

Preface

This edition of *Topics in Heterocyclic Chemistry* concerns the use of heterocycles as components of anion receptors and sensors. Initially, an area restricted to pyrrole alone, a much wider range of heterocycles have now been used as hydrogen bond donors and as other components in synthetic anion receptor systems. The pioneer of this area, Jonathan L. Sessler from the University of Texas at Austin, who first employed expanded porphyrin systems, such as sapphyrin, as anion receptors provides the first chapter with Brett Rambo, Eric Silver and Chris Bielawski on covalent polymers containing discrete heterocyclic anion receptors. Keeping with the topic of pyrrolic macrocycles, Chang-Hee Lee and Phil Gale discuss recent advances in the anion complexation chemistry of calixpyrroles (flexible pyrrole macrocycles in which the pyrrole rings are linked by sp^3 hybridised carbon atoms), while Wim Dehaen covers the related area of calixphyrin macrocycles (macrocycles which combine the properties of calixpyrroles and porphyrins). Moving from macrocyclic pyrrole-based anion receptors, Hiromitsu Maeda reviews progress in the design and synthesis of acyclic pyrrole-based anion receptor systems. The prodigiosins are a class of tripyrrolic natural products that have been shown to have a range of useful biological activities which have been linked to their anion complexation and membrane transport properties. The chemistry of this fascinating family of compounds is surveyed by Jeff Davis. We then begin to move away from pyrrole with an account of the recent blossoming of indole-based anion receptors by Hemraj Juwarker, Jae-min Suk and Kyu-Sung Jeong. Finally, in the pyrrole arena Pavel Anzenbacher Jr discusses the role pyrrole-based anion receptors can play in sensing anions. Ermitas Alclade, Immaculada Dinarès and Neus Mesquida discuss how CH hydrogen bonds and electrostatic interactions are key non-covalent interactions in the complexation of anions by imidazolium based anion receptors, while Nathan Kilah and Paul Beer discuss the role of pyridinium and pyridine in hosts for anions. Finally, recent advances in the use of triazoles as components of anion receptors are surveyed by Kevin McDonald, Yuran Hua and Amar Flood. Our aim in editing this book was to illustrate the wide range of structures both simple and complex, acyclic and cyclic, charged and neutral that function as effective anion receptor systems.

Southampton, UK
Leuven, Belgium
July 2010

Phil Gale
Wim Dehaen

Anion Recognition in Supramolecular Chemistry

Gale, P.A.; Dehaen, W. (Eds.)

2010, XII, 372 p. 355 illus., 52 illus. in color., Hardcover

ISBN: 978-3-642-15443-0