

## *Book Reviews*

**Phase Transfer Catalysis 3rd Edition.** By E.V. Dehmlow and S.S. Dehmlow. VCH: Weinheim; 1993, XIII + 499 pp., hardback. DM 188, £ 77. ISBN 3-527-28408-7.

Slightly more than one decade has passed since the first edition of "Phase Transfer Catalysis" by E. V. Dehmlow and S. S. Dehmlow was published (second edition in 1983). Due to an enormous amount of new information connected with PTC the third revised and

enlarged edition of Dehmlows' book which appeared in 1993 was really awaited with interest.

This book includes two relatively short chapters that suitably join theoretical and practical knowledge about the ion pairs, their extraction and mechanisms of PTC, respectively. These chapters are followed by the last, large one, devoted to the applications of PTC, which comprises general information on experimental procedures, like a kind of the catalyst and solvent, stirring rate etc., crucial for the success of PTC reactions, and determines the scope of PTC in synthesis. Practically all known types of PTC reactions, including substitution and addition reactions of inorganic anions, C- and heteroanion alkylation, organometallic chemistry, chemistry of ylides, carbenes, reduction and oxidation, have been carefully and critically described.

The contents of the book practically cover all the area of PTC. General descriptions of PTC from the earlier editions are retained, while the huddle of new findings is set in order and critically evaluated. Therefore, this book is useful not only for chemists who are familiar with PTC, but also for the beginners in the matter.

The Authors critically evaluated questionable literature data after checking many of them in a laboratory (e.g. enantioselective PTC reactions). Many types of reactions were illustrated by general experimental procedures, thus the Reader is able to recognize how simple and convenient they are. Numerous tables with types of reactions and/or products facilitate the selection of the literature on any particular problem. The references (3650 items cover half of 1990) are listed alphabetically (according to the name of the first author), which allows for easy checking whether the paper is cited in the book, or not. As it is impossible to treat exhaustively the huge literature on PTC in a single volume, the Authors decided to maintain selected old references and add new, important ones. In this context, Keller's "Phase-Transfer Catalysis" (three volumes Fluka-Compendium) has been evidently overlooked.

I found a few instances of unskillfulness, some of them are listed below. The lack of base (sodium amide) for methylation of isomeric methylphenylacetonitriles is misleading (p. 149), vicarious substitution requires a molar amount of quaternary ammonium salt (p. 243), carbon tetrahalides and particularly hexahaloethanes (solids!) are rarely used as solvents (p. 251), the effect of concentration of the catalyst on the yield of dichloronorcarane is unconvincingly explained (p. 274), and finally, vinyl acetate cannot be considered as an electron-deficient olefin (p. 297 and p. 308). Also, I have encountered some printer's errors: aroyl not aryl chlorides (p. 113), acetonitrile forms  $\alpha,\beta$ -unsaturated nitriles C (not ketones) (p. 202), Scheme 3-227 not 2-227 (p. 343),  $\beta$ -nitro- or  $\beta,\beta$ -dicyanostyrenes instead of  $\alpha$ -derivatives (p. 356); structures on Scheme 3-218 from ref. [3512] (p. 328), and Scheme 3-226 (p.342) should be corrected.

All these mistakes and oversights are not significant and do not hinder the understanding of the subject-matter, whatsoever. In my opinion, the third edition of the book "Phase Transfer Catalysis" by E. V. Dehmlow and S. S. Dehmlow is an excellent, comprehensive survey of the work done in this area.

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