Carbon nanotubes represent one of the most exciting research areas in modern science. These molecular-scale carbon tubes are the stiffest and strongest fibres known, with remarkable electronic properties, and potential applications in medicine, sensing devices and a wide range of other fields. Cutting through the plethora of information available, Carbon Nanotube Science is the most concise, accessible book for the field, presenting the basic knowledge graduates and researchers need to know.

Based on the successful Carbon Nanotubes and Related Structures, this new book focuses solely on carbon nanotubes, covering the major advances made in recent years in this rapidly developing field. Chapters focus on electronic properties, chemical and biomolecular functionalization, nanotube composites and nanotube-based probes and sensors. The book begins with a comprehensive and up-to-date discussion of synthesis, purification and processing methods. With its full coverage of the state of the art in this active research field, this book will appeal to researchers in a broad range of disciplines, including nanotechnology, engineering, materials science, chemistry and physics.

Peter J F Harris is Manager of the Centre for Advanced Microscopy at the University of Reading, where he is involved in a wide range of projects in both the physical and biological sciences. His personal research interests mainly involve the application of high-resolution TEM to carbon materials. He is a member of the Editorial Advisory Boards both for the Journal of Physics: Condensed Matter and Carbon.
Carbon Nanotube Science

Synthesis, Properties and Applications

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Contents

Preface xi

1 Introduction 1
1.1 Buckminsterfullerene 2
1.2 Fullerene-related carbon nanotubes 3
1.3 Single- and double-walled nanotubes 5
1.4 Catalytically produced carbon nanotubes 6
1.5 Who discovered carbon nanotubes? 7
1.6 Carbon nanotube research 8
1.7 Scope of the book 10
References 11

2 Synthesis I: arc- and laser-vaporization, and heat treatment methods 14
2.1 Production of multiwalled nanotubes by arc-evaporation 14
   2.1.1 Early work 14
   2.1.2 The arc-evaporation technique: further developments 16
   2.1.3 Alternatives to graphite 18
   2.1.4 Safety considerations for the arc-evaporation method 18
2.2 Growth mechanisms of multiwalled nanotubes in the arc 19
   2.2.1 General comments 19
   2.2.2 Vapour phase growth 20
   2.2.3 Liquid phase growth 21
   2.2.4 Solid phase growth 22
   2.2.5 The crystallization model 23
2.3 Production of multiwalled nanotubes by high-temperature heat treatments 24
2.4 Production of single-walled nanotubes by arc-evaporation 27
2.5 Production of single-walled nanotubes by laser