ABSTRACT

The present thesis comparises three main chapters.These chapters are introduction, experimental and results and discussion.

Chapter (I) represents a literature survey on the materals related to the plane of research.

Chapter (II) includes the methods of preparation as well as the instrumentation and techniques used.

Chapter (III) contains the data obtained and their discussion.This Chapter is divided into three main parts:

1- Studying of the solid complexes derived from

Poly-glycidylmethacrylate bearing ethylenediamine, Poly-glycidyl-methacrylate bearing 4-aminoantipyrine and Poly-glycidylmethacrylate bearing 2-aminothiazole.

The structures for these complexes were studied by means of IR, Electronic Spectra, DTA, TGA and Magnetic susceptibility. The study reveals that the coordination sites are ethylenediamine (for XIV), 4-aminoantipyrine(for XV) and 2-aminothiazole (for XVI) moietes

2- Studying the chelating resins

The studied chelating resin of Poly-Acrylonitryl-methylene-bis-acrylamide with (9: 1) and (7: 3) mole ratio and bearing oxime moiety and Poly-Glycidylmethacrylate-divinylbenzene with (9 : 1) and (7 : 3) mole ratio and bearing ethylendiamine moiety were studied by means of IR and thermal analysis (DTA/TG).The study indicated that the coordination sites are oxime for resins (XXIIandXXIII),ethylendiamine for resins (XXVI and XXVII)and dithiocarbamate for resin(XXVIII) moieties.

3- Studying the uptake behaviour of metal ions by chelating resins from equeous solutions

The study indicates that:

1) The uptake process of metal ions by chelating resins is affected by pH value of medium,ionic radii,time of treatment.
2) The optimum pH values is pH = 10 for Cu^{2+}, Co^{2+} and Ni^{2+}, pH=8 for Zn^{2+} and Cd^{2+} at pH = 8 and pH=5 for Hg^{2+}.
3) Chelating resins (XXII) and (XXVI) stabilize the oxidation state(III)for Cobalt through their uptake process at pH=10.
4) Chelating resins (XXII and XXVI) give nearly the same uptake value at equlibrium time for Cu^{2+}, Ni^{2+}, Zn^{2+}, Cd^{2+}, Hg^{2+} and pb^{2+} ions.
5) Chelating the resin (XXII) gives higher uptake values for pb^{2+} (1.04 mmol/g) and lower values for Hg^{2+} (0.46 mmol/g). whilst (XXVI) displays the inverse. (0.316 mmol/g for pb^{2+} and 1.58 mmol/g for Hg^{2+}). So the two metal ions can be separated from each other by good effeciency.
6) Dithiocarbamate chelating resin (XXVIII) gives a higher uptake value for Hg^{2+} (2.03 mmol/g), and pb^{2+} (1.14 mmol/g). This can be explained by the higher ability of Hg^{2+} and pb^{2+} towards sulpher than nitrogen sites.