

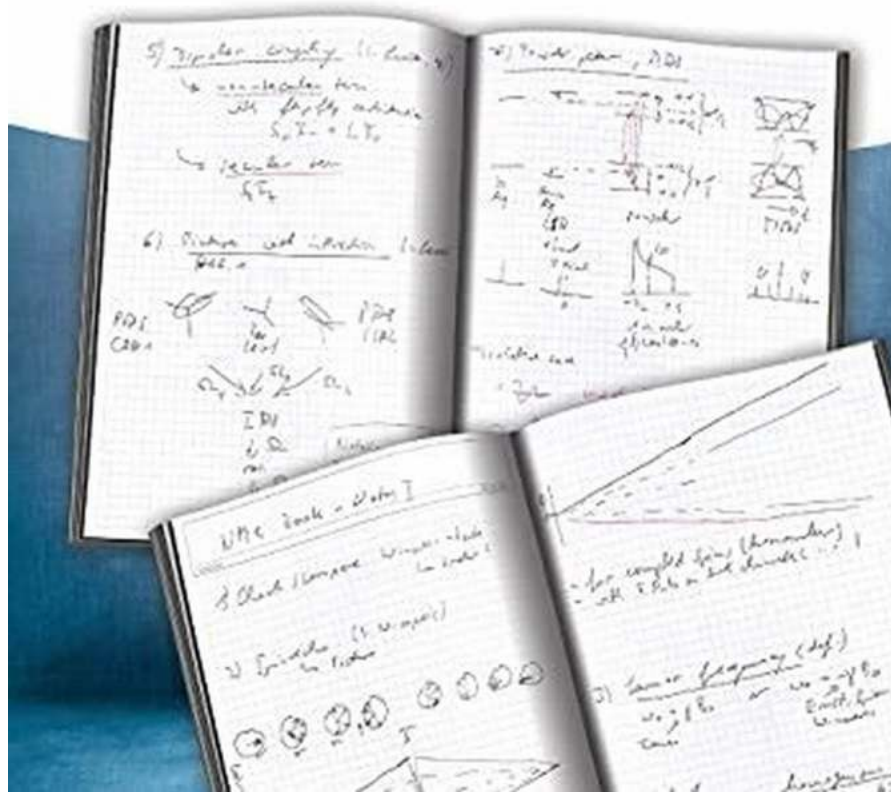
# Unlock the Secrets of Solid State NMR! Discover Its Principles, Methods, and Diverse Applications.

WILEY-VCH

Klaus Müller and Marco Geppi

## Solid State NMR

Principles, Methods, and Applications

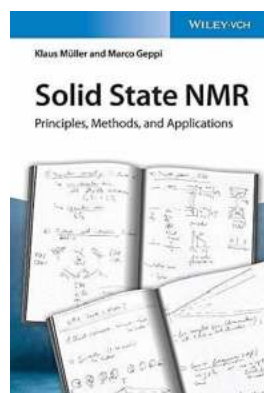


Solid State Nuclear Magnetic Resonance (SSNMR) spectroscopy is a powerful analytical technique used to investigate the structure, dynamics, and interactions

of solid materials. This comprehensive guide unravels the principles behind SSNMR, explores its various methods, and dives into its wide-ranging applications. Whether you are a researcher, a chemist, or simply curious about the fascinating world of solid-state NMR, this article is your key to unraveling the mysteries beneath the surface.

## Understanding Solid State NMR Principles

Solid State NMR is based on the same principles as conventional liquid-state NMR, but it is tailored for the study of solids. Dive into the realm of nuclei, magnetic resonance, spin interactions, chemical shifts, and relaxation times as we demystify the core principles that make SSNMR possible.



## Solid State NMR: Principles, Methods, and Applications

by Klaus Müller (1st Edition, Kindle Edition)

★★★★★ 5 out of 5

Language	: English
File size	: 68053 KB
Text-to-Speech	: Enabled
Screen Reader	: Supported
Enhanced typesetting	: Enabled
Print length	: 544 pages
Lending	: Enabled



## Methods and Techniques

Solid State NMR offers a plethora of methods and techniques to study diverse materials, from catalysts and pharmaceuticals to materials for energy storage and biological macromolecules. Explore magic-angle spinning, cross-polarization, dipolar coupling, and various other methods that enable researchers to unlock the secrets hidden within solid-state samples.

## **The Multifaceted Applications of Solid State NMR**

Solid State NMR finds applications in numerous fields, revolutionizing our understanding of materials and paving the way for groundbreaking discoveries. Discover how SSNMR contributes to the development of new drugs, the characterization of materials for electronics, the study of battery materials, and the investigation of complex protein structures. We will unveil the wide-ranging potential of this versatile technique.

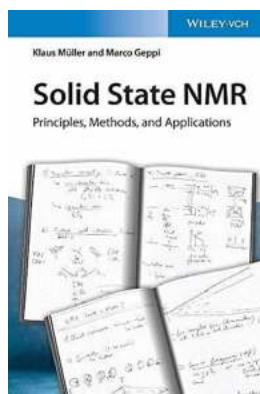
## **Navigating the Challenges**

Like any analytical technique, Solid State NMR does present its fair share of challenges. However, with proper understanding and advanced techniques, researchers can overcome these hurdles. Learn about the challenges of sensitivity, spectral resolution, sample preparation, and data analysis and gain insight into the state-of-the-art strategies employed by experts in the field.

