

Book Review of Reactivity Tuning in Oligosaccharide Assembly

Reactivity Tuning in Oligosaccharide Assembly. Edited by Bert Fraser-Reid (Pittsboro, NC) and José Cristóbal López (Instituto de Química Orgánica, General CSIC, Madrid, Spain). From the series, Topics in Current Chemistry, 301. Springer: Heidelberg, Dordrecht, London, New York. 2011. xvi + 296 pp. \$309.00. ISBN 978-3-642-20913-0.

The glycosylation reaction is the most challenging reaction of synthetic carbohydrate chemistry. Since Koenigs–Knorr’s early work in 1901, a plethora of glycosylation methods have been discovered, and with these new reactions, it has been established that the choice of glycosyl donor and acceptor as well as the conditions of activation employed were key to obtaining the desired product. In this book, the various concepts that allow a synthetic carbohydrate chemist to make such choices are reviewed.

In eight chapters, the various authors describe how the nature of the anomeric leaving group and protecting groups combined with the method of activation allow the fine-tuning of a glycosylation reaction. Indeed, they review the use of various glycosyl donors and illustrate how the use of latent or active donors, armed (or superarmed), disarmed (or superdisarmed), or torsionally restricted donors allows the efficient preparation of oligosaccharides in good yields. The authors also summarize how the stereochemical outcome of glycosylations can be directed by the appropriate use of nearby or remote participating groups, electron-withdrawing nonparticipating groups, or torsionally restricting protecting groups in the glycosyl donor. Of particular interest is the review of efficient methods for preparing notoriously challenging β -mannosidic bonds as well as uronic acid containing oligosaccharides. As stated by the editors in the first chapter, many aspects of the glycosylation reaction such as the Reciprocal Donor–Acceptor Selectivity (RDAS) remain difficult to rationalize.

To summarize, this book covers the most important discoveries made recently and should find its place on the bookshelf of any chemist engaged in synthetic carbohydrate chemistry.

France-Isabelle Auzanneau

University of Guelph

10.1021/ja210231x

Published: November 08, 2011