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## PREFACE

Liquid crystalline materials are omnipresent in daily life. A broad spectrum of powerful applications of these exotic materials has created new avenues in academic and industrial research. Some of the common applications include display devices, temperature and pressure sensors, light valves and biosensors. Yet, there is considerable current interest in the design and development of novel liquid crystalline compounds with various functional properties. In addition, there is a significant interest in the characterization of these compounds at atomistic-level resolution using a variety of modern experimental, theoretical and computational approaches, which would aid the easy creation of high quality functional molecules. The mesogenic properties of liquid crystalline molecules are fascinating to spectroscopists and have been well utilized in the development of a variety of physical techniques including Nuclear Magnetic Resonance spectroscopy. Needless to mention that the increasing number of research teams, reports and meetings related to this interdisciplinary field is an indication of the wealth and remaining challenges of this rapidly growing field.

This book does not intend to cover the whole field of thermotropic liquid crystalline (TLC) materials as it is extremely difficult to cover within a single book. Instead it presents a collection of Chapters written by experts on various exciting topics in the field. Properties of recently developed TLCs (such as banana-type, thiophene-based, and columnar TLCs), phase biaxiality, and novel polymeric TLCs are discussed in detail. Solid-state NMR studies to obtain atomistic-level structural and geometrical information of TLCs are presented. Synthesis of liquid crystalline conjugated polymers, fast switching of nematic materials by an electric field, and photoconducting discotic systems are also presented.

It is my considerable pleasure to offer my thanks to all the authors for their wonderful contributions and the publishers for the help in developing the book. I thank my family for their help in bringing out this book. I also would like to thank my colleague and friend, Dr. Narasimhaswamy (Central Leather Research Institute, Chennai, India), who introduced me to this exciting field of research that has led to the development of this book.

I sincerely hope researchers in both academia and industries will find the book to be useful for their research.

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