

## Preface

It was not long ago that the mention of carbon-rich materials conjured up images of only diamond and graphite, while carbon-rich molecules referred primarily to polycyclic aromatic hydrocarbons. It is amazing how times have changed. A plethora of new synthetic break-throughs, coupled with an unprecedented range of futuristic applications, has radically transformed this realm of science. While the discovery of the fullerenes and carbon nanotubes did much to bring the science of carbon-rich molecules and materials into the limelight over the past couple of decades, seminal work in this area has been ongoing for well over 125 years.

This monograph was designed to offer an overview of the spectacular modern face of the chemistry associated with carbon-rich compounds. Recent advances in methodologies for the synthesis of carbon-rich molecules are at the forefront of several chapters, including many examples of molecules of previously unimaginable proportions, such as superbenzenes, polyene molecular wires, and conjugated oligomers that are nanometers in diameter/length. As a practical aspect, each individual chapter contains a handful of important experimental protocols selected by the authors to provide a starting point for the reader. Synthetic advancements have naturally led to new carbon-rich topologies. The relationship between structure and property is thus a recurring theme throughout this book, and the expert authors offer fundamental insight and perspective into the unique, and sometimes unpredictable, properties of these materials from both a theoretical and experimental perspective. Finally, with new properties come new applications. Never before has the future of carbon-rich materials been so bright, literally, in some cases. Many carbon-rich molecules are being incorporated into increasingly sophisticated luminescent devices (OLEDs), field effect transistors (FETs), and solar cells, while others are being explored as active components in molecular electronics. Alternatively, the study of carbon-rich molecules and oligomers can often lead to a better understanding of larger systems that are themselves difficult if impossible to study easily, such as nanotubes, polymers like poly(phenylene ethynylene), or photosynthetic processes. Such investigations shed light on both the potential and limitations of new materials.

This book was the collective work of a number of people. Most importantly, we appreciate the contributions of the authors, whose time, effort and expertise have made this monograph both an interesting read and a stimulating scientific

resource. We express our gratitude to Ms. Annie Tykwinski for designing the cover art, and we would like to thank Drs. Elke Maase and Manfred Köhl at Wiley-VCH for an enjoyable collaboration in the preparation of this book.

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