

Handbook of Heterogeneous Catalysis

Volume 1

Edited by
G. Ertl, H. Knözinger, J. Weitkamp

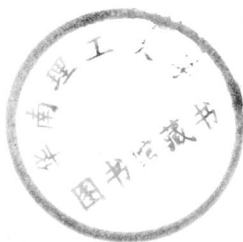
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Foreword

Heterogeneous catalysis has not only become the basis of industrial and environmental chemistry during this century, but also its scientific foundation has been developing with ever increasing speed. The *Handbuch der Katalyse* edited by G.M. Schwab in the period 1941 to 1943 and P.H. Emmett's Catalysis series published between 1954 and 1960 were the first accounts summarizing the then available knowledge of catalysis. Many new and now prosperous specialized journals and review series have been founded in the following decades and the emphasis nowadays given to the field of catalysis within the framework of chemical and chemical engineering education is documented by the increasing number of monographs and text books of the science of catalysis that became available in recent years. The present handbook, published at the verge to the 21. century, is the first comprehensive treatise of heterogeneous catalysis that attempts to describe all facets of the field from the scientific fundamentals to the chemical engineering of industrial processes.

Heterogeneous catalysis is an interdisciplinary area that demands the cooperation of scientists from a multitude of different disciplines. It is based on solid state chemistry and physics, materials chemistry and engineering, surface science, analytical chemistry, theoretical chemistry, reaction kinetics and mechanisms, and reaction engineering. For a comprehensive treatise of the science of heterogeneous catalysis hence, the cooperation of more than 200 experts from all over the world was required. These scientists have contributed highly topical articles ranging from catalyst preparation and characterization through the analysis of catalytic conversions at a molecular level to the reaction engineering aspects of industrial catalysis. We are extremely grateful to all authors for their expert work and enthusiastic cooperation. It is obvious that a work like this handbook cannot be com-

posed of entirely uniform chapters. But we trust that each of the contributions conveys the basic principles of the particular subject to the interested readers. It is also clear that the production of a handbook requires a relatively long period of time. As a consequence the most recent literature could not be covered in all chapters. We believe that this is not too severe a disadvantage because a handbook article is in fact meant to describe generally accepted principles rather than providing an encyclopedic review of a topic. However, we also understand that those authors who submitted their contributions at a very early stage may be disappointed by the time it took to appear in print. We can only apologize for this and call on their understanding for the amount of work that had to be invested by the editors and the publisher to ultimately produce this handbook.

During the planning phase as well as during the preparation of the handbook we have been very fortunate to have extremely stimulating discussions with and expert advice from many colleagues of which we want to mention only a few, namely A. Baiker, P. Courty, E. Gallei, B.C. Gates, K. Kochloefl, J.A. Moulijn, R. Schlögl. We gratefully acknowledge their valuable assistance. Last but not least we are grateful to our partners at VCH, Dr. Mager and Dr. Bär, and to our desk-editor, Dr. Bew, for their highly competent and professional cooperation.

It is our hope that this Handbook of Heterogeneous Catalysis may promote the further development of the field, that it may stimulate the mutually beneficial cooperation between various relevant disciplines, and that it may attract young scientists to devote their interest to a fascinating, interdisciplinary and future-oriented area.

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