

## PREFACE

The work embodied in this thesis entitled '*COORDINATION CHEMISTRY OF N AND/OR CHELATORS AND, ANALYTICAL APPLICATIONS OF IMIDAZOLYLAZO RESIN*' was initiated in Nov.'91. The thesis consists of eight chapters of the work : The development of coordination chemistry of transition metals emphasising on f-block elements and the extension of idea to certain analytical application of newly designed resin.

A partial review of the transition metal chemistry of N and/or O and S donor ligands alongwith the purpose of the present work are briefly summarised in the first chapter. Chapter II deals with the synthesis and spectroscopic characterization of 2',2'-dipyridylamine complexes of La(III), Ce(III), Pr(III) Th(IV) and UO<sub>2</sub>(VI). In chapter III uranyl complexes of heterocyclic Schiff bases : 2-aminopyridine-, 2-aminopyrimidine-salicylaldehydes and their peroxy derivatives are described . Chapter IV defines the chemistry of dioxouranium-sulfur systems. Two series of uranyl thio Schiff bases, two series of uranyl-thioether complexes and their peroxy complexes are characterized by spectroscopic and thermal measurements. Adducts of heterocyclic bases of UO<sub>2</sub>(L-L)<sub>2</sub> (L-L=acetylacetonato, benzoylacetonato and 8-hydroxyquinolinato) are characterised in chapter V. In chapter VI Cobalt(II)/(III) complexes of azophenolates and azophenolcarboxylates are spectroscopically characterised alongwith their redox activity.

The coordination chemistry of 2-arylaazoimidazoles are described in chapter VII. Arylaazoimidazoles bears soft pyrolic-N and hard pyridinic-N donor centres. Class a metal ions prefer hard-N and class b metal ions prefer soft-N centre. This idea is extended to solid surface separation process in chapter VIII.

A resin incorporating imidazolylazo group into a polymeric matrix is designed and characterised. The resin is regenerable and highly selective for Hg(II) and Ag(I) at pH 6.0. It has no affinity for alkali, alkaline earth and 3rd transition metals. Trace quantity of Hg(II) (1--2 ppm) is removed from river water and the purification is tested radiometrically.

In keeping with the general practice of reporting scientific observation, due acknowledgement has been made whenever the work has been described as based on the findings of other investigators. I must take the responsibility of any unintentional oversights and errors which might exist inspite of precautions.

Department of Chemistry  
The University of Burdwan  
Burdwan 713 104  
India

*Pabitra Chattopadhyay* 16/11/96  
(Pabitra Chattapadhyay)