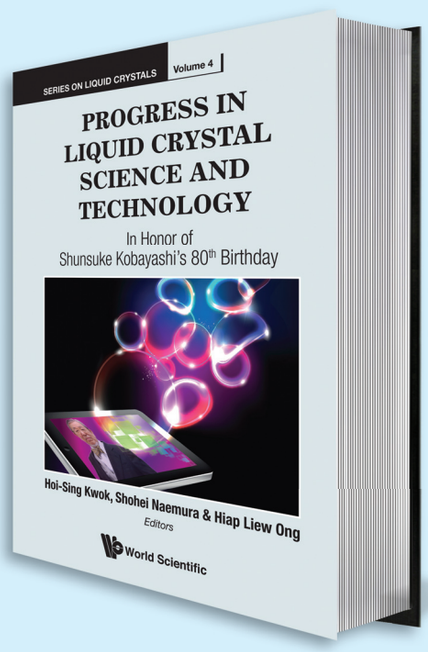
Series on Liquid Crystals Volume 4

PROGRESS IN LIQUID CRYSTAL SCIENCE AND TECHNOLOGY

In Honor of Shunsuke Kobayashi's 80th Birthday

edited by **Hoi-Sing Kwok** *(Hong Kong University of Science and Technology, Hong Kong),*
Shohei Naemura *(Tottori University, Japan & University of Southampton, UK)* &
Hiap Liew Ong *(Kyoritsu Optronics, Taiwan)*



The presence of liquid crystal displays (LCDs) marks the advances in mobile phones and television development over the last few decades. Japanese companies were the first to commercialize passive-matrix TNLCDs and, later on, high-resolution activematrix LCDs.

Prof. Shunsuke Kobayashi has made essential contributions to Japan's prominence in LCD development throughout this period. He is well-known not only for his own groundbreaking research, but also for the training of many prominent figures in the display industry, both in Japan and in other countries.

This book brings together many prominent researchers in the field of liquid crystal science and technology, to share with us the key developments in LCD over the last few decades. It comprises of five categories — from basic physics and chemistry of liquid crystals, to detailed descriptions of alignment technologies, wide viewing angle technologies, LC optics, and display applications.

The Slottow-Owaki Prize is awarded for outstanding contributions to the education and training of students and professionals in the field of information displays. This year, the award recipient is Dr. Hoi-Sing Kwok, SID fellow and professor at Hong Kong University, for providing education and training in display technology to many students and professionals in Asia through the creation of a display research center at the Hong Kong University of Science and Technology.

Contents: ***Reminiscences:*** Introduction: Memories of 43 Years of Liquid Crystal Research *(Shunsuke Kobayashi)*; ***LC Materials:*** Symmetry and the Physical Properties of Liquid Crystals *(Tom C Lubensky)*; Defect Textures of Liquid Crystals *(Stephen James Cowling, Edward James Davis, Richard John Mandle and John William Goodby)*; Electric Birefringence in the Isotropic Phase of Nematic Liquid Crystals *(Shohei Naemura)*; Development History of Liquid Crystal Displays and Its Materials *(Matthias Bremer, Melanie Klasen-Memmer and Kazuaki Tarumi)*; Cholesteric Blue Phases Under Confinement: Skyrmion Lattices and Other Exotic Defect Structures *(Jun-ichi Fukuda and Slobodan Žumer)*; Smectic Liquid Crystals and Their Display Uses *(Akihiro Mochizuki)*; ***Alignment Technologies:*** Nanostructured Alignment Surfaces for Liquid Crystals *(Hoi-Sing Kwok, Jacob Y L Ho, Yuet-Wing Li, Chung-Yung Lee, Man-Chun Tseng and Fion S Yeung)*; Photoalignment of Liquid Crystals: Applications to Fast Response Ferroelectric Liquid Crystals and Rewritable Photonic Devices *(Vladimir G Chigrinov and Hoi-Sing Kwok)*; Application of UV-Curable Liquid Crystals *(Haruyoshi Takatsu, Hiroshi Hasebe, Toru Fujisawa and Shunsuke Kobayashi)*; Alignment Layer Considerations for Defect-Free Bistable SmC Devices *(Philip Bos, Chenhui Wang and Philip Watson)*; Fast Switching Surface-Polymer-Assisted Vertically Aligned Displays *(Jeoung-Yeon Hwang, Volodymyr Borshch and Liang-Chy Chien)*; ***Wide Viewing Angle Technologies:*** Vertical Alignment Technology *(Hidefumi Yoshida)*; The Advance of Patterned Vertical Alignment Technology *(Jun Souk)*; Homogeneously Aligned Liquid Crystal Displays: In-Plane Switching Versus Fringe-Field Switching *(Seung Hee Lee and Young Jin Lim)*; Important Developments in Wide Viewing Angle LCD Technology *(Hiap Liew Ong)*; ***LC Optics:*** Photophysical Properties of Light Responsive Liquid Crystals in Polymeric Templates *(Luciano De Sio, Loredana Ricciardi, Cesare Umeton, Svetlana Serak and Nelson Tabiryan)*; Review of Optics of Liquid Crystal Topical Meetings *(Giancarlo Abbate)*; Measurement of Liquid Crystal Cell Parameters *(Jin Seog Gwag)*; Liquid Crystal Lens for Three-Dimensional Display Applications *(Yi-Pai Huang)*; Optical Torques and Light Orbital and Spin Angular Momentum Transfer in Liquid Crystals *(Enrico Santamato)*; ***LC Displays and Applications:*** Sub-Millisecond Response Liquid Crystals for Display and Photonics Devices *(Yuan Chen, Jie Sun and Shin-Tson Wu)*; Fast Switching Liquid Crystal Displays *(Lachezar Komitov and Gurumurthy Hegde)*; Principles of Three-Dimensional Display Based on Liquid Crystal Panel by Integral Imaging *(Sin-Doo Lee and Byoungho Lee)*; Polymer-Dispersed Liquid Crystals *(John West)*; Polymer-Stabilized Liquid Crystal Displays *(Deng-Ke Yang)*; Self-Compensating VAN Displays for High-Contrast Projection and Direct-View Applications *(Terry Scheffer and Jiuzhi Xue)*; Reflective and Transflective Liquid Crystal Display Devices *(Ki-Han Kim and Tae-Hoon Yoon)*; Methods to Reduce Power Consumption of Liquid Crystal Displays *(Temkar N Ruckmongathan)*.

Readership: For universities, corporations, individual researchers/student/professors dealing in the area of electrical & electronic engineering.

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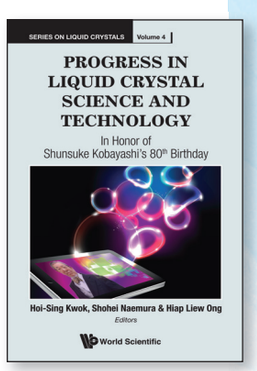

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