Abstract

An excellent professional reference and superior upper-level student text, Liquid Crystals, Second Edition is a comprehensive treatment of all the basic principles underlying the unique physical and optical properties of liquid crystals. Written by an internationally known pioneer in the nonlinear optics of liquid crystals, the book also provides a unique, in-depth discussion of the mechanisms and theoretical principles behind all major nonlinear optical phenomena occurring in liquid crystals. Fully revised and updated with the latest developments, this Second Edition covers: Basic physics and optical properties of liquid crystals. Nematics, as well as other mesophases such as smectics, ferroelectrics, and cholesterics. Fundamentals of liquid crystals for electro-optics, and display and non-display related applications. Various theoretical and computational techniques used in describing optical propagation through liquid crystals and anisotropic materials. Nonlinear optics of liquid crystals, including updated literature reviews and fundamental discussions. Structured to follow a natural sequence of instruction, from basic physics to the latest specialized optical, electro-optical, and nonlinear applications, Liquid Crystals is a textbook that grounds students in the fundamentals before introducing them to the most current discoveries in the field. Written in a clear, reader-friendly style, it features numerous figures, tables, and illustrations, including important and hard-to-find device and material parameters. Invaluable to students, researchers, and those working with liquid crystal applications in various industries, Liquid Crystals, Second Edition is the most comprehensive and up-to-date resource available.
Liquid Crystal Thermometers. The use of liquid crystals as temperature sensors is possible because of the selective reflection of light by chiral nematic (cholesteric) liquid crystals. A chiral nematic liquid crystal reflects light having a characteristic wavelength determined by its pitch and by the viewing angle (the angle between the eye of the observer and the surface of the liquid crystal). Because the pitch of a chiral nematic compound is temperature-dependent, observed color is a function of temperature.


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