

Book Reviews

Carbonylation. Direct Synthesis of Carbonyl Compounds

By H. M. Colquhoun, D. J. Thompson and M. V. Twigg, published by Plenum, New York, 1991, 296 + xi pp.

This excellent book, written by three members of ICI or associated companies, reviews the recent developments in transition metal catalyzed carbonylation chemistry and emphasizes the importance of catalytic carbonylation as a general tool in synthetic organic chemistry.

As stated by the authors in the Preface, the book is practically oriented and is organized accordingly, devoting the individual chapters to the different classes of organic compounds that can be prepared by carbonylation.

After an introductory chapter, mainly of historical significance, the book begins with a concise, yet comprehensive, review (Chapter 2) of the reaction mechanisms through which carbonylation reactions can occur. The following chapter (Chapter 3) includes an excellent description of the practical aspects related to the set up of carbonylation reactions in the laboratory, including the often overlooked safety aspects. These range from the purification and handling of carbon monoxide, to the properties of the most common catalysts, to the description of laboratory equipments.

The following eight chapters deal with the different classes of compounds that can be prepared by transition metal catalyzed carbonylation (aldehydes, ketones, carboxylic acids, esters, amides, lactones, etc.) and are organized according to the starting reactants from which the individual compounds can be obtained. Stress is placed on the mechanistic aspects of the reactions that are presented clearly and concisely. Throughout the book clearness is helped by a wide and selected choice of examples illustrated in well organized schemes. Interestingly, in all chapters appropriate examples of the experimental procedure necessary for the preparation of specific molecules are presented.

The final chapter contains a wide selection of experimental procedures for the preparation of catalysts and precious metal recovery. The book ends with a useful appendix on suppliers of catalysts and equipments for carbonylation reactions.

In conclusion, a practical and easy to consult yet authoritative book which will be helpful both to experts and to newcomers to the field.

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Molten Salt Techniques, Vol. 4

Edited by Robert J. Gale and David G. Lovering, published by Plenum, New York and London, 1991, 275 + xx pp., US\$ 75 in USA and Canada.

This fourth book in the series on techniques and specialities of the growing field of molten salt chemistry contains seven chapters, each covering diverse aspects, written by active and competent researchers. Together with the previous volumes in the series, this volume of good quality contributes to a further overview of the field.

Chapter 1 deals with "Amides and Amide Mixtures, with Special References to Electrochemical Properties", written by R. Narayan and K. L. N. Phani from the Indian Institute of Technology, Madras. In 40 pages, subjects like preparation, purification, stability, safety, acid-base behaviour, electrochemical properties, and applications of these interesting melts are reviewed, and 160 references cited.

Chapter 2 is on "Physicochemical Properties of Liquid Organic Salts Using Chromatographic Techniques", written by C. F. Poole, K. G. Furton, R. M. Pomaville, S. K. Poole and B. R. Kersten from Wayne State University, Detroit, MI. In 40 pages, this interesting new field is discussed, and 59 references are included. The liquid organic salts encompass various alkylammonium, 4-toluenesulfonate and thiocyanate salts, for example. It is concluded that gas chromatography is a useful tool for characterization of the unique class of polar selective solvents formed by these liquid organic salts, in a temperature range not exceeding 200 °C.

The subject of Chapter 3 is "Thermal Conductivity and Diffusivity Measurements", written by Hiromichi Ohta and Yoshio Waseda from Ibaraki and Tohoku Universities in Hitachi and Sendai, Japan. In 27 pages, heat transfer properties of liquids at high temperatures (about 1000 °C) are treated, putting major emphasis