

desired goal, namely the design of small molecule libraries with high hit rates in biological and biochemical tests.

“Combinatorial chemistry” is the recurring theme that runs through all the chapters. However, it is interesting that the meaning given to this term has changed over the course of the last few years. Whereas combinatorial chemistry methods were previously associated with synthesizing many “diverse” molecules in the most efficient way possible, many of the articles in this book clearly reflect a modern view originating from trends in the industrial development of pharmaceutical agents. According to this, combinatorial chemistry methods, together with new algorithms, enable one to generate “focussed” molecule libraries aimed at achieving a particular biological activity, with active molecule hit rates that can reach several percent, a success rate significantly better than that of “conventional” combinatorial libraries.

This book edited by Arup Ghose and Vellarkad Viswanadhan offers an excellent basis of information for all scientists interested in the subject, and also for students. In addition to easily understandable introductory sections and reviews, it contains practical examples which effectively illustrate the complex subject of computer-aided design of combinatorial libraries, and convey a balanced picture that can also be appreciated by newcomers to the area. The editors have been very successful in combining these functions. The excellent quality of all the articles is complemented by a good standard of production, clearly printed text and formulas, and many informative figures and tables which are a valuable reference source. I hope that the book will reach a wide readership—in my view it is a masterpiece!

Gisbert Schneider  
F. Hoffmann-La Roche  
Basel (Switzerland)

**Quaternary Ammonium Salts.** Their Use in Phase-Transfer Catalysis. By R. Allen Jones. (Series: Best Synthetic Methods.) Academic Press, San Diego 2001. xxii + 565 pp., hardcover \$ 159.95.—ISBN 0-12-389171-X

This book is mainly intended for synthetic organic chemists. However, it will be of interest to any chemists who may have a need to employ phase-transfer catalysis in their work.

The book starts with a chapter outlining methods for the preparation of quaternary ammonium salts and a brief discussion of their use as phase-transfer catalysts. There follows a series of chapters organized by reaction type. All of the main reaction processes that can benefit from phase-transfer catalysis (nucleophilic substitutions, base-promoted reactions, oxidations, reductions, etc.) are covered in detail, and the extensive use of tables nicely illustrates the range of substrates and catalysts that can be utilized. As with other books in the series *Best Synthetic Methods*, there is a strong emphasis on practical aspects of the subject. Experimental procedures (over 600 in total) are provided throughout all chapters, and often a number of alternative methods for achieving the same type of transformation are presented. This feature is complemented by a detailed table of contents at the start of the book, which makes it easy for the reader to rapidly locate a reaction of interest.

In general the coverage of the literature is excellent and appropriate references are included at the end of each section. Although citations up to 1999 are included, the vast majority of the content is drawn from work published during the period 1965–1995. This is entirely appropriate for most aspects of this subject, but does mean that some of the recent developments in asymmetric phase-transfer catalysis are not covered.

As might be expected for a first edition, there are a number of minor typographical errors, including occasional numerical errors in the procedures, but these should be obvious to most readers. There are also a few instances where ambiguous terms are used to describe specific quaternary ammonium salts. For example, “Adogen” and “Aliquat” are used when referring to Adogen 464 and Aliquat 336, and the term “quininium salt” is often used when referring to a variety of different cinchona alkaloid derived salts. Apart from these minor quibbles the production quality is of a high standard.

Any book on this subject will inevitably be compared with the classic texts *Phase Transfer Catalysis*, edited by E. V. Dehmlow and S. S. Dehmlow (VCH, Weinheim, 1993), and *Phase-Transfer Catalysis—Fundamentals, Applications, and Industrial Perspectives*, by C. M. Starks, C. L. Liotta, and M. C. Halpern (Chapman & Hall, New York, 1994). This book differs in that it is specifically concerned with quaternary ammonium salts and so does not include information about other types of phase-transfer catalysts (phosphonium salts, crown ethers, etc.). It also lacks the detailed discussion on kinetics and mechanism found in the earlier texts. The value of this book lies in the inclusion of more recent material, and the vast amount of detail relating to practical aspects of the subject. This makes it an ideal starting point for anyone seeking information on how to perform a particular phase-transfer reaction catalyzed by a quaternary ammonium salt.

Overall this book should serve as an excellent resource for anyone involved in synthetic organic chemistry.

Barry Lygo  
School of Chemistry  
University of Nottingham (Great Britain)