## **The Future of Solid State NMR**

As technology advances and new methodologies emerge, the future of Solid State NMR holds great promise. Explore the exciting advancements, including higher magnetic field strengths, innovative pulse sequences, and enhanced sensitivity, which will propel this technique into new dimensions. Get a glimpse of what lies ahead in the world of solid-state NMR.

Solid State NMR is a captivating field of research with principles, methods, and applications that continue to intrigue scientists worldwide. This comprehensive guide has provided a glimpse into this fascinating discipline. Whether you are a beginner or an expert, Solid State NMR offers an exciting journey filled with discoveries waiting to be made.



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### Solid State NMR

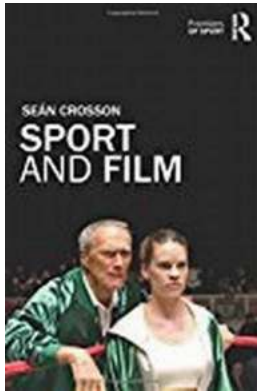
A thorough and comprehensive textbook covering the theoretical background, experimental approaches, and major applications of solid-state NMR spectroscopy

Nuclear Magnetic Resonance (NMR) spectroscopy is a powerful non-destructive technique capable of providing information about the molecular structure and dynamics of molecules. Alongside solution-state NMR, a well-established technique to study chemical structures and investigate physico-chemical properties of molecules in solutions, solid-state NMR (SSNMR) offers many exciting possibilities for the analysis of solid and soft materials across scientific fields. SSNMR shows unique capabilities for a detailed investigation of structural and dynamic properties of materials over wide space and time ranges. For this reason, and thanks to significant advances in the past several years, the application of SSNMR to materials is rapidly increasing in disciplines such as chemistry, physics, and materials and life sciences.

Solid State NMR: Principles, Methods, and Applications offers a systematic to the theory, methodological concepts, and major experimental methods of SSNR spectroscopy. Exploring the unique potential of SSNMR for the structural and dynamic characterization of soft and either amorphous or crystalline solid materials, this comprehensive textbook provides foundational knowledge and recent developments of SSNMR, covering physical and theoretical background, experimental methods, and applications to pharmaceuticals, polymers, inorganic and hybrid materials, liquid crystals, and model membranes. Written by two expert authors to ensure a clear and consistent presentation of the subject, this textbook:

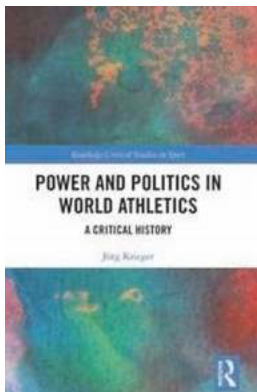
- Includes a brief to the historical aspects and broad theoretical background of solid-state NMR spectroscopy
- Provides helpful illustrations to explain the various SSNMR concepts and methods
- Features accessible descriptive text with self-consistent use of quantum mechanics
- Covers the experimental aspects of SSNMR spectroscopy and in particular a description of many useful pulse sequences
- Contains references to relevant literature

Solid State NMR: Principles, Methods, and Applications is the ideal textbook for university courses on SSNMR, advanced spectroscopies, and a valuable single-volume reference for spectroscopists, chemists, and researchers in the field of materials.



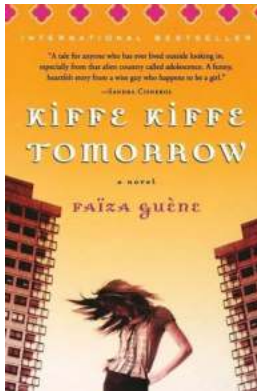
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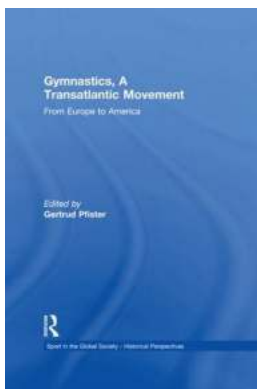
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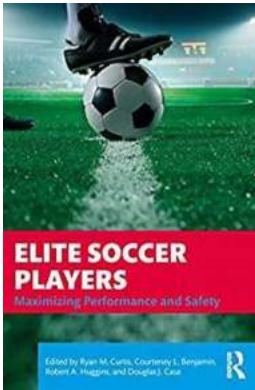
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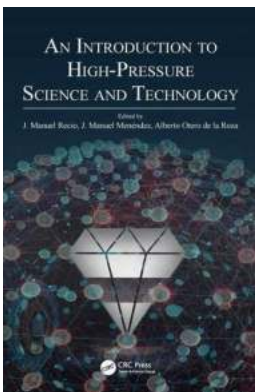
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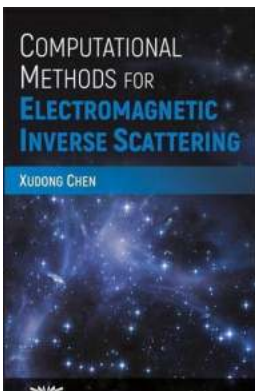
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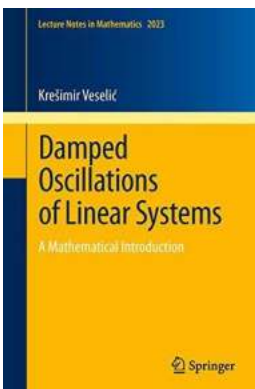
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