PREFACE

Coordination Chemistry is the most active research field in inorganic chemistry. Study of coordination compounds of lanthanides has a pride of place in coordination chemistry in view of the varied applications of these compounds in science and technology. However, the development of coordination chemistry of lanthanides is limited in comparison with the development of coordination chemistry of transition metals. Moreover, coordination chemistry of lanthanides is of recent origin - only five decades old, whereas the coordination chemistry of transition metals is as old as two centuries. With the advent of modern sophisticated instruments, coordination chemistry of lanthanides has received the attention of modern inorganic chemists.

As part of our programme for the isolation and characterization of solid lanthanide complexes, we have synthesized a total of 42 new complexes of lanthanide nitrates and perchlorates with three substituted benzenesulphonamides, which are widely known as sulpha drugs. The three benzenesulphonamides used are sulphamethazine (4-amino-N-[4,6-dimethyl-2-pyrimidinyl]benzenesulphonamide, abbreviated to ADPB), sulphisomidine (4-amino-N-[2,6-dimethyl-4-pyrimidinyl]benzenesulphonamide; abbreviated to AD\textsuperscript{1}PB) and sulphisoxazole (4-amino-N-[3,4-dimethyl-5-isoxazolyl]benzenesulphonamide; abbreviated to ADIB).
Sulpha drugs are important class of therapeutic compounds. In combination with certain other drugs, they are used for the treatment of various bacterial infections. Study of the coordination behaviour of sulpha drugs is of considerable interest because coordination of metal ion is reported to enhance the biological activities of organic compounds. The lanthanide ions used for the preparation of the present complexes are La(III), Pr(III), Nd(III), Sm(III), Gd(III), Dy(III) and Y(III). Complexes of lanthanide nitrates and perchlorates with the three benzenesulphonamides mentioned earlier have been isolated in the solid state. These complexes have been characterized by elemental analysis, molecular weight determination, magnetic moment and molar conductance measurements and IR spectral studies. Apart from the above studies, thermal decomposition studies of all the lanthanide nitrato complexes with the three ligands have been carried out using TG and DTG techniques. These studies throw light into the thermal behaviour of these complexes.

It is hoped that the present investigation is a modest contribution to the coordination chemistry of lanthanides. The present investigation has a national importance as well, in view of the fact that the beach sands of South-West coasts of India are rich in monazite, the chief lanthanide bearing ore. It is also interesting to note that the development of science and technology of lanthanides in India is limited, although India has the best resources of these precious metals.