

Book Review

NMR shifts reagents; ed. by Robert E. Sievers, Academic Press, New York/London, 1973, xii + 410 pages, \$ 9.50 (paperback).

This book is composed of papers derived from a symposium on shift reagents sponsored by the American Chemical Society in April of 1973. It provides the best available summary of many of the quantitative aspects of shift reagent utilization, and the most complete set of references presently available concerning these substances. It does not explicitly provide a guide for the simplest applications of shift reagents in organic structure determination, although it does contain references that provide immediate access to these applications. Further, anyone who reads these papers carefully will learn a number of facts that can usually be applied to the uncomplicated sort of study that is the major use of shift reagents.

These papers deal in detail with a number of different subjects. The extent of aggregation of various shift reagents in solution, the magnitudes of the equilibrium constants for formation of shift reagent-substrate adducts, and the magnetic characteristics of representative shift reagents are considered. Several papers contribute interesting information concerning the significance and extent of hydration of these complexes. The promise and difficulties associated with obtaining detailed information concerning the structures and conformations of organic substances in solution by computer-based fitting of observed and calculated shifts are carefully explored. Areas of special application of shift reagents that are outlined include shifting overlapping lines in CIDNP spectra, changing the time scale in dynamic NMR rate measurements, investigating structures of organometallic complexes, and exploring secondary deuterium isotope effects on shifts.

The book contains as a separate section a well-organized and complete bibliography of references to shift reagents. Although the applications of shift reagents in areas such as the determination of structures of natural products are not extensively touched on in the papers in the volume, this bibliography contains all the examples that are presently available of this type of use of shift reagents.

The book is paper bound and relatively inexpensive; the reproduction is excellent for this type of publication; the time between the symposium and publication is astonishingly short. Overall, the volume provides an admirable illustration of the ability of the publishing industry to convert a collection of manuscripts into a finished volume while their information is still fresh and valuable. This volume is worth buying by anyone who is carrying out research

with shift reagents; the bibliography alone should be of great value to those who frequently encounter practical spectroscopic problems requiring solution by shift reagents.

*Department of Chemistry
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139 (U.S.A.)*

GEORGE M. WHITESIDES