chelating groups.
c) Polymer formation through reaction of metal donor atom coordination.

\[
\begin{align*}
\text{N} & \quad \text{O} \\
\text{N} & \quad \text{O} \\
\text{H} & \quad \text{H} \\
+ & \quad \text{M} \\
\text{O} & \quad \text{O} \\
\text{M} & \quad \text{M}
\end{align*}
\]

Further, there are a number of plants which are known to chelate various ions [3-5]. Currently studies are underway concerning the complexation of the uranyl ion by such plants, specifically sphagnum fimbraiatum and spagnum recurrum mosses. Thus future efforts at identification, separation and isolation of metal containing moieties might include use of natural occurring reagents.

**Literature reveal that number of co-ordination polymers are reported below.**

Asha D. Patel and co-worker [6] also reported a various coordination polymers based on bis 8-hydroxyquinoline moieties with various metal ions. Coordination polymers containing a novel bis(oxine) bidentate ligand, namely \( \text{N, N'}-\text{di}(8\text{-hydroxyquinolinolyl}-5\text{-methyl})-\text{N, N'}-\text{diethyl}-1,3\text{-propane diamine (QEPD)} \) have been prepared with the metal ions \( \text{Zn(II), Cu(II), Ni(II), Co(II) and Mn(II)} \).

\[
\text{Coordination polymers, QEPD-Mt} = \text{Cu,Ni,Co,Mn,Zn}
\]

Sunil S. Patil and co-worker[7] also reported Mixed Ligand Dioxouranium Complexes with 8-Hydroxyquinoline and Some Amino Acids.
B. N. Patel and co-worker [8] reported Complexes of 2-(8-Quinolinol-5-yl)-amino methyl-3(4-methyl phenyl)-5-(Phenyl)-Pyrazoline with Cu(II), Mn(II) and Zn(II) have been synthesized.

B. N. Patel and co-worker et al[9] also reported Complexes of 2-(8-Quinolinol-5-yl) -amino methyl-3-(4- Methyl Phenyl)-5- (4-chloro Phenyl)-Pyrazoline with Co(II), Ni(II) and Mn(II) have been synthesized.

Where ,M= Co$^{+2}$, Ni$^{+2}$, Mn$^{+2}$
S. A. Patel and co-worker [10] reported the treatment of 2-Chloro-1-(2, 3-dihydro-perimidin-1-yl)-ethanone with 5-amino-8-hydroxy quinoline afford a 2- (8-Hydroxy-quinolin-5-ylamino)-1-(5-methyl-4-methylene-1,4-dihydro-2H-quinazolin-3-yl)-ethanone (PEHQ).

![PEHQ Metal Complex](image)

PEHQ Metal Complex - Mt = Cu$^{+2}$, Ni$^{+2}$, Co$^{+2}$, Mn$^{+2}$, Zn$^{+2}$

Khyati D. Patel and H. S. Patel et al [11] reported the bisligand namely, 5,5’-(2,2’-(p-tolylazanediyl) bis (ethane-2,1-iyl) bis (oxy) bis (methylene)) diquinolin-8-ol (TBEQ) was synthesized by facile and fast procedure.

![TBEQ](image)

R. T. Vashi and S. B. Patel et al [12] reported novel ligands containing quinazoline-4-one-8-hydroxyquinoline (QQ) merged moieties were prepared and characterized.
K. D. Patel and S. C. Panchani et al[13] reported Coordination polymers containing a novel bis(oxine) bidentate ligand, namely 4,4’[(8-Quinolinolyl-5-methylenoxy) diphenyl sulfide $\text{H}_2\text{L}$ have been prepared.

Hasmukh S. Patel and Khyati D. Patel[14] reported A novel bis (bidentate) ligand, namely 5, 5’- (2, 2’- (phenyl azanediyl) bis (ethane-2,1 - diyl) bis (oxy) bis (methylene) diquinolin 8 - ol) (PBEQ), was synthesized.

8-hydroxyquinoline is one of the well-known N-O bidentate ligand and most widely utilized as a chelating agent industrially and analytically. The complexing capacity with metal ions of this ligand has been further enhanced by preparing its bis form such bis ligand from a may afford a linear chain coordination polymers arrayed with metal ions in the
reporting units. These linear chain coordination polymers are of short chain lengths with the hydroxyl end groups as shown below.

Patel and his coworkers reported the coordination polymers of bis (8-hydroxy-5-quinolinyl methylene) sulphide with Zn(II), Cu(II), Ni(II), Co(II) and Mn(II) ions and characterized by elemental analyses, IR and diffuse reflectance spectral studies and magnetic moment. They also have investigated the thermal behavior of each of coordination polymer by TGA in air upto 700\(^0\)C. The order increasing thermal stability as under.

\[ \text{Cu} < \text{Ni} < \text{Co} < \text{Mn} \]

Beside this research, several scientists of many nations are also engaged in the co-ordination polymer research. These types of polymers are studied recently. Their structures and reference names are given below[16, 17].
Recently our research coworker [15-18] reported the novel co-ordination polymers of Bis-(8-quinolinol)s as well as Bis-(8-quinolinol)s containing amide bridge.

I.B. Johns and H.R. Dipietro reported structure of trimer of salicylonitrile, 2,4,6-tris(2-hydroxy phenyl)-s-triazine suggest that it should be coordinate with divalent tetracoordinate metal ion to form polymeric products.

Yongquin wei, kechen wu and Ria broer [19] worked on a polymeric cobalt compound [Co(DCNT)(H_2O)]_n with novel topology: Synthesis, structure, luminescence, and magnetic property. The hydrothermal reaction of Co(NO_3)_2. 6H_2O and a new designed ligand H_2DCNT yields a three-dimensional polymer [Co(DCNT) (H_2O)]_n (1), H_2DCNT=2,4-bis(4-carboxyphenylamino)-6-diethylamino-1,3,5-triazine. In the structure of 1, each DCNT^2- has three coordination sites, one nitrogen atom in the triazine ring coordinating to Co(II) and two carboxylates adopting bridging mode, which make the infinite Co(II) chains array uniformly and evenly toward crystallographic c-axis. Luminescent and magnetic properties of (1) were also studied.
The structure and synthetic route of H$_2$DCNT

Number of co-ordination polymers based on 8-hydroxy quinoline has been reported for pharmaceutical application. However, the reaction between the 1.0 mole of 2,4-di chloro-6-N,N-substituted amino -1,3,5-triazine and 2.0 mole of 5-amino-8-hydroxy quinoline has not been reported except only certain reference. These newly prepared bis-(8-quinolinol)s containing triazine having N,N-substituted amino derivatives applied for metal complexation is not yet reported.