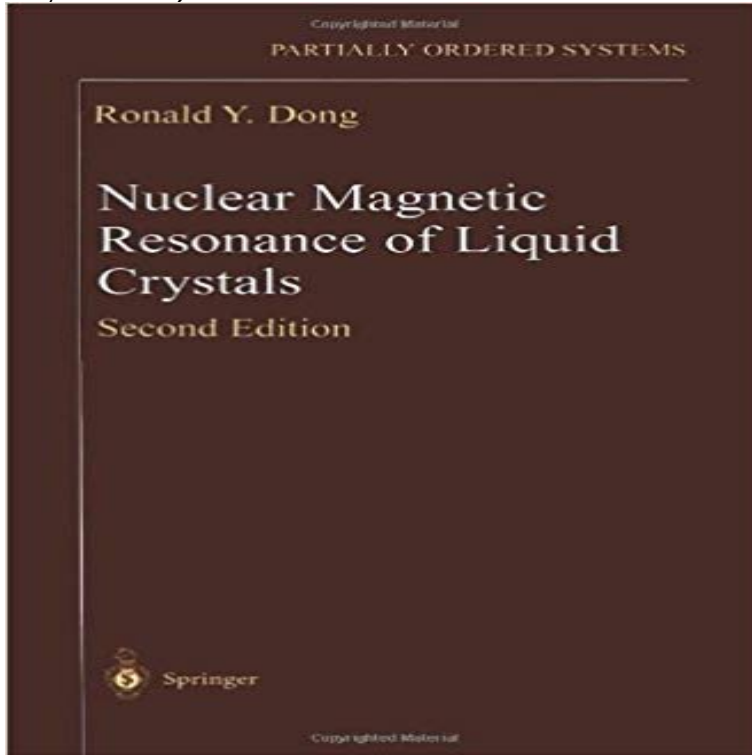


# Nuclear Magnetic Resonance of Liquid Crystals (Partially Ordered Systems)



Liquid crystals have become ubiquitous in the displays for electronic devices, ranging from wrist watches to laptop computers. Nuclear magnetic resonance has become one of the important techniques for determining their structures and properties. Intended for researchers and students in physics, chemistry and materials science, this book provides the necessary background information and sufficient mathematical and physical detail to study the current research literature. The book begins with a survey of liquid crystal phases and field effects and with an introduction to the basic physics of nuclear magnetic resonance; it then discusses orientational ordering and molecular field theories for various liquid crystal molecules and NMR studies of uniaxial and biaxial phases. Subsequent chapters consider spin relaxation processes (using a semiclassical approach) and rotational, translational, and internal molecular dynamics of liquid crystals. The final chapter discusses two-dimensional and multiple-quantum NMR spectroscopies and their application in elucidating liquid crystal properties. This second edition, updated throughout, incorporates many new references, corrects typographical errors, and includes new mathematical appendices.

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