Polysaccharides are fascinating polymers possessing magnificent structural diversity and functional versatility. Some of these polysaccharides -in particular cellulose, starch, and semi-synthetic derivatives thereof- are actively used in commercial products today, many others remain underutilized. Hemicelluloses, comprising the non-cellulosic cell-wall polysaccharides of vegetative and storage tissues of annual and perennial plants, represent an immense renewable resource of biopolymers accounting for an average up to 50% of the biomass. They occur in a large variety of structural types, divided into four general groups, i.e., xylans, mannans, mixed linkage β-glucans, and xyloglucans. Their application potential was emphasized many times by scientists, however, has not been exploited on an industrial scale. The future shortage of energy resources, replacement of petroleum based products connected with the solution of environmental problems, and demands for healthy food and alternative medicine are the main driving forces for the immense activities in research of polysaccharides including the hemicelluloses.

The annual meeting of the ''Verein der Zellstoff- und Papierchemiker und -ingenieure (Zellcheming) took place in Wiesbaden, Germany, in June 2005. Experts in the area of wood, paper, and polysaccharides from industry and academia discussed news in their fields. The ''Cellulose Chemists Round Table Discussion'' at the Zellcheming meeting is an excellent place to exchange knowledge in the area of polysaccharides. The general theme was focused on ''Hemicelluloses and derivatives of hemicelluloses''. Selected papers presenting the state of the art in the field of hemicelluloses are collected in this special issue of *Macromolecular Symposia*.

The collection of papers in this volume addresses some of the current key concerns with regard to

- Structural diversity and application potential of hemicelluloses
- Chemical functionalization of hemicelluloses in particular xylans and model compounds as well as product characterization
- Properties and effects of hemicelluloses in various systems
- Isolation of hemicelluloses and xylodextrins

We would like to stress that the knowledge discussed in this volume is not a final story. On the contrary, it is intended that the information presented will stimulate scientists in industry and academia to continue with the search and development of new products and applications on the basis of the important renewable resource hemicelluloses.

In this regard, as editors, we would like to take the opportunity to express our gratitude to the authors for their seminal and timely contribution, to the referees as well as to Dr. Andreas Koschella for technical assistance.

We would also like, on behalf of the authors, to express our gratitude to Wiley-VCH for agreeing to publish this special issue of *Macromolecular Symposia* with papers from the field of polysaccharides. In particular, we would like to thank Dr. Ingrid Meisel (Editor *Macromolecular Symposia*) of Wiley-VCH for her efficiency and her conscientious efforts to ensure timely completion of this book.

T. Heinze
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