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Lyotropic Liquid Crystals; The Director and the Order Parameter; Stiff But Flexible; Liquid Crystal Character; Viscosity; Elasticity; The Induced Dipole Moment; References; 6: Thermodynamics for Liquid Crystals; The Three Laws of Thermodynamics
Phase Transitions Entropy; The Boltzmann Distribution; The Minimization of Free Energy; References; 7: The Calculus of Variations; The Brachistochrone Problem; Catenary and Suspension; The Euler-Lagrange Equation; Deeper Meanings of the Euler-Lagrange Equation; References; 8: The Mean Field; Ideal Gas in Crystal Lattice; Long Rod Models; The Composite Electric Field and Average Index of Refraction; The Dipole Mean Field Is Born; References; 9: Maier-Saupe Theory; The Nematic to Isotropic Phase Transition Calculation; Dielectric Anisotropy Calculation; Near Neighbor Correlation; References
10: Phenomenological Theory The Nematic to Isotropic Phase Transition Calculation; Birefringence Calculation; References; 11: Static Continuum Theory; Basic Principles; Static Continuum Theory Examples; The Twisted Only; The Twist and Tilt; The Tilt Only; The Freedericksz Cell; The Splay Tilt; In-Plane Switching; The Bend Perpendicular; The Twisted Nematic; In Memoriam; References; 12: Dynamic Continuum Theory; Conservation Principles; The Leslie Work Hypothesis; Turn-On Example; Hydrodynamic Instability; Conclusion; References; 13: The First Liquid Crystal Display; Dynamic Scattering The Liquid Crystal Display Calculator References; 14: Liquid Crystal Display Chemistry; The Aromatic Compounds; The Search for a Robust Display Liquid Crystal; References; 15: The Twisted Nematic; A Twist of Fate; The Gathering Patent Storm; Watches and Calculators; References; 16: Engineering the Liquid Crystal; Poincare Sphere; Refractive Index Ellipsoid; Jones Vector; The Phase Retardation Parameter; The Mauguin Condition; The Gooch-Tarry Condition; Twisted Nematic Waveguiding; The Twisted Nematic Cell; References; 17: The Active Matrix; Matrix Addressing; The Super Twisted Nematic Active Matrix Addressing

Sommario/riassunto

An unprecedented look into the basic physics, chemistry, and technology behind the LCD Most notably used for computer screens, televisions, and mobile phones, LCDs (liquid crystal displays) are a pervasive and increasingly indispensable part of our lives. Providing both an historical and a business-minded context, this extensive resource describes the unique scientific and engineering techniques used to create these beautiful, clever, and eminently useful devices. In this book, the history of the science and technology behind the LCD is described in a prelude to the development of t
