

## Fragments of Fullerenes and Carbon Nanotubes

Every organic chemist was at one time, at least during his early years, convinced that aromatic molecules are by definition absolutely flat. If you still have this wrong idea in your mind, *Fragments of Fullerenes and Carbon Nanotubes* is one of the books that you need to read to discover the exciting and promising science of these non-conformist twisted aromatic molecules. In this book, Marina A. Petrukhina and Lawrence T. Scott have gathered relevant contributions from several research groups who can be considered as leaders in the field of curved polycyclic aromatic hydrocarbons (PAHs). It should be noted that this book is only about well-identified and designed molecules resulting from controlled organic, or “bottom-up”, synthetic strategies.

The 14 chapters may be divided into two distinct groups corresponding to the categories named in the book's title. The first part (Chapters 1–9) is concerned with fragments of fullerenes, and deals with bowl-shaped “geodesic” polyarenes such as corannulene and sumanene, and also with other bigger curved PAHs or more complex molecular systems incorporating such entities. Several syntheses are described, and although the emphasis is usually on the mechanism that induces the distortion from planarity in the final aromatic compound, many other aspects are also discussed, such as physical properties, theoretical studies, the formation of free radicals or anions, and complexation by metals or fullerenes. The ninth chapter provides a good transition to fragments of carbon nanotubes, since it considers hemispherical polyarenes as tips of carbon nanotubes, and thus as possible seeds for the chemical growth of the latter.

The second part is more about purely synthetic aspects, and deals with one of the current synthetic challenges in the field of carbon molecules: nobody has yet been able to develop a complete controlled synthesis of the fully rigid segments of carbon nanotubes that are sometimes called “aromatic belts”, “picotubes”, or “double-stranded belts”.

These last five chapters describe five independent approaches, which are very different from each other but all show remarkable ingenuity in their strategies and have given very promising preliminary results. In contrast to the usual kinds of reviews published in journals, this book tells the complete scientific stories: what was the initial idea, how things worked out or not, what are the prospects or the next alternative strategies. For that reason, these last chapters are, in my opinion, to be commended not only to chemists active in this very specific field, but also to every organic chemist who is interested in strategies of multistep syntheses and such brain-teasing scientific struggles. Generally speaking, even non-specialists working in that domain of organic chemistry would probably appreciate reading this book, but I would not recommend it to beginners in organic chemistry, who might be confused rather than informed by these exotic results.

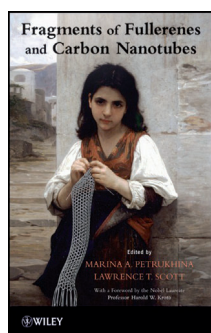
Only a few general criticisms about this book come to mind, the main one being that some of the figures and schemes are of poor quality. In fact, the use of color would have been a great help towards a better understanding of the orbital geometries and crystal structures and of molecules that cannot otherwise be clearly represented in two dimensions. One might also regret the occurrence of much repetition in the introductions of several chapters, for example in the definitions of carbon nanotube geometries, although that might be useful if individual chapters are read in isolation.

In conclusion, unlike the sad-looking young lady on the cover, who does not seem to be greatly motivated by the scientific tour de force that she is about to accomplish, I have really appreciated reading *Fragments of Fullerenes and Carbon Nanotubes*, and I now look forward impatiently to a future second edition, which will hopefully incorporate new chapters covering the first successful syntheses of aromatic belts, which I expect to appear soon in the literature.

Fabien Durola

CNRS—Centre de Recherche Paul Pascal  
Université Bordeaux 1 (France)

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**Fragments of Fullerenes and Carbon Nanotubes**

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