

A Concise Encyclopedia of Catalysis

CATALYSIS FROM A TO Z

EDITED BY BOY CORNILS, WOLFGANG A. HERRMANN, ROBERT SCHLÖGL AND CHI-HUEY WONG, Wiley-VCH, Weinheim, 2000, 640 pages, ISBN 3-527-29855-X, £130

Classically, catalysts are defined as materials that alter the rate of a chemical reaction without being consumed or altered in the process. The chemicals industry relies heavily on the use of catalysts to achieve chemical reactions at acceptable rates of reaction and with desired product selectivity. It is estimated that over 80 per cent of all chemical and oil processing products are obtained with the aid of catalysts. Catalysis has thus emerged as an essential technology spanning many of the disciplines in science and engineering, both in industry and academia. As a consequence few, if any, people are familiar with details of all aspects and terminologies used in the various areas of catalysis, since practitioners in disciplines such as homogeneous, heterogeneous, biological catalysis and industrial process catalyst engineering fields have all developed specialist terminologies relevant to their art. This encyclopedia, "Catalysis from A to Z", specifically covering catalysis, is thus welcome.

The book contains approximately 3000 entries which provide concise explanations or descriptions of the keywords in question. The keywords cover most of the terminology likely to be encountered and used by practitioners on all aspects of catalysis. These include descriptions used in catalyst preparation: impregnation for example, and in fundamental, theoretical and applied studies of catalysts, for instance kinetics, density functional theory, phase transfer catalysis as well as characterisation methods and techniques used. Concise descriptions of most of the important industrial processes, reactions and technologies are included, for example Fischer-Tropsch synthesis, LPO (low pressure oxo) processes, hydrogenation and oxidation. The 164 contributors, mostly European, who have supplied the information are from academia and industry, and all are active in catalysis.

Besides the clear concise descriptions for each entry, there is extensive cross referencing throughout. The level of information given in each entry is

usually well detailed, sometimes illustrated, albeit in some cases generalised. In a few cases the information is sketchy or oversimplified. As may be expected in a volume of this nature there are occasional missed cross references or missing entries, however these are few in number and do not detract from the overall excellent quality.

Throughout, there is considerable reference to the platinum group metals as catalysts in all relevant processes; but whereas electrocatalysis is barely mentioned, fuel cell catalysis is covered.

Since the book is intended as a first stop, point of reference guide, many entries have references either to further comprehensive reference works and textbooks on the subject or to primary scientific literature and articles. This enables the reader to access detailed and specialist information, beyond the scope and intentions of the book, very quickly and easily. French and German translations of the keyword are given at the end of each entry.

Of particular interest to the reviewer are the entries of industrial processes which are listed under either the name of the company, such as BP, Shell, UOP, Monsanto, where appropriate, or the process or reaction name, such as BP Cativa process, SHOP process and Monsanto L-dopa process. As a result the book provides quick, easy and straightforward reference and insight to the range and extent of technologies, processes and products developed worldwide across the chemicals industry by many different companies.

This book will be an extremely useful reference book for scientific libraries and to practitioners in the field. While reviewing this book, my colleagues and I spent many pleasant hours testing (and increasing) the extent and breadth of our knowledge of catalysis. I am sure many others will enjoy doing the same.

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