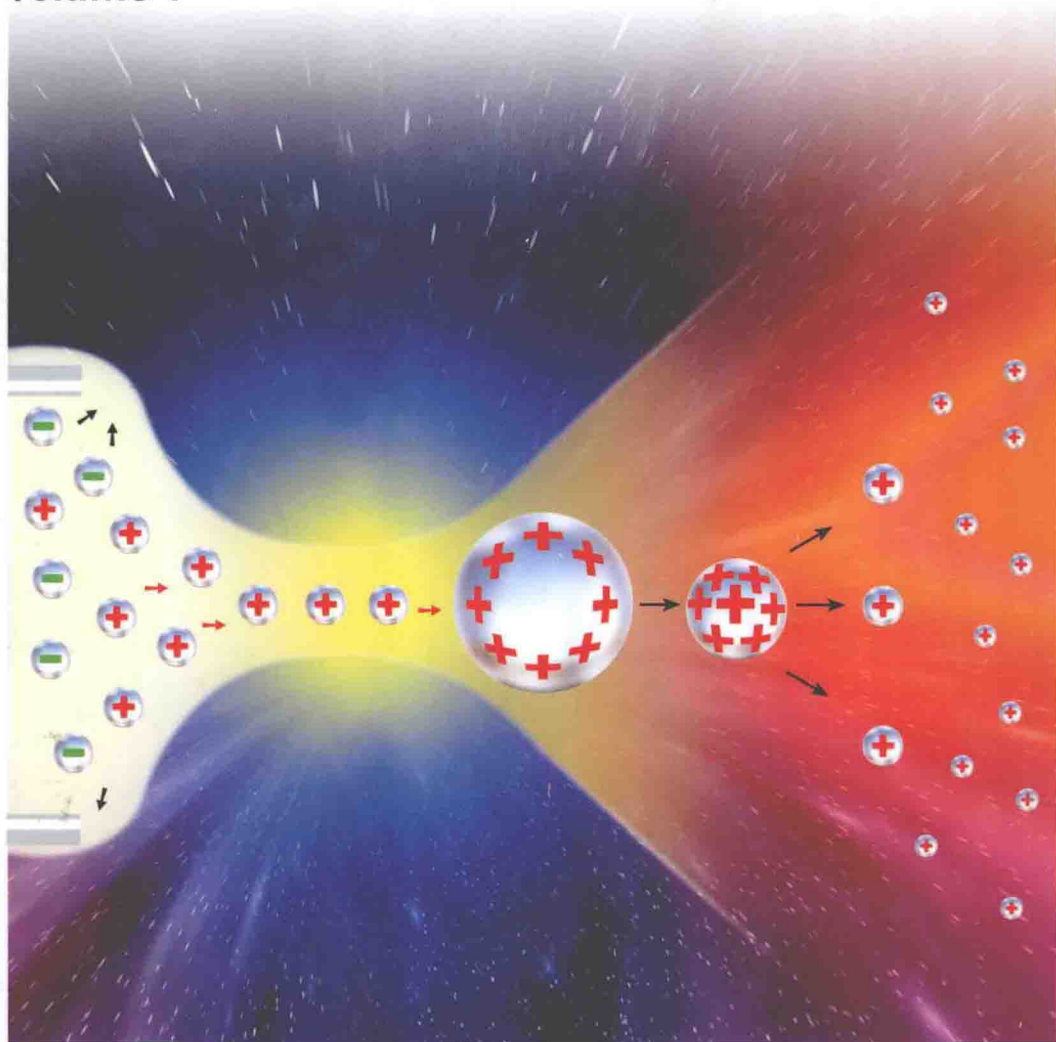


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Second, Completely Revised and Enlarged Edition
Volume 1



Edited by Christoph A. Schalley

Analytical Methods in Supramolecular Chemistry

2nd, Completely Revised and Enlarged Edition

Volume 1



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Preface

Editing the second edition of “Analytical Methods in Supramolecular Chemistry” was a great pleasure – in particular, since all contributors to the first edition immediately agreed to update their first edition chapters with the progress made since the book first appeared in print. In addition, several new chapters have been added so that the second edition is now a two-volume set and contains an even broader overview of the methods that are applied to investigate and characterize supramolecules and large non-covalent aggregates.

The contributions dealing with methods to analyze the thermochemistry of molecular recognition through NMR and UV/VIS titrations by Keiji Hirose, through isothermal titration calorimetry by Franz Schmidtchen and through extraction methods by Holger Stephan, Maja Kubeil and Kerstin and Karsten Gloe include many new examples which add more detailed insight into the methods described.

While the first edition was certainly somewhat biased towards discrete supramolecules, the new chapters contribute information on methods devoted to the study of extended structures. Besides the chapter on membrane pores by Stefan Matile and Naomi Sakai, which was already part of the first edition, Christoph Böttcher introduces the reader to (cryo-)transmission electron microscopy. A prominent example in this chapter is the structural characterization of gels based on amphiphilic hexonamides. Anthony D'Aléo, André Del Guerzo and Frédéric Fages describe the spectroscopic characterization of gels by confocal laser scanning microscopy. Furthermore, Yoram Cohen and his coworkers added to their chapter on DOSY-NMR methods work on extended systems such as supramolecular polymers, zeolites, micelles, cells and tissues and Kari Rissanen included a substantial addition on crystal engineering in the crystallography chapter.

However, the second edition also extends the length scales at the other end: Bianca Hermann's and Regine Hofmann's contribution on scanning probe microscopic methods is followed by a chapter on single-molecule force spectroscopy provided by Tobias Schroeder, Jochen Mattay and Dario Anselmetti.

Finally, the electrochemical investigation of supramolecules is introduced by Paola Ceroni, Alberto Credi and Margherita Venturi – a chapter which nicely complements the contributions on optical spectroscopy as described in the chapters on photochemistry by Bernard Valeur, Mário Berberan-Santos, Monique Martin

and Pascal Plaza and on CD spectroscopy by Marie Urbanova and Petr Maloň, as well as that on mass spectrometry.

Although the techniques described in the second edition still represent only a selection from the large variety of methods used for the examination of supramolecular aggregates, the coverage is now significantly broader than in the first edition. To make the book useful for experts as well as beginners in the field, many authors have picked up the idea of Bianca Hermann, who included a number of tutorials in her first-edition chapter. These tutorials are printed separately from the text and may be useful to introduce the beginner to specific points with which the experts in the field are probably familiar.

Well aware of the huge effort required to review the methods critically, I am very grateful to all authors that contributed to this second edition of the “Analytical Methods in Supramolecular Chemistry”. They have done a great job in describing the many different methods in a well-readable, but detailed and not too simplistic way, pointing out the potential and the pitfalls of the different methods. The large variety of supramolecular complexes and the difficulties that arise for their characterization from weak bonds and fast dynamics require often the application of several complementary methods. Therefore, a broad knowledge of the techniques that are available and their scope and limitations is required for successful work in supramolecular chemistry. I sincerely hope that the present second edition contributes to this endeavor.

Berlin, October 2011

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