

Chemistry of Nanocarbons. Edited by Takeshi Akasaka (University of Tsukuba, Japan), Fred Wudl (University of California, Santa Barbara, USA), and Shigeru Nagase (Institute for Molecular Science, Myodaiji, Japan). John Wiley & Sons, Ltd.: Chichester, U.K. 2010. xxviii + 498 pp. \$145. ISBN 978-0-470-72195-7.

This is an excellent book that presents a high-resolution snapshot of the rapidly expanding field of nanoscale, carbon-rich materials. Published in August 2010, the 19 chapters of the book contain more than 2000 references on a broad range of topics. Most of the chapters appear to be up to date through 2008, but only about half provide references from 2009. This sparse coverage since 2008 is an inevitable consequence of the lag time between completion of the chapters and publication of the finished monograph. Unfortunately, lack of more recent references will make the treatment of specific areas seem outdated to specialists who are aware of the most recent advances in their own fields. Those same specialists, on the other hand, are probably the very people who will benefit the most from reading the other chapters of this book that deal with closely allied topics. The book is also recommended for students, postdocs, and newcomers to the fields covered. The chapters provide excellent overviews of landmark discoveries and current challenges in each area, and there is much information to be found in their contents.

Fullerenes, endohedral fullerenes, and carbon nanotubes are discussed in many of the chapters, but readers will also find authoritative accounts of recent research on carbon nano-onions, -peapods, -horns, -hoops, and -diamond particles, as well as graphene ribbons. About the only well-defined carbon-rich materials that receive little or no coverage are carbyne (linear polyynes) and large polycyclic aromatic hydrocarbons. These fall at the low end of the nanometer scale, and the editors appear to have decided not to include materials with fewer carbon atoms than fullerenes. The most obvious omission is graphene, which has come on the scene so fast and so recently that it simply did not make it into this book as a stand-alone topic.

Methods are discussed for functionalizing many of the materials by both covalent and supramolecular chemistry. The electronic properties of the various forms of nanocarbons crop up as a recurring theme in many of the chapters, and applications

in photovoltaics and nanoelectronics receive considerable attention. There is some overlap among the chapters on topics such as the many methods investigated for the dispersion, solubilization, and separation of carbon nanotubes, but it is not a shortcoming. Instead, it gives the readers multiple perspectives. The tabulations by Kraszewska, Diederich, and Thilgen and by Olmstead and coauthors of all the higher fullerenes that have been isolated and identified and of all the endohedral trimetallic nitride fullerenes that have been structurally characterized, respectively, are particularly welcome because this information is scattered rather widely over many years in the literature.

The brevity of the subject index (~13 pages) and the lack of an author index unfortunately are fairly standard for edited monographs in chemistry these days. Color figures are also commonly absent, although the editors of this book apparently convinced the publisher to print several pages of them. These are collected near the middle of the book and labeled, presumably to keep the costs of publication down. However, notes should have been included in the captions of the corresponding black and white versions of the figures in each chapter to direct readers to the color versions.

The chapters vary in length from 49 pages with more than 250 references to eight pages with only nine. A detailed seven-page Table of Contents lists all the subtopics covered in each chapter and is available for viewing free online on the Wiley Web site. Chapters can also be purchased individually in electronic format from the same site, which is an attractive option for readers who do not wish to buy the entire book.

All three editors are prolific authors in their own right, and their high standing among scientists in the nanocarbon community has enabled them to recruit an exceptionally distinguished team of authors for the chapters. The book is quite reasonably priced and belongs in the personal libraries of all scientists who are actively engaged in research on the chemistry of nanocarbons. Every university chemistry library should also have a copy.

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