



# **Nematic and Cholesteric Liquid Crystals: Concepts and Physical Properties Illustrated by Experiments (Liquid Crystals Book Series)**

*Patrick Oswald, Pawel Pieranski*

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## **Nematic and Cholesteric Liquid Crystals: Concepts and Physical Properties Illustrated by Experiments (Liquid Crystals Book Series) Patrick Oswald, Pawel Pieranski**

Liquid crystals allow us to perform experiments that provide insight into fundamental problems of modern physics, such as phase transitions, frustration, elasticity, hydrodynamics, defects, growth phenomena, and optics (linear and non linear). This excellent volume meets the need for an up-to-date text on liquid crystals.

**Nematic and Cholesteric Liquid Crystals: Concepts and Physical Properties Illustrated by Experiments** is a result of personal research and of the graduate lectures given by the authors at the École Normale Supérieure de Lyon and the University of Paris VII, respectively. The first part of the book presents historical background, the modern classification of liquid crystals, and mesogenic anatomy; the second part examines liquid crystals with nematic and cholesteric orientational order. Topics include dielectric and magnetic properties, Frederiks transitions and displays, light scattering, flow and electrohydrodynamic instabilities, surface anchoring transitions, interfaces, equilibrium shapes, and the Mullins-Sekerka instability. Smectic and columnar liquid crystals are covered in more detail by the authors in a separate volume, entitled Smectic and Columnar Liquid Crystals: Concepts and Physical Properties Illustrated by Experiments.

The presentation is illustrated throughout by simple experiments, some of which were performed in class. **Nematic and Cholesteric Liquid Crystals: Concepts and Physical Properties Illustrated by Experiments** provides a useful reference intended for advanced undergraduate and graduate students and researchers in liquid crystals, condensed matter physics, and materials science.

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