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Book review

"PHASE TRANSFER CATALYSIS IN ORGANIC SYNTHESIS," (Volume 4 of "REACTIVITY AND STRUCTURE CONCEPTS IN ORGANIC CHEMISTRY"), by W.P. Weber and G.W. Gokel, Springer-Verlag, Berlin/Heidelberg/New York, 1977, xv + 280 pages, \$29.80

As the authors state, phase transfer catalysis (PTC) represents a major advance in organic chemical methodology. Some areas, in particular, halo-carbene generation, have truly been revolutionized by its application. Many other organic processes such as nucleophilic substitution, esterification, alkylation, oxidation, reduction and ylide formation can now be carried out more simply, more cheaply and in better yield when the PTC technique is used. As Alper and Cassar have demonstrated, phase transfer catalysis can be used to excellent advantage in the synthesis of organometallic carbonyl complexes and in organometallic processes such as the Pd(0)-catalyzed carbonylation of organic halides.

In view of the growing importance of phase transfer catalysis, this book by Weber and Gokel is most welcome. The first chapter provides a clear and concise discussion of the principles and the mechanism of PTC and of the quaternary ions, amines, crown ethers and cryptands which are used as catalysts. The following fourteen chapters bring the applications of PTC. The discussions are aimed at the synthetic chemist. They cover the scope of each particular application and stress practical considerations. They are backed up by many tables of specific examples from the literature.

This book is up-to-date, with literature coverage which includes 1976 references in the main text. The authors have provided an addendum which brings annotated 1976 and 1977 references dealing with PTC and its applications. The field of phase transfer catalysis is a fast-moving one, and this book will soon be out of date. However, even then it will still provide an excellent base of information for anyone who is coming into the field "cold."

This book is well produced. The table of contents is quite detailed and a subject and an author index also are provided. The book has one irritating feature: an excessive use of a veritable alphabet soup of abbreviations -- BTEAB, DBDMA, HDTBP, LTEAB, TOMAC, (TMS)₂, etc., and even TIAA, which, however, here has nothing to do with pension plans and insurance. The glossary of abbreviations on pages xiii-xv fulfills a definite need! But this is a minor matter -- this is an excellent, well-organized and well-written

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book which can be recommended to all who are active in organic synthesis. Organometallic chemists would do well to become familiar with this very useful technique, for many applications of phase transfer catalysis in organometallic chemistry surely remain to be discovered.

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