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## Book reviews

*Nucleoside Synthesis — Organosilicon Methods*, E. Lukevics and A. Zablocka, Ellis Horwood, Chichester, 1991, 496 pages. U.S. $221.95. ISBN 0-13-812652-6

This is the English edition of a Soviet monograph first published in 1985. It has been substantially revised and updated to take account of the significant changes which have occurred in the field since the Soviet edition.

Nucleoside chemistry has been increasingly important in recent years owing to the expansion in research on antiviral drugs. The book is therefore a timely monograph on one method of preparing nucleosides, the so-called silyl method of synthesis. This is a modification of the Hilbert–Johnson approach of condensing heterocyclic bases with sugar derivatives. The stability of the silylated bases allows for greater flexibility in the reaction conditions which may be used to achieve this condensation, and the lower electronegativity of silicon compared with carbon makes the synthesis more effective.

The book is arranged in two parts. The first part is a conventional review of the subject in six chapters while the second part consists of cumulative tables on syntheses of nucleosides by the silyl method published before 1990. Apart from chapter 1, which is an eleven page discussion of other ways of preparing nucleosides, the book is entirely devoted to this one method. The effects of solvents, use of Lewis acids and mercury salts in the reaction are described fully and after a general chapter on methodology (chapter two) the chapters in part one are arranged in order of the type of nucleoside being synthesised. This makes the book easy to use and a useful source of experimental detail for the laboratory worker.

The tables in part 2 take up nearly 250 pages, covering 2549 reactions. Compounds are categorised by nucleoside type and listed by IUPAC name. Yields, catalysts, solvents, temperatures, resultant anomeric ratios, and references are easily found from these tables.

This is an exhaustive monograph on one reaction and should appeal to the laboratory chemist involved in the important field of nucleoside synthesis.

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*Electron Deficient Boron and Carbon Clusters*, G.A. Olah, K. Wade and R.E. Williams (Eds.), John Wiley & Sons, New York, 1991, 379 pages. £47.50. ISBN 0-471-52795-5

*Electron Deficient Boron and Carbon Clusters* is a volume dedicated to William N. Lipscomb for the occasion of his 70th birthday. The contents derive from a symposium on Electron Deficient Clusters held in 1989. The initial dedication (F.A. Cotton) illustrates without a doubt the great contributions that Bill Lipscomb

has made to inorganic chemistry over the past 50 years.

The book comprises 14 Chapters, the first, by way of an introduction (Olah, Wade, Williams), contains a useful set of definitions of terms and serves to remind readers of the origins of basic cluster bonding phenomena. Chapter 2 (R.E. Williams) is an in-depth look at systemisation in *nido*-cluster geometries and bonding. To all those with an interest in cluster bonding, this Chapter is essential reading. Electron distribution in boranes and carboranes forms the theme of Chapter 3 (K. Wade); it provides a thought provoking excursion into the factors determining cluster charge distribution. In Chapter 4, Buehl and Schleyer discuss IGLO (Individual Gauge for Localised Orbitals) shift calculations. Previously used with success in carbocation predictions, applications to boranes are now explored; this provides a readable introduction to the technique. Detailed results concerning the diamond-square-diamond mechanism of cage rearrangement are provided by Mingos and Wales in Chapter 5. The reader is made aware of relevant orbital and geometric symmetry selection rules and two theorems for identifying degenerate rearrangements which invoke orbital crossings are presented.

Theoretical aspects make way for experimental results in Chapter 6 (N.N. Greenwood) with recent work from the Leeds (UK) group. Structural details of small boranes and their behaviour upon thermolysis are discussed alongside a fascinating survey of metallaborane structures, selected because of their unexpected nature. The theme of the book's title is well represented in Chapter 7 (T.P. Onak and K. Fuller) with summarised reactions of small carboranes. Selected heteroboranes are discussed in Chapters 8 (S.O. Kang and L.G. Sneddon) and 9 (N.S. Hosmane and J.A. Maguire); both accounts provide insight into recent results in this area. Chapter 11 focusses on the elegant studies of R.N. Grimes in which the ability of *nido*- and *cyclo*-carborane anions to participate in the formation of multidecker sandwich compounds is explored. The chapter makes fascinating reading both to the uninitiated and to the reader who is already familiar with the work. Chapters 10 (D.P. Workman and S.G. Shore) and 11 (T.P. Fehlner) explore transition metal–boron interactions in clusters which are metal-rich. The former account centres on systems derived from the hydroboration of $H_2Os_3(CO)_{10}$; the latter deals mainly with ferra- and cobaltaboranes and emphasises the new area of metallaboride chemistry. In the spirit of the boron-carbon analogy, Fehlner throws down the gauntlet of "inorganometallic" chemistry; will the main group chemist take up the challenge and use this term? While of clear interest in its own right covering aspects of the oxidative addition of C–H bonds to iridium and osmium, Chapter 13 (T.C. Flood) does not fit comfortably into a book entitled *Electron Deficient Boron and Carbon Clusters*. The material may well find itself hidden from those chemists to whom it will be of most value. The final Chapter (G.A. Olah) returns the reader to a pure theme suggested by the book title — that of hypercarbon clusters.

In conclusion, this book is a collection of independent essays written by leaders in the field and provides a timely and balanced overview of an area full of challenge to the theorist and experimentalist. It is a volume which should find its way into most chemistry departmental libraries. As prices go nowadays, it is good value.

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