

Preface

The 26th International Carbohydrate Symposium (ICS 2012) took place in Madrid, Spain from 22 to 27 July 2012. One thousand delegates and accompanying persons attended the meeting from all continents. The meeting was a tremendous success, gathering both senior scientists and several hundreds of young glycoscientists.

This conference is the most important one in carbohydrate chemistry and biochemistry, and the participants presented their latest contributions in the different aspects of the field. From organic synthesis to biomedicine, passing through structural aspects, molecular recognition features, materials science applications, and mechanistic biochemistry advances, among many others. From the chemical aspects, it is today evident that the glycochemistry field is alive and continuously expanding. Synthetic chemistry methods permit access to a variety of oligosaccharides, both neutral and charged, in amounts that in turn allow the study of their biochemical and biomedical properties at a level of complexity that was elusive a few years ago. Additionally, the latest advances in purification techniques together with the improvement in analytical tools permit working with pure glycoconjugates under many different experimental conditions.

This multidisciplinary issue of *Pure and Applied Chemistry* gathers 10 representative contributions from eminent scientists working in the field. They encompass the different aspects described above. The importance of NMR techniques to unravel the conformation, dynamics, and molecular recognition features of oligosaccharides is described, as well as the importance of natural and modified saccharides as sources of new nanomaterials or molecular transporters. Organic synthesis methods together with enzymatic approaches are presented as complementary approaches to obtain saccharides and their glycomimetics, showing different properties as ligands and/or inhibitors and strikingly diverse structures. Modifications of polysaccharides to access novel biomaterials are also considered. Fundamental mechanistic aspects are described from the chemical and biochemical perspectives. Therefore, we feel that this *PAC* issue serves to show to the chemical community different aspects of modern carbohydrate chemistry, which is today at the cutting edge of diverse scientific disciplines and acts as a glue to bring together scientists with different expertise to tackle key problems for science and society.

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