

BOOK REVIEWS

Comprehensive Organic Transformations: A Guide to Functional Group Preparations, 2nd ed. Richard C. Larock. Wiley, New York, 1999. 2583 pp., \$150.00.

This encyclopedic compendium lists and categorizes organic reactions gleaned exhaustively from the primary literature. The first edition, published in 1989, summarized reactions reported in over 160 journals and books. This update adds complete listings of relevant reactions published in four premier synthetic journals (*Journal of the American Chemical Society*, *Journal of Organic Chemistry*, *Tetrahedron Letters*, and *Synlett*) from 1988 through 1995, plus reactions from many other journals, books, and reviews.

The contents are arranged according to substance category (functional group) and reaction type. The major categories covered are: alkanes and arenes; alkenes; alkynes; halides; amines; ethers; alcohols and phenols; aldehydes and ketones; nitriles, carboxylic acids, and derivatives. Typically between 5 and 15 types of reactions (major processes) are given to form substances of each category. Representative examples of these reaction types are reduction, oxidation, ring-forming reactions, metal-promoted coupling reactions, elimination, alkylation, acylation, organoboranes, cyclization, rearrangements, condensation, carbonyla-

tion, substitution, and addition. For each reaction, the structures of reactants and products, reagents and conditions, and the literature references (but not the names of authors) that contain full procedures are given. Percentage yield is not given; however, the author states in the preface that only reactions having at least 50% yield are considered. Protecting groups and heterocyclic chemistry are for the most part omitted from this volume.

At the end of the volume there is a transformation index, nearly 600 pages long and alphabetically arranged according to the overall structure of each product. This helpful index also lists the overall structure of the reactant and page number for each entry.

Only reactions judged to be of practical utility in the synthetic laboratory are included in this enormous work. This, then, is an indispensable reference work for designing and carrying out modern organic chemical synthesis. The first edition has been in widespread use by both students and experienced chemists. It is amazing that so much information is contained in a single volume that is arranged in a logical and easy to use fashion.

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Phage Display: A Laboratory Manual. Edited by C. F. Barbas III, D. R. Burton, J. K. Scott, and G. J. Silverman. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, 2001, 738 pp.

Phage Display: A Laboratory Manual is a self-contained manual on this type of molecular-recognition-based cloning. Each chapter of this book was individually prepared by a number of different authors to facilitate thorough coverage on a wide range of topics. The book is divided into five sections, one of which is a number of appendices. The topics in the book range from the basic biology of filamentous phages to a variety of screening methods including traditional gene fragment and expression cloning. Two other sections of the book focus on the construction and screening of antibody and peptide

libraries. The material is presented in a logical fashion and ranges from step-by-step protocols for use at the lab bench to theoretical discussions to help troubleshoot problems. In addition, catalog numbers and supplier information are provided at various places throughout the text. Thus, the text covers a wide range of tools involved in the construction, characterization, and screening of phage display libraries. Each chapter was very well written and easy to understand. I believe that the book will serve as a very useful reference to individuals in the field, as well as an excellent introduction for new investigators.

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Practical Protein Crystallography, Second ed. Duncan E. McRee. Academic Press, San Diego, 1999. 477 pp., \$89.95.

This book's title is an apt description of the contents of this volume, an update to the original 1993 edition. In an easy reading style, McRee concentrates on pragmatic, applications-oriented aspects of protein crystallography with minimal background theory. In fact, one section is entitled Protein Crystallography Cookbook. This is an excellent text for investigators making their initial forays into crystallography who are in need of a clear and well-organized resource to lead them through the laboratory and computational techniques necessary for a crystal structure determination, from beginning to

end. However, the novice would be well served to consult additional texts that delve deeper into protein crystallization and diffraction theory, and McRee suggests several in the preface. For the experienced crystallographer, this text may yield alternative laboratory methods and will serve as a quick, desk-side reference.

The book begins with a brief overview of protein sample preparation and crystallization. The brevity of this section is unfortunate in a book that will be attractive to those new to the field since these subjects are worthy of books of their own. Nonetheless, the most commonly used crystallization techniques are discussed and noteworthy hints and warnings are included. The book continues with a description of diffraction data collection, stressing the factors that