

Book review

Host Guest Complex Chemistry I; edited by F. Vögtle, (*Topics in Current Chemistry 98*), Springer-Verlag, Berlin, Heidelberg, New York, 1981, vii + 197 pages, DM76. ISBN 3-540-10793-2,

Host Guest Complex Chemistry II; edited by F. Vögtle, (*Topics in Current Chemistry 101*), Springer-Verlag, Berlin, Heidelberg, New York, 1982, vii + 203 pages, DM88. ISBN 3-540-11103-4.

Host Guest Complex Chemistry III; edited by F. Vögtle and E. Weber, (*Topics in Current Chemistry 121*), Springer-Verlag, Berlin, Heidelberg, New York, Tokyo, 1984, xiv + 224 pages, DM98. ISBN 3-540-12821-2.

The appearance of the third (and final?) volume in this series provides an excellent opportunity to review the three volumes as a related set of books. Volume I contains an introductory overview of crown-type compounds (E. Weber and F. Vögtle), a discussion of the concept, structure and binding in complexation (D.J. Cram and K.N. Trueblood), a review of the complexation of uncharged molecules and anions by crown-type host molecules (F. Vögtle, H. Sieger and W.M. Müller) and an account of the analytical applications of crown compounds and cryptands (E. Blasius and K.-P. Janzen). Volume II contains a review of the structural chemistry of both natural and synthetic ionophores and their complexes with cations (R. Hilgenfeld and W. Saenger), an account of the dynamic aspects of ionophore mediated membrane transport (G.R. Painter and B.C. Pressman), a description of bioorganic modelling of enzyme catalysis by studying stereoselective reactions with chiral neutral ligand complexes (R.M. Kellogg) and a review of phase-transfer catalysed reactions (F. Montanari, D. Landini and F. Rolla). Volume III continues this theme with a discussion of solvent extraction of metal ions by crown compounds (Y. Takeda), a review of the use of crown compounds as alkali and alkaline earth metal ion selective chromogenic reagents (M. Takagi and K. Ueno), a description of the photocontrol of ion extraction and ion transport by photofunctional crown ethers (S. Shinkai and O. Manabe), a review of the attachment of macroheterocyclic ligands to polymers (J. Smid and R. Sinta), a discussion of the synthesis of aza-macrocycles with pendant arms having additional ligating groups, and their complexes (Th.A. Kaden), and finally a description of bridged, capped and fenced porphyrins (J.E. Baldwin and P. Perlmutter).

As a scan of the chapter titles in the previous paragraph will reveal, the series concentrates (but not exclusively) on the synthetic, structural, thermodynamic and kinetic aspects of coronand, cryptand, catapinand and podand ligands and their complexes, with an emphasis towards their analytical and biological importance. The first synthetic ionophores, [18]crown-6 and dibenzo[18]crown-6, were described by C.J. Pedersen in 1967, and the growth of this exceptionally important field since that data has been phenomenal; the elegant chemistry of the '80's represents true molecular engineering. The

importance of crown ethers to synthetic inorganic and organometallic chemists does not need to be emphasised, and at a total cost of ca. £68 for 624 pages, this excellent set of books cannot be too highly recommended. The reviews are written to a uniformly high standard, and the quality of the type-set text is excellent. Secondary, rather than primary, sources are emphasised in many of the articles, and the introductory article in Volume I can be particularly recommended if quick access to earlier review material is required. With the exception of some of the illustrations in the review by Hilgenfeld and Saenger (Volume II), the quality of the figures (and clear illustrations are crucial to this field) is first-class, and adds substantially to the value of the reviews. The principal criticism of the set must be the absence of an index, which sadly detracts from the overall usefulness of the volumes. If a fourth volume is currently being planned (and we hope that it is), then the editors would do well to consider the inclusion of a retrospective and comprehensive index of the whole series.

In summary, these three volumes provide an authoritative (if not comprehensive) coverage of the field of host guest complex chemistry at a reasonable price, which should make them readily available for purchase by private individuals as well as by libraries. This is a four-star collection, denied its final star for the lack of an index.

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