

## Book reviews

*Carbohydrates as Organic Raw Materials II*, Edited by G. Descotes, VCH, Weinheim, 1993, ISBN 3-527-30007-4, x + 278 pages, DM148.-, £61.-

This book contains a collection of papers, which covers the main lectures of the second international workshop with the same name, held on July 2–3, 1992, in Lyon (France). The proceedings of the first workshop were published in the first volume of this series. Initial comparison reveals that in the second volume all manuscripts were submitted camera-ready. The required font appears to be Times, but, unfortunately, each author has used a different version, which has created a less than perfect appearance. Most of the tables, schemes and figures are functional and quite clear.

The purpose of this workshop was to bring together representatives from academia and the chemical and agricultural industries to exchange ideas and to discuss the state of the art of research and development efforts devoted to broadening the scope of industrial applications of carbohydrates. Indeed, the 12 contributions are evenly divided between academia and industry. The papers are grouped around two main themes:

- (low molecular weight) fine chemicals from carbohydrates
- polymers, detergents and food additives based on carbohydrates

A fascinating insight is provided into a large number of different approaches. These range from fundamental synthetic organic methods (e.g., Vandewalle et al., C<sub>4</sub> and C<sub>5</sub> chiral building blocks; Riess & Greiner, perfluoroalkylated carbohydrate surfactants) to very practical research required to prepare products for commercial introduction (e.g., Goossens, the evaluation of erythritol as a low-cal sweetener; Mentech et al., the production and evaluation of sucrose polyacetate — “SUPA” — as a bleaching booster for laundry detergents). Other topics include transition-metal catalysed conversion reactions of glucose and fructose, the use of aqueous sugar solutions as solvents in organic synthesis, disaccharide building blocks, carbohydrate liquid crystals, glycoside-bearing polymers, amphiphilic alkyl glucosides, and the large-scale production of polydextrose and sucrose fatty esters in extruders.

With only one or two exceptions, the level of the contributions is very satisfactory. Several of the papers are in fact extensive reviews and they provide a large number of references. This book should be a source of inspiration to industrial as

well as academic researchers. It also shows that the different philosophies involved in industrial and academic research can be reconciled to create new momentum. Browsing through the chapters yet again leaves me looking forward to the third workshop, to be held in the Netherlands in the autumn of 1994.

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*Reviews in Computational Chemistry*, Edited by Kenny B. Lipkowitz and Donald B. Boyd, VCH, Weinheim, 1993. Vol. 3, ISBN 1-56081-619-8, pp 271, 128 DM; Vol. 4, ISBN 1-56081-620-1, pp 280, 138 DM; and Vol. 5, ISBN 1-56081-658-9, pp 458, 179 DM.

*Carbohydrate Research* gives a regular demonstration of the increasing use of computational methodologies in carbohydrate chemistry. So where texts become available which review the techniques commonly used, they are likely to be of interest to a wide range of readers from students up to the experts actively involved in developing the next levels of application.

We are still in an environment of rapid progress in computer hardware and software development so it is no easy task to produce books that can maintain a useful lifespan against this background. In this series we have the latest volumes of reviews designed to begin “from ground zero and provide for you a minitutorial on how to implement various computational methods to solve problems”. The editors also hope that the publication will allow the reader “to use this series to learn how to solve problems using computational methods and be able to locate key references quickly”.

Although these selected volumes from the series on Computational Chemistry do not specifically address carbohydrates, there is much of interest.

The opening chapter of Volume 3 by Tamar Schlick, *Optimization Methods in Computational Chemistry*, looks at the use of numerical minimisation algorithms as provided in many molecular modelling packages, as well as other simulation procedures. These are often poorly detailed by software suppliers and are easily used and abused, but this review introduces the concepts well and gradually progresses through the mathematical preliminaries to a discussion of the merits and drawbacks of several methods. It is supported with numerical examples and numerous references.

Following on from this, partly as an application of the types of minimisation