

## Dendrimers

Almost every year a new book on dendrimers emerges from the depths of scientists' offices to excite and delight the research community. This trend is now continued by a group of respected dendrimer scientists from Université de Toulouse (France) headed by Anne-Marie Caminade. The group has taken on an impressive challenge to write a reference book about dendrimers and their applications. Dendrimers are repeatedly branched macromolecules with a perfectly defined structure—a key feature, which has allowed dendrimers to find important applications in biotechnology and materials science. The field of dendrimer science has consequently evolved quickly during the past 35 years from the synthesis of first “cascade” molecules to a rapidly developing area of multidisciplinary research spanning most disciplines in natural sciences. The field of dendrimer research and number of publications is now vast and this book therefore limits itself to catalytic, material and biomedical uses of dendrimers, although the area that it covers is still impressively large.

The book is organized into four parts that orchestrate a train of 21 individual chapters written mostly in a review style. Part 1 opens the book logically by introducing dendrimers briefly from a historical perspective and quickly moves to the synthetic and characterization methods used to prepare monodisperse dendrimeric compounds. Finally, luminescent, stimuli-responsive, liquid-crystalline, and nanoparticle-conjugated dendrimers are introduced. Unfortunately, Part 1 seems to be the weakest link of the book, especially Chapter 2 on methods of characterization of dendrimers just rushes through the techniques, leaving the reader with little useful information.

Part 2 is devoted for applications in catalysis and, no doubt, the laboratory's strong background in this area is also reflected in the text, which offers an excellent focus and more insight to the applications than Part 1. Not surprisingly, the focus is on homogeneous catalysis, which is the most active research area of dendrimeric catalysts. However, also heterogeneous catalysis with dendrimers is included, offering a nice comparison with the two catalyst types.

Part 3 introduces the use of dendrimers in preparing gels, layered nanostructures and, importantly, as chemical and biological sensors, which are of utmost importance for future applications. The connection between the chapters is limited, however the individual chapters are again of high quality and pave way for the last part of the book.

Subject of the final Part 4 is the biological and medical uses of dendrimers in imaging, nucleic acid transfection and drug delivery. This part gives the reader a coherent and well-written overview of the area. Special care has been taken to present the large variety of cationic dendrimeric compounds used as transfection agents with detailed evaluation of poly(amido amine) dendrimers.

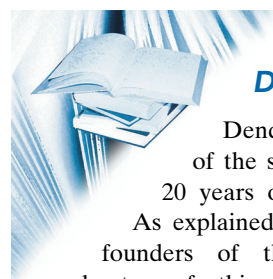
The book is aimed at scientists already familiar with the field; throughout the chapters the large amount of information is clearly organized, different applications listed and importance well pointed out. However, the style of the book is to present the literature data, not to analyze and explain it. Therefore its didactic impact remains low. For example, complementing the text with illustrative figures and adding exercises or questions to the chapters might have eased the undergraduate students and lecturers to approach the book and widen its impact. The figures in the book are clear and have a uniform look, but the black-and-white graphical presentation is not eye-catching and makes it less attractive. Cited literature is up to date and includes well over two thousand references, which come up to 2010 or even 2011.

In summary, *Dendrimers—Towards Catalytic, Material and Biomedical Uses* needs time and thought to read through, but also rewards the reader with an up-to-date overview of recent literature. The book is of high quality and recommended reading for anyone working with dendrimers or wanting to have a good reference book; rich in information, clearly organized and thoroughly referenced with topical primary publications.

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## Designing Dendrimers

Dendrimer chemistry is one of the success stories of the last 20 years of synthetic nanoscience.

As explained by Tomalia, one of the founders of the field, in the first chapter of this book, dendrimers and dendrons can be considered as unique quantized building blocks for nanoscience. Each generation (or layer) or growth on the surface of the branched dendritic architecture increases the size of the object in a controllable and predictable way, and modulates its properties.



**Dendrimers**  
Towards Catalytic, Material and Biomedical Uses. By Anne-Marie Caminade, Cédric-Olivier Turrin, Régis Laurent, Armelle Ouali, and Béatrice Delavaux-Nicot. John Wiley & Sons, Hoboken, 2011. 566 pp., hardcover, € 155.00.—ISBN 978-0470748817