

1. Record Nr.	UNINA9910298639703321
Titolo	The Liquid Crystal Display Story : 50 Years of Liquid Crystal R&D that lead The Way to the Future // edited by Naoyuki Koide
Pubbl/distr/stampa	Tokyo : , : Springer Japan : , : Imprint : Springer, , 2014
ISBN	4-431-54859-9
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (426 p.)
Disciplina	621.3815422
Soggetti	Optical materials Electronic materials Electronics Microelectronics Polymers Amorphous substances Complex fluids Optical and Electronic Materials Electronics and Microelectronics, Instrumentation Polymer Sciences Soft and Granular Matter, Complex Fluids and Microfluidics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Preface; Contents; History of the 142nd Committee on Organic Materials Used in Information Science and Industry; Establishment; Research Activity of the Committee; International Symposia; Participation in Joint Research by This Committee; Activity Policy for Liquid Crystal Materials Subcommittee; Part I: Breakthroughs in the Development of Liquid Crystal Displays; Chapter 1: Liquid Crystal Materials; 1.1 Liquid Crystals for Dynamic Scattering Mode (DSM) Displays; 1.1.1 Introduction: The Dawn of Development; 1.1.2 Practical Development at Sharp; 1.1.3 Summary 1.2 The First 35 Years of Positive Dielectric Liquid Crystal Material RandD for Field-Effect LCDs 1.2.1 Liquid Crystals for Field-Effect LCDs; 1.2.2 Molecular Structures, LC Material Properties, and LCD

Performance; 1.2.2.1 Examples for Niche Application of Nematic Liquid Crystals; 1.3 TN Materials 2: Liquid Crystal Material for Multiplexed Liquid Crystal Display; 1.3.1 Historical Background in Relation to Multiplexed Liquid Crystal Devices; 1.3.2 Concept of Multiplexing Drive; 1.3.3 Liquid Crystal Materials for Multiplexing Drive; 1.3.4 Development of White Liquid Crystals for Multiplexing Drive; 1.3.5 Conclusions; 1.4 Super Twisted Nematic Liquid Crystals; 1.4.1 Introduction; 1.4.1.1 Liquid Crystalline Tolan; 1.4.1.2 Liquid Crystalline Alkenyl; 1.4.1.3 Liquid Crystalline Azine; 1.5 Thin Film Transistor Materials: From Cyano Compounds to Fluorinated Compounds; 1.5.1 Introduction; 1.5.2 Discovery of Fluorinated Liquid Crystal Compounds and Liquid Crystal Material for the Initial Development of AM-LCDs; 1.5.3 Characteristics Required for LCDs; 1.5.4 Development of Fluorinated Liquid Crystal Compounds and Liquid Crystal Material Properties; 1.5.4.1 Liquid Crystal Material Development for TN Mode; 1.5.4.2 Liquid Crystal Material Development for IPS Mode; 1.5.4.3 Liquid Crystal Material Development for VA Mode; 1.5.5 Towards Higher Contrast; 1.5.6 Summary; 1.6 Ferroelectric Liquid Crystalline Polymers: Properties and Applications; 1.6.1 Introduction; 1.6.2 Ferroelectric Liquid Crystalline Polymers; 1.6.2.1 Molecular Design and Properties; 1.6.2.2 Electro-Optical Response and Molecular Structure; 1.6.3 Applications of FLCs; 1.6.3.1 Application of Flexible Liquid Crystal Panel; 1.6.4 Summary; References; Chapter 2: Circuits and Drives for Liquid Crystal Devices; 2.1 Circuits and Drive Methods: Multiplexing and Matrix Addressing Technologies; 2.1.1 Introduction; 2.1.2 Multiplexing Technologies; 2.1.3 Matrix Addressing Technologies for Passive Matrix LCDs; 2.1.3.1 A-to-1 Amplitude Selection Technologies; 2.1.4 Active Addressing and Multiline Addressing Methods; References; Chapter 3: Alignment Films for Liquid Crystal Devices; 3.1 Liquid Crystal Surface Orientation Techniques; 3.1.1 Why Is the Orientation of the Liquid Crystal Necessary?

---

Sommario/riassunto

This book focuses on the development of liquid crystal displays (LCDs) and liquid crystal materials (LCs) in Japan. The Committee of Organic Materials Research for Information Sciences of the Japan Society for the Promotion of Science (JSPS) planned the book to document essential LCD innovations and developments since the beginnings of the field-effect LCD technology in 1970. The book illustrates the remarkable effort and progress behind those flat, lightweight, and high-information-content LCDs that have become the indispensable human-machine interface for virtually all electronic devices. In contrast to other publications on this topic, the book illustrates the interdisciplinary character of the LCD technology and its crucial importance for technological progress of the field far beyond displays. It also gives insights into breakthrough innovations not revealed in other publications. Moreover, prospects for the development of LC research toward new fields of applications are provided. In line with its interdisciplinary character, the book targets researchers in basic science as well as engineers and researchers in industry.

---