

The second review, on the determination of the number of active centres in Ziegler-Natta polymerizations, by J. Mejzlik, M. Lesná, and J. Kratochvila, surveys the methods used in critical fashion, covering a wide range of systems. It concludes that there is no method for the direct and selective determination of active centres which is completely free of objections. The discussion of conventional organometallic mechanisms is minimal.

A third review, on the synthesis and properties of substituted polyacetylenes, by T. Masuda and T. Higashimura (editor S. Okamura) presents a summary of the various catalyst types employed and the mechanistic routes (thought to concern metal carbenes) involved. This is a useful, though from an organometallic viewpoint over-brief, review.

In summary, this book will provide background material for those interested in organometallic catalysis of polymerizations. It will not be a primary reference for many organometallic chemists. Polymer chemists may find it much more generally useful.

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Catalysis: Science and Technology, Volume 8, Edited by J.R. Anderson and M. Boudart, Springer Verlag, 1987, 262 pages, DM 148, ISBN 3-540-15034-X.

This series of books on catalysis in science and technology is now almost complete. Its purpose has been to collect authoritative reviews on the main areas of catalysis, rather than to provide a long-running series of "Advances" type articles. The emphasis throughout has been on processes which have industrial relevance, and in all the articles many relevant practical details are provided.

The first chapter, by G. Chinchin, P. Davies and R.J. Sampson, all of ICI, details the historical development of catalytic oxidation processes. The reactions discussed include oxidations of sulphur dioxide and ammonia, and various routes to the production of maleic anhydride. The review is almost entirely concerned with heterogeneous systems. Chapter 2, by J.C. Mol and J.A. Moulym considers alkene metathesis, starting with a useful, if fairly conventional, discussion of the reaction mechanism. Both homogeneous and heterogeneous catalysts are well discussed, together with problems relating to the stereochemistry of the reaction and the routes for initiation. The major industrial applications of the processes are also reviewed.

Chapter 3, by J.J. Carberry, reviews physico-chemical aspects of mass and heat transfer in heterogeneous catalysis, with Chapter 4, by K.C. Pratt, dealing with small scale laboratory reactors. The final section, by J.H. Lunsford, deals with the application of EPR methods in studies of heterogeneous catalysis. Not only is this technique valuable because of its great sensitivity, but it also provides much information not readily available by other methods.

As we have come to expect from this publisher, the volume is well-produced with clear illustrations and few errors. Most of the chapters are well referenced into 1985. Perhaps the weakest point of the production is the index, which is rather limited.

For example, despite an extensive discussion of carbene complexes and tungsten based catalysts in the chapter dealing with metathesis, neither of these feature in the index. This volume also contains the author index for volumes 1–8 of the series.

This series is designed for, and will chiefly be of interest to, the practical industrial chemist who actually uses catalytic processes. To these readers this volume too will prove invaluable, and should be readily accessible. It must be said, however, that its interest to the organometallic chemist will be more limited. Additionally, a book with chapters on such very diverse topics is unlikely to attract many individual purchasers.

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