PREFACE

The work in this thesis entitled 'ARYL AZENE OXIDES: SYNTHESIS, STRUCTURE AND MESOGENIC BEHAVIOUR' was initiated from an attempt to design and synthesize new mesogenic materials and also to explore the different physical properties of those compounds.

The thesis consists of six chapters. A brief survey of different types of mesogens, known chemistry of aryl azene oxides along with the purpose of the present work has been presented in chapter I.

Chapter II deals with the details of experimental techniques used for the identification and charcterization of various mesophases.

In chapter III, a convenient, economic, rapid and environment-friendly method for the synthesis of bis(*n*-alkyloxyarene)diazene oxides has been described. The detailed spectroscopic characterization, thermal properties as well as X-ray diffraction studies of bis(*n*-alkyloxyarene)diazene oxides have been reported here.

A new series of mesogenic compounds, bis[4-(*n*-alkyloxybenzoyloxy)phenyl]-diazene oxides, constitute the subject matter of chapter IV. The synthesis, chracterization, thermal behaviour for all the members have been described. Molecular structure has been determined by single crystal X-ray diffraction method.

The synthesis, characterization and thermal behaviour of a new series of mesogenic triazene-1-oxides having four phenyl groups is the subject matter of Chapter V.

Another family of mesogenic triazene-1-oxides containing four phenyl and two ester units is the main topic of Chapter VI. Their preparation, structure, spectral and thermal properties have been described.

The present work was initiated in July 2001 at University of North Bengal, under the joint supervisions of Dr. P. Bandyopadhyay, Department of Chemistry & Professor P.K. Mandal, Department of Physics.

In keeping with general practice of reporting scientific observations, due acknowledgement 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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