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Book review

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GMELIN HANDBOOK OF INORGANIC CHEMISTRY, 8th Edition, New Supplement Series, Volume 54, BORON COMPOUNDS, Part 20, BORON-HYDROGEN COMPOUNDS, Part 3, L. Barton, T. Onak, R. J. Remmell, S. G. Shore and M. Yamauchi, volume authors; K. Niedenzu and K. -C. Buschbeck, volume editors, 1979, vi + 305 pages, DM 689, \$ 379.

BORON COMPOUNDS, FORMULA INDEX, K. Niedenzu and K. -C. Buschbeck, volume editors, 1979, 397 pages, DM 745, \$ 409.80. Gmelin Institut für Anorganische Chemie der Max-Planck-Gesellschaft zur Förderung der Wissenschaften and Springer-Verlag, Berlin/Heidelberg/New York.

The present volumes bring the Gmelin Handbook boron series to a conclusion. Part 20 completes the coverage of the boron hydrides and their derivatives. Its subjects of discussion are the higher boron hydrides and their derivatives such as Lewis base adducts, derived anions and B-H substitution products - from  $B_5H_9$  and  $B_5H_{11}$  through  $B_6H_{10}$ ,  $B_6H_{12}$  and  $B_9H_{15}$  through  $B_{10}H_{14}$  and on to the larger species, all the way to the  $[B_{48}H_{45}]^{5-}$  ion. The seven chapters covering these compounds all are excellently done. Particularly useful are the many formulas and figures without which the latter part of the book would not be very comprehensible. Included in the discussions are methods of preparation of the species in question, their physical properties, including thermodynamic data and structural parameters and their spectroscopic properties (principally vibrational spectra and proton and B-11 NMR spectra) and mass spectra. Many useful tabulations of data as well as reproductions of NMR spectra are provided. Literature coverage appears to be complete. For the boron hydrides the period 1950-1977 (inclusive) is covered; for the derivatives of these boron hydrides the cut-off date is 1976. (The literature prior to 1950 is dealt with in the earlier boron "main" and "supplement" volumes.) An appendix provides general references (reviews, book chapters and books) to boron hydride chemistry.

All in all, this is an excellent, detailed and up-to-date review of the higher boron hydrides. The authors are all at universities in the USA and thus the entire book is written in English,

which will please the large international readership of the Gmelin Handbook.

The final volume brings an alphabetical formula index for all the boron compounds to be found in the 20 volumes of the boron series, beginning with  $\text{AgAs}_3\text{BBr}_2\text{C}_{17}\text{H}_{23}$  and ending with  $\text{B}_{100}\text{P}$  (the only alphabetical index in existence which did not get past "B"! ). Listed beside the empirical formula for each entry is a descriptive structural formula, e.g.,  $[(\text{C}_2\text{H}_5)_4\text{N}]_3[\text{B}_{24}\text{H}_{23}]$  for  $\text{B}_{24}\text{H}_{83}\text{N}_3$ , and the New Supplement Volume number and the appropriate page number. Also provided in this book is a useful overview of the Gmelin boron series with a subject index coded very generally according to elements which are bonded to boron - B-H, B-O, B-N, B-X, B-S, B-C, etc. To anyone wishing to extract the maximum from these volumes, the indexes will be indispensable.

The Gmelin Institut and, in particular, the two editors involved, are to be commended for their conception of this 20 volume series and for bringing it to fruition. The availability of this series provides the chemist with a reliable baseline for future literature searches in the boron area and he can feel certain that the job has been done most thoroughly up to the cited cut-off date. We are told by the editors in their final preface that the coverage of boron compounds will be continued in supplement volumes. The first of these will up-date the literature coverage for all 20 volumes of this series to a common cut-off date of 1977. Further supplement volumes then will follow as new research results accumulate. We wish this useful "Gmelin within the Gmelin" good health and long life!

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