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Book reviews

The Stereo Rubbers,; edited by W.M. Saltman, John Wiley & Sons, New York, 1977, x + 897 pages, $49.50

This book is a comprehensive treatise on the chemistry and physics of the new classes of rubbers, produced by organometallic catalysts, that have been developed in the last twenty years. It covers also some aspects of the production, processing and economics of these materials. The authors of the individual chapters are all well known in their fields and are drawn from several countries. The book is very largely successful. It is readable, well presented and contains a wealth of information and references. Overall, the approach has been descriptive and non-mathematical, although inevitably the later physical chapters include all the necessary equations for proper treatment of the subjects. The book is well provided with diagrams and tables.

In such a comparatively new field still much controversy exists, and this is well brought out in the chapters on the mechanism of coordination catalysis, homogeneous anionic polymerization, and network formation, where in the latter even the author professed that his preface was a summary of his beliefs. From the chemistry point of view in the first half, the book has a good balance between the fundamental and the applied aspects. Chapters which might be expected from their titles largely to duplicate their material, are found to present the subject from the industrial point of view and then the academic. This has been achieved by a careful juxtaposition of authors from industrial and academic circles. Thus, for example, Cooper's chapter on preparation of polydienes by coordination catalysts and that of Dall'Asta on olefin copolymers, are well complemented by Teyssié and Dawan's chapter on coordination catalysis.

Some exception may be taken to the form of the second half of the book which deals primarily with the physics of polymers, but also contains chapters on network formation and on aging and degradation. Here the book appears to wish to combine an introductory text on rubber science together with the primary subject of the book, the stereorubbers. Each chapter is in effect an essay on the subject of its title, with special reference to the stereorubbers. The degree of concentration on the stereorubbers varies considerably, from very little in the chapter on uniaxial rupture of elastomers and the last chapter on elastomers in tires, to much in the chapter on viscoelastic behaviour. Individually, the chapters may be excellent, but the primary purpose of the book is somewhat lost. A specialized treatise on the stereorubbers for the rubber technologist could assume the large amount of background material given, whereas an introductory manual to rubber technology would benefit from the absence of the concentration on stereorubbers in the first half.

Nevertheless, the editor is to be complimented on the production of a book which will probably fill the role of the standard text on the subject for some time.

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Sussex-N.P.L. Computer Analysed Thermochemical Data: Organic and Organometallic Compounds, by J.B. Pedley and J. Rylance, University of Sussex, 1977 £10.00*.

The appearance of this book of tables is most welcome. On the assumption of fixed enthalpies of formation for any inorganic compounds involved, data for the enthalpies of reaction for several thousand organic and organometallic compounds have been processed by a computer to provide a very timely supplement (covering the years 1968—1975) to Cox and Pilcher's authoritative work published in 1970. The book, which is produced in a loose leaf, ring binder format, contains three tables. The first and longest of these lists the standard enthalpy of formation derived from the standard enthalpy of combustion or vaporisation for each compound. The Chemical Abstracts Registry Index name of each compound is given where possible. It is regretable that the editors have not followed the Chemical Abstracts procedure for ordering the chemical elements in the formula of each compound, which is also given. The second table reports the standard enthalpy changes of 1133 reactions, and the last table gives the standard enthalpies of formation of the inorganic species present in the second table. Finally a list of references is given which is largely confined to the period 1968—1975.

The tables are well set out and easy to read. The pages are not numbered; which is rather inconvenient, when it is realised that the part of the first table of greatest interest to the readers of this journal is a seventeen page section which starts about 140 pages from the beginning. The purchase of this book by libraries is recommended without reservation, but the insubstantial binding and cover may indicate re-binding if general accessibility is intended.

Finally, it is to be hoped that this invaluable project will be maintained in the years ahead. As the thermochemistry of organometallic compounds becomes better explored and understood, the availability of the computerised data file at the University of Sussex will be a significant asset.

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* This book may be obtained from Dr. J.B. Pedley, School of Molecular Sciences, University of Sussex, Brighton BN1 9QJ (Great Britain).