



Multidimensional NMR in Liquids: Basic Principles and Experimental Methods

By F. J. M. van de Ven

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Multidimensional NMR in Liquids offers a lucid treatment of basic NMR phenomena, building up to today's most sophisticated NMR experiments from first principles. Using easy-to-grasp product-operator formalism, diagrams, and practical examples, one-, two-, and N-dimensional NMR experiments are explained with minimal recourse to quantum mechanics. Separate theoretical sections are provided for readers interested in spin-quantum mechanics, as are the appendices providing theoretical backgrounds in linear algebra, quantum mechanics, and angular momentum.

Following a systematic and rigorous description of all important 2D experiments (including the applications of pulsed field gradients), up-to-date coverage is given of three-dimensional and four-dimensional homo- and heteronuclear NMR experiments. The book provides original descriptions of complicated topics such as strong coupling, decoupling, and cross-polarization. The final chapter presents the basic concepts of relaxation, followed by an introduction to density operator relaxation theory.

Multidimensional NMR in Liquids is intended for chemists, biochemists, and others interested in studying molecular structure and dynamics with NMR spectroscopy. It also is suitable for use as a text in advanced undergraduate and graduate courses in NMR.

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Editorial Review

From the Publisher

Accessible to chemists and biologists of many different levels, this book provides a complete treatment of high-resolution NMR, building from a one-peak one-dimensional spectrum to multi-dimensional multi-nuclear NMR, including both three- and four-dimensional techniques. Each chapter begins by approaching the subject in an intuitive and pictorial manner using vectors to present the physical phenomena with a minimum recourse to quantum mechanics. The subject is elaborated upon using practical applications and examples, supported by an appropriate and rigorous quantum mechanical derivation of the section.

Appendices containing the concepts of linear algebra, quantum mechanics, and angular momentum utilized throughout the book are also provided.

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