

Preface

The 142nd Committee on Organic Materials Used in Information Science and Industry of the Japan Society for the Promotion of Science (JSPS) was established in November 1974. This committee has actively continued its research activities since then and now has entered its eighth research term (one term lasts 5 years). Meanwhile, the liquid crystal display (LCD) has been a wonderful achievement. When the committee was established, no one anticipated that the LCD could contribute so much to today's industrial field. In the transition of research and development during the early period, there was a growing opportunity that it would go beyond the contribution of this committee, which would become part of the history of the development of the LCD. The Technical Tradition Project arose accidentally from the University–Industry Research Cooperation Program (UICR) in JSPS. Fortunately, the project was adopted and was tentatively titled “Liquid Crystal—Past, Present, and Future”.

The background that contributed to the innovation of the LCD, led worldwide by Japan, was the strong motivation for using liquid crystal materials as display elements. This story could hardly be told without the teamwork of university–industry research cooperation in different fields such as chemistry, physics, or electronics for development of the circuitry, the liquid crystal materials, and the liquid crystal-related elements.

I strongly requested that the early and later researchers should keep in mind, in writing about the development of liquid crystal materials or the related components of the LCD in advances from the electric calculator to the LCD: “A process and a way of thinking that preceded the invention and/or the discovery”, and What brought about the breakthrough in industrialization of the LCD?

Chapters 1–8 of this book cover the topical research that provided a breakthrough in development of the liquid crystal display, from liquid crystals to devices. Because of the widespread field of diverse research activities in development of liquid crystal displays, the accomplishment of this aim would have been difficult with a single author trying to cover all aspects. Therefore, several knowledgeable authors who engaged in developing the field have been involved in writing the first eight chapters of the book.

Chapters 9–11 describe the story of the recent developments and the future perspectives in materials, physics, and functionality of liquid crystals, especially focusing on the contributions by Japanese research groups for the last decade.

On behalf of the editorial board, I wish to thank all the authors for their valuable contributions, their concerted efforts, and the time spent on this project, all of which made this book possible. Our special thanks go to Martin Schadt for his contributions in Sects. 1.2, 6.1, and 7.2. Last but not least, I wish to express our appreciation for having been granted generous financial support by the JSPS for this “Technical Tradition Project” for the UICR program. The grant enabled us to realize this book, *The Liquid Crystal Display Story: 50 Years of Liquid Crystal R&D That Lead the Way to the Future*.

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The Liquid Crystal Display Story

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