# BOOK REVIEWS

*NMR Spectroscopy—An Introduction*, H. GÜNTHER, University of Siegen. John Wiley and Sons, 605 Third Avenue, New York, NY 10158. 1980. xiv+436 pp. 15.5 x 23.5 cm. $62.00.

This book is the English edition of Günther's *NMR-Spektroskopie*, published in 1973. For the English edition the author has incorporated additional material, primarily in pulse Fourier Transform nmr, with applications to carbon-13. The adoption of the SI system is another departure from the German edition. The translation is by R. W. Gleason, Middlebury College, Vermont.

The book contains 11 chapters. Chapter 1 is a brief introduction to the phenomenology of nmr. Chapter 2 contains introductory discussions of proton chemical shifts and spin-spin splitting. Chapter 3 is a fairly standard treatment of the mechanics of measurement of nmr spectra. Chapter 4, Chemical Shift and Spin Spin Coupling as Functions of Structure, continues the discussion of proton chemical shifts and splittings begun in Chapter 2. Spin-spin splitting is discussed further in Chapter 5. Here the emphasis is on non-first-order splitting. The quantum mechanical formalism is presented, as is a rather traditional discussion of some of the more common non-first-order systems. Extensive use has been made of the approach of sub-spectral analysis. Chapter 6, The Influence of Molecular Symmetry and Chirality on Proton Magnetic Resonance Spectra, provides additional discussion on the matter of magnetic- and chemical shift equivalence. This is done without group theory, but the concept of enantiotopic and diastereotopic groups is discussed. The author chooses to include a discussion of carbon-13 satellites in this chapter. In Chapter 7, nmr is discussed from the point of view of classical mechanics. Relaxation effects are treated, as is pulse Fourier transform spectroscopy. Chapter 8 covers dynamic nmr. Here the author first discusses principles, with emphasis on two-site exchange, and then he provides a number of nice illustrations from the organic literature. Chapter 9 contains discussions of superconducting magnets, double resonance experiments, Fourier transform spectrosocpy, CIDNP, nmr of paramagnetic materials, nmr of partly oriented molecules, nmr in solids, and nmr imaging. Chapter 10 covers fluorine-19 nmr and carbon-13 nmr. Chapter 11, the Appendix, contains tables of chemical shifts and coupling constants, mathematical relationships, including the Bloch equations, and a listing of the ASTM standard definitions of terms, symbols, conventions and references for nmr.

The book is intended to be an introductory text. Unfortunately, the high cost makes its use as a text somewhat questionable. However, it is an excellent introduction to nmr. The order of presentation of the material might be questioned, but the overall content is very good. The approach uses some mathematics; indeed, an appreciation of elementary quantum mechanics is assumed. However, the reader who insists on a more empirical approach can still gain much from the book. There are numerous references made to literature articles and other books. Problems have been placed at the end of some of the chapters, and answers are provided. The index is adequate.

No fault is found with the translation, or the layout of the book. Figures and diagrams are clearly and carefully drawn, and the highlighting in red is very effective. Very few errors are in evidence.

H. M. BELL, *Virginia Polytechnic Institute and State University*