

Book review

Trends in Synthetic Carbohydrate Chemistry: edited by DEREK HORTON, LYNN D. HAWKINS, AND GLENN J. MCGARVEY, American Chemical Society, Washington, D.C., U.S.A., 1989, xii + 355 pp., \$69.95 (North America), \$83.95 (abroad).

Trends in Synthetic Carbohydrate Chemistry was developed from symposia sponsored by the Divisions of Organic Chemistry and of Carbohydrate Chemistry at the 191st (1986) and 194th (1987) National Meetings of the American Chemical Society. This book is divided into two sections, each of which has nine chapters. It also includes author, affiliation, and subject indexes.

The first section of the book contains descriptions of reactions used to transform sugars into desired target molecules. Included in this initial section are discussions of the syntheses of the bicyclic nucleosides known as octosyl acids A and C, long-chain carbohydrates made from unstabilized carbohydrate ylides, chiral pyrrolidines, oligosaccharides found in the aureolic acids and class II anthracycline antibiotics, deoxyfluoro sugars, glycosyl fluorides, and aminodeoxy and deoxy analogs of α,α -trehalose. Total syntheses of alpha, gamma, and iso-alpha cyclodextrins also appear among the first nine chapters, as well as methods for orthoesterification under kinetic control, and deprotection of acetals and dithioacetals using iodine in methanol.

The second section focuses on the synthesis of carbohydrates, primarily from non-carbohydrate precursors. This section includes discussions of total synthesis of *N*-acetylneuraminic acid (both racemic and biologically active) using a furan ring as a "masked" carboxylic acid, deoxy and aminodeoxy sugars which arise from 3,4-dihydro-2*H*-pyrans produced by Diels-Alder reactions, and a variety of monosaccharides and related compounds derived from 7-oxanorbornenes. Also described are applications of allylboronates in the synthesis of sugars and related compounds, stereoselective addition reactions to unsaturated systems leading to monosaccharides, stereoselective aldol additions, and microbially aided and enzyme-catalyzed syntheses of carbohydrates.

Most of the chapters primarily contain material that had already been published; thus, the book takes the form of a series of authoritative review articles, each focused on the research from a particular laboratory. Although the writing styles vary considerably, they combine to produce a book which is generally well written. Most of the chapters contain a small number of minor errors but these tend to be readily recognizable and they do not lead to confusion. The references to the

primary literature are quite complete. There is little overlap in the topics covered, and that which does exist is noted in the text.

The print quality of the manuscripts from which the book was reproduced varies considerably. In most cases, the reproduction is excellent, but five chapters have noticeably light or otherwise lower quality print. Two chapters have portions of letters missing in places, and in one the reduction of figure size is sufficiently great that magnification will be necessary for some readers.

Synthetic carbohydrate and organic chemists will find this book to be interesting and valuable. It will be a desirable addition to the library of an institution where persons are engaged in synthetic chemical research and could serve as a text in a graduate-level seminar course in carbohydrate synthesis. The book is fairly priced.

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