

PREFACE

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The work embodied in this thesis “**MIXED-LIGAND COMPLEXES OF RUTHENIUM- AND OSMIUM- BOUND 2-(ARYLAZO)PYRIDINES: SYNTHESIS, SPECTRA AND ELECTROCHEMISTRY**” was intended to explore the ruthenium/osmium chemistry of 2-(arylaazo)pyridine ligand system (L) in combination with different coligands of varied ligational modes and strengths.

The thesis consists of seven chapters. A brief survey of the known chemistry of 2-(arylaazo)pyridines is outlined in **Chapter I** along with the purpose of the present investigation. The prime concern is to prepare new mixed-ligand complexes of 2-(arylaazo)pyridines in osmium bound state (**Chapters II - VII**) and to some extent unexplored related ruthenium chemistry (**Chapter V**). **Chapter II** is on preparation of stable but reactive starting materials of type $[\text{OsX}_2\text{L}_2]$ ($\text{X} = \text{Cl}, \text{Br}$) using available and new synthetic routes. In **Chapter III** the reactions of isomeric $[\text{OsX}_2\text{L}_2]$ towards anionic N-donor ligands (A) ($\text{A} = \text{NO}_2^-, \text{SCN}^-$ and N_3^-) are described. **Chapter IV** deals with synthesis and characterisation of mixed BL (B = heterocyclic base) complexes of osmium(II). **Chapter V** considers mixed bipyrazine (bpyz)-/bipyrimidine (bpym)-L complexes of ruthenium(II) and osmium(II). Synthesis, characterisation and redox behaviour of QL (Q = non-innocent dioxolene ligands) complexes are the subject matter of **Chapter VI**. Isolation and characterisation of osmium(III)-L complexes are described in **Chapter VII**.

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

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