PREFACE

The work in this thesis entitled ***PLATINUM METALS' COMPLEXES : SYNTHESIS AND CHARACTERIZATION*** was undertaken to synthesize some new coordination compounds of different platinum metals having O,N,S donor system and to explore the interesting chemistry behind the formation of these complexes.

The thesis consists of five chapters. A brief survey of known chemistry of different types of coordination compounds having aryl azo ligands along with purpose of the present work has been presented in Chapter I

Chapter II deals with the formation of different palladium(II) complexes with ONS as the donor system. All the palladium(II) complexes have been characterized by spectral data and X-ray Diffraction. The theoretical electronic structure of the complexes was deduced on the basis of 'Time Dependent Density Functional Theory' (TD-DFT).

The isolation of platinum(II) complexes of the terdentate, monoanionic (ONS) diazene ligands, their spectral study, structural characterization and reactivity constitute the core of chapter III. For better understanding of the electronic structure of the platinum complexes the TD-DFT calculations have also been included in this chapter.

Rhodium and Iridium exhibit a unique chemistry in bringing about C-S cleavage. Chapter IV deals with the formation of cyclometallated complexes of rhodium(III) and iridium(III) through regiospecific $C(sp^2)$-S cleavage of the azo ligands. Synthesis, spectral and structural characterization of the complexes containing the desulfurized ligands, have been reported in this chapter. TD-DFT calculations and inferences drawn thereof have been delineated.

The chapter V deals with the synthesis, characterization, X-ray crystallographic analysis and TD-DFT studies of diamagnetic octahedral ruthenium(II) complexes of the diazene ligands.

The present work was initiated in July, 2005 at University of North Bengal, under the supervision of Dr. P Bandyopadhyay, Department of Chemistry.

In keeping with general practice of reporting scientific observations, due acknowledgements has been made whenever the work described as based on the findings of other investigators. I must take the responsibility of any unintentional oversight and errors, which might have crept in spite of precautions.

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