

Book review

The nuclear Overhauser effect in structural and conformational analysis; by David Neuhaus and Michael Williamson, VCH Publishers, N.Y., 1989, xxii + 522 pages, £67, ISBN 3-527-26639-9.

It has been almost twenty years since this topic was so comprehensively treated. Since then advances in NMR instrumentation have made the measurement of NOEs, a valuable tool in structural elucidation. This book is well produced, with the text well written and complemented by numerous figures. It is divided, almost equally, into three main sections treating the theory, experimental details, and applications of the NOE experiment. The substantial treatment of the theory of the NOE effect is concise and purposeful. The authors, however, avoid discussing dipole-dipole coupling in the solid state and the use of the NOE to investigate relaxation, kinetics, or exchange phenomena.

The second section provides a thorough practical guide to performing an NOE experiment, from sample preparation to data presentation. Both one-dimensional and two-dimensional (NOESY), variants are described in detail. Also discussed are the Truncated Driven NOE (TOE), phase sensitive NOESY, Rotating frame NOE (CAMELSPIN and ROESY), and methods for solvent line suppression. The authors are careful not only to outline the merits of each technique but also to discuss their limitations, and to note occasions when other factors may be responsible for an observed NOE, leading to possible misinterpretation of the data. On the basis of this chapter alone I would recommend the purchase of this volume to anyone employing NOE techniques.

The third section on applications, however, will be of little direct interest to many readers of this journal. Most of the molecules chosen as illustrations are either purely organic or, where the technique is at its most powerful, biopolymers. Despite one reference to a ^1H to ^6Li NOE measurement and a ^1H - ^{113}Cd heteronuclear correlation experiment most of this book is devoted to ^1H - ^1H or ^1H - ^{13}C interactions. Other spin 1/2 nuclei such as ^{15}N , ^{19}F , and ^{31}P receive, in comparison, little attention. For the organometallic chemist, however, the lessons learned from the examples discussed may easily be extended to more familiar molecules.

Overall, however, this book is a worthy successor to that earlier classic of Noggle and Schirmer.

*School of Chemistry and Molecular Sciences,
University of Sussex, Brighton BN1 9QJ (Great Britain)*

Gerry Lawless