PREFACE

We are passing through a phase of Industrialization in the Country. Industries while helping to make tremendous progress also give rise to a number of Social, Biological and Environmental problems, primarily because of the effluents flowing from the factory sites. A humble attempt is made to identify and estimate the metal ions from the Industrial effluents in this research work leading to Ph.D. degree under Mysore University.

For this purpose, I have taken the assistance of a simple instrument called Spectrophotometer to estimate the metal ions from the Industrial effluents. It requires a sensitive reagent to develop colour with metal ions. Depending upon the intensity of colour, the presence of metal ions can be estimated using spectrophotometer. A number of sensitive reagents are available for the estimation of metal ions. In the present work, we have made an attempt to synthesize some new ligands and apply these synthesized ligands for the estimation of metal ions from the Industrial effluents.

In Chapter 1, an attempt has been made, to make a study of some heavy metal ions and how they cause environmental problems, leading to some complications in social life and the treatment technologies applied in various industries for the removal of heavy metal ions from their effluents.

Chapter 2 provides an insight into Schiff’s bases, formation of Schiff’s bases, their use as ligands, their metal complexes, their biological applications and their analytical study.
Chapter 3 deals with synthesis of $\alpha$-phenylthiourea and its derivatives, 2-amino benzothiazole and its derivatives. Synthesis of new Schiff’s bases o-Vanillidine-2-aminobenzothiazole, its 4-methyl, 6-chloro and 6-bromo derivatives and their Copper complexes. Spectrophotometric determination of Copper using these reagents is reported. Methods for the determination of Copper from the industrial effluents are also discussed.

In Chapter 4, a study of azodyes like 2-aminobenzothiazole and their derivatives as spectrophotometric reagents is discussed.

Chapter 5 deals with synthesis of some 2-amino benzothiazolylazo-2-amino-3-hydroxy pyridine and its 4-methyl, 6-chloro, 6-bromo-2-aminobenzothiazole derivatives and their use as spectrophotometric reagents for the determination of metal ions like Copper, Cobalt, Cadmium, Nickel and Zinc from the industrial effluents using suitable masking reagents.

Chapter 6 gives a detailed discussion on the future research work on the area.

References are listed out in the last part of the thesis.

Appendix-1 includes all the IR, $^1$H NMR and mass spectral analysis of the synthesized ligands and complexes.

Appendix-2 contains the Investigator’s articles published in Journals and papers presented in Conferences.