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Book reviews

Sonochemistry: Theory, Applications and Uses of Ultrasound in Chemistry; by T.J. Mason and J.P. Lorimer, Ellis Horwood, Chichester, 1988, xii + 252 pages. £38.50 (hardcover), ISBN 0-7458-0240-0.

The use of ultrasound in chemistry has grown rapidly in the last five years and this is reflected by the books which are either about to be, or have just been, published on the subject. The successful applications of ultrasound in synthetic chemistry are now so numerous and varied that whole books are now being devoted to the subject. This volume, as its title suggests, is concerned with a very broad range of areas, not just the synthetic uses of ultrasound and as such provides an excellent background source for those new to the field.

The book contains eight chapters which are titled "Ultrasonics"; "General Principles", "Synthesis"; "Polymers"; "Kinetics and Mechanisms"; "The uses of high frequency ultrasound in chemistry"; "Ultrasonic equipment and chemical reactor design"; and "Miscellaneous effects of power ultrasound". The questions most frequently asked of this reviewer on ultrasound are; "What type of reactions are affected by ultrasound?"; "What apparatus do I need for sonochemistry?"; and "Why does sonochemistry work?" The chapters on synthesis, equipment and reactor design, and general principles will answer these questions as well as many others, and in the future I will direct enquirers to this book with confidence. The other chapters will be of great interest to those who would like a broader view of the field of ultrasonics and also to polymer chemists.

In the Preface the authors mention their involvement in the Royal Society of Chemistry residential course in 1988. I suspect that many of the equations and schemes in the synthesis chapter (and diagrams elsewhere in the book) have been reproduced from the course handbook, some of the equations and schemes also appear to have been typeset by the publisher. The two different typefaces thus used give the synthesis chapter a rather uneven appearance.

The book is generally well produced with few typographical errors, criticism, must however, be made of the index. The index covers about four pages but many of the entries are unhelpful or unnecessary. For example, if one looks up "bath" or "ultrasonic bath" there are no entries, the information required being under the entries "using a bath" and "using an ultrasonic bath"; there is only one entry under "sonochemistry" the main title of the book; the work "thermochemical" appears as an entry; and "dispersion of solids" appears twice but with different page number references!

The poor index does not detract greatly from the usefulness of the book as it is generally well laid out. Newcomers to sonochemistry as well as those with some

experience in the field will find much of interest in this very wide-ranging book.

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Gmelin Handbook of Inorganic Chemistry, 8th edition, *B — Boron Compounds, System Number 13, 3rd Supplement Volume 4*, by G. Heller, A. Meller, and T. Onak, Springer-Verlag, Heidelberg, 1988, xviii + 256 pages, DM1198, ISBN 3-540-93567-3.

The present volume concludes the 3rd Supplement issue of boron compounds. It deals with the chemistry of boron compounds with (1) Cl, Br, and I (by A. Meller, 101 pages); (2) S, Se, Te, and Po (by G. Heller, 49 pages, 43 of these dealing with B–S); and (3) carboranes (by T. Onak, 101 pages).

The volume is of the quality to which one has become accustomed with the Gmelin series. It is remarkably free from errors, although two have been noted (on page 76, in the first line of the second paragraph, a sulfur atom is missing in the formula; and ref. 17, on page 89, has a minor clerical error). There are the usual details and helpful Tables; in many of the latter, compounds are listed, with comments on items of interest that have been reported, and appropriate reference numbers.

The literature coverage is to the end of 1984, although there is the occasional later reference; the 2nd Supplement, Volume 2 provided details of the bibliography through 1980.

Among compound types which will be of particular interest to readers of this Journal are those of formula RB(H)Hal, $RBHal_2$, R_2BHal, $RB(ER')_2$, and $R_2B(ER')$ (E = S, Se, or Te), as well as carboranes.

The carborane coverage includes data on compounds having from 1–13, 16–20, 26, 30, 34, 40, and 42 boron atoms. There is also a section dealing with polymers based on carboranes containing 10 boron atoms, and on metallacarboranes of various types.

The authors, editors (K.-C. Buschbeck and K. Niedenzu), and publishers are to be commended on a fine achievement.

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Chromatographic Enantioseparation; methods and applications; by Stig G. Allenmark, Ellis Horwood, Chichester, 1988, 224 pages, £38.50, ISBN 0-84312-988-6.

Any chemist currently working in the field of chiral synthesis will tell you that the use of polarimetry for the assessment of optical purity leaves much to be desired. In a recent search of the literature for the rotation of the pure enantiomer of a compound which we had synthesized, we found seven different values, none of which proved to be strictly accurate. In addition, the measurement of optical