PREFACE

The inception of nitrosyl chemistry starts with the isolation of nitroprusside in 1849. Extensive studies appear to have been made on synthesis and stereochemistry of nitrosyl complexes of iron, cobalt, molybdenum, ruthenium, rhodium, tungsten, and osmium, etc. But however a little work seems to have been reported on the synthesis and stereochemical aspects of cyanonitrosyl complexes of chromium in monovalent oxidation state. It is, therefore, thought worthwhile to synthesize and characterize some mixed-ligand cyanonitrosyl complexes of chromium with different organic compounds in +I oxidation state, and results of this investigation are incorporated in this thesis.

The thesis entitled, "Preparation and characterization of some mixed-ligand cyanonitrosyl complexes involving simple and biologically important organic compounds", consists of seven chapters and the contents of each are as follows:

The chapter I begins with the general introduction in which the existing literature of the nitrosyl complexes of transition metals has been briefly surveyed, followed by their
bonding nature and structural aspects. As an outcome of these, the scope of the present work has also been stressed.

The chapter II describes the synthesis and physico-chemical studies of some mixed-ligand cyanonitrosyl\(\{\text{CrNO}\}^5\) complexes of chromium with some potentially mono- and bidentate aniline(s). The properties of the complexes have been studied in detail and the probable structure discussed on the basis of various physico-chemical studies.

The chapter III deals with the synthesis, properties and structures of some mixed-ligand cyanonitrosyl complexes of monovalent chromium with some secondary- and tertiary aromatic amines.

The chapter IV describes the synthesis and structural investigations of some novel hexa-coordinated mixed-ligand cyanonitrosyl \(\{\text{CrNO}\}^5\) complexes of chromium with some heterocyclic esters, ketone and alkanol.

In chapter V, a report on preparations properties and structural studies of some mixed-ligand cyanonitrosyl complexes of chromium having \(\{\text{CrNO}\}^5\) electron configuration with some potentially mono- and bidentate pyridine based organic compounds like ethyl 2-pyridylacetate, 2-(2-methylaminoethyl)-pyridine, 2-picolylchloride hydrochloride, acetoxy-pyridine and \(\text{N,N-diethylnicotinamide}\) has been given.
The VI chapter describes the preparation and characterization some novel cyanonitrosyl complexes of chromium(I) with some biologically active organic compounds like lepidine, quinaldine, 4-hydroxymethylquinoline, 4-chloromethylquinoline and 4-mercaptopmethylquinoline.

The last chapter, that is, chapter VII describes synthesis and physico-chemical investigation of some mixed-ligand cyanonitrosyl complexes of chromium involving \([\text{CrNO}]^5\) electron configuration with some biologically important 5-pyrazolone derivatives.

The references given in this thesis are covered upto date.