

BOOK REVIEWS

Catalysis: Heterogeneous and Homogeneous. Edited by B. DELMON and G. JANNES. Elsevier Scientific Publishing Company, Amsterdam and New York, 1975. xxv + 547 pp. Dfl. 160.

These are the "Proceedings of the International Symposium on the Relations between Heterogeneous and Homogeneous Catalysis Phenomena" held in Brussels in October 1974. As the subtitle suggests, the purpose of this symposium was to emphasize the common features of homogeneous and heterogeneous catalysis.

The book includes 28 submitted and 10 invited papers and their discussions. The editors have added a useful introduction that guides the reader into the material included in the book. Overall, the works presented are of a good scientific level, but, as always occurs in the Proceedings of a Meeting like this, there is a wide variation in the depth, scope and importance of the contributions. Special emphasis was placed on trying to interpret fundamental aspects of heterogeneous catalysis in terms of the more well known chemistry of homogeneous systems (coordination chemistry). The discussion was mostly based on common structural features and spectroscopic observations. Refined kinetic and tracer work are rare. The techniques of epr and ir analysis were frequently used for basic structural work, most often in combination with spectra-sensitive CO and NO analysis. Those papers in which kinetic data were presented pointed to a close mechanistic similarity between heterogeneous and homogeneous catalysis. On the homogeneous side, the main approach was the heterogenization of homogeneous catalysts. It was hoped that this would provide another view of the relationship between homogeneous and heterogeneous catalysis. Three heterogenization methods were used: formation of a metal-carrier bond, impregnation followed by evaporation of the solution, and reaction with macromolecular ligands. This approach did not yield as much information as expected. The heterogenized catalysts were either too different from, or very similar to, their homogeneous counterparts. No gradual change in properties was observed. Besides these general observations, many of the papers provided useful material for those working in the field. I found particularly interesting a few

papers in which a systematic attempt was made to compare the catalytic properties of homogeneous catalysts and their heterogenized counterparts for a given test reaction. In the same vein, the heterogenization of Wilkinson catalysts provided another set of data for comparison. The bifunctionality of heterogenized complexes, also reported in this book, opens an exciting avenue for further research. Several other papers were comprehensive studies in which different techniques were coupled with kinetics measurements to establish relationships between activity and structure; these undoubtedly will contribute to a better understanding of the catalytic process.

In summary, these proceedings cover an interesting overlapping area of both homogeneous and heterogeneous catalysis that makes this a useful reference book for those working in catalytic research.

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Platinum-Iridium Reforming Catalysts. By J. C. RASSER. Delft University Press, 1977. 232 pp., paperbound, \$24.00.

This book appears to be the doctoral thesis of J. Rasser, containing work done while a member of Professor J. Scholten's research group. Chapter 1 reviews the theory of temperature-programmed desorption (TPD) and makes some minor extensions. An extra feature of this chapter is a discussion of the effect which temperature dependence of the preexponential factor has on the various derived equations. Chapter 2 is largely concerned with an analysis of the theoretical lineshapes predicted by the equations of Chapter 1. Special attention is given to the peak width at half maximum which can be a particularly useful parameter for characterizing the desorption process. Chapter 3 mainly consists of a summary of thermochemical data on the Pt-Ir system. Chapter 4 may be considered the heart of the treatise and deals with the TPD of hydrogen from a number of materials varying in metal composition from pure Pt to pure Ir. Included