

Book reviews

Catalytic Activation and Functionalisation of Light Alkanes: Advances and Challenges

E. G. Derouane, J. Haber, F. Lemos, F. Ramôa Ribeiro and M. Guisnet (eds)

Kluwer Academic Publishers, Dordrecht, 1998

x + 492 pages, £145

ISBN 0-7923-4960-1

A major challenge for the chemicals industry is the development of energy-efficient means of selectively functionalizing methane and other lower alkanes. That challenge is principally focused on the development of new catalyst systems. At present, the attractively low cost of the lower alkanes is more than offset by their relative lack of chemical reactivity, so that when conditions can be discovered for their chemical transformation, either conversion rates have to be uneconomically low, or the desired products, e.g. methanol from methane, are themselves destroyed under the chosen conditions. Almost 400 pages of this book comprise a record of the principal lectures at a NATO Advanced Study Institute held in Southern Portugal in the summer of 1997, which was devoted to the many approaches which have been explored for the understanding and development of catalysts for reactions of C_1 – C_4 alkanes. This is followed by some 60 pages of selected short communications; the book is completed by a brief report on an accompanying Workshop, a principal finding of which was that there should be greater integration of the diverse approaches to catalyst development, especially with regard to potential applications.

Among the many investigative approaches addressed in the main section are biomimetic activation, organometallic and heteropolyacid-salt activation, and activation by superacids. For all of these, the possible utilization of zeolite supports is extensively analysed. Theoretical approaches which are presented include the computer simulation of catalyst active sites in zeolites.

The book is generally well presented, and, for those active in the field, for whom it is likely to be a valuable source book, its rapid production (January 1998) will be welcomed. However, closer inspection reveals that uniformity between (and even within) chapters, as well as general accuracy, have to some extent suffered. Although the frequency of minor textual errors occasionally becomes distracting [especially the more humorous ones, such as reference to the agnostic (*sic*) effect], only rarely did I find that they leave the intended meaning unclear. A greater distraction was the subject index, which comes close to being of the type that would have been better omitted altogether (for example, neither 'Fischer–Tropsch' nor the more recently developed and

somewhat controversial 'Gif' reactions are indexed, although both are discussed in more than one chapter; in contrast, there are no fewer than 31 entries under the peculiarly uninformative heading 'alkane').

Essentially all chapters are copiously referenced, often covering the literature well into 1997, but the book's 'author index' is simply an alphabetical listing of contributors. One personal hobby horse: I regret the use, by some contributors, of reference listings which include titles of research papers. This style, common, for example, in the life sciences, has generally been the exception in chemistry publishing and should, I believe, be discouraged; to my mind it adds little more than the means for a publisher to sell more paper.

Despite these criticisms, and the relatively high cost, this book is itself an important contribution towards the integration of different approaches to catalysis, as advocated in the Workshop report, and is sure to find its way on to the shelves of many laboratories in which catalysis research is being pursued or considered.

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Metal Sites in Proteins and Models: Redox Centres

Structure and Bonding, Volume 90

H. A. O. Hill, P. J. Sadler and A. J. Thomson (eds)

Springer, Heidelberg, 1998

209 pages. £76

ISBN 3-540-62888-6

What a delight to see three volumes of *Structure and Bonding* (88–90) devoted to topics in the area of 'metal sites in proteins and models'. Even better to find three world-leading biological inorganic chemists as the editors guiding this special series. Surely this must be a recipe for success. In my opinion, it is — but not quite in the way I expected. Although this review is primarily concerned with Volume 90, I feel I must put it in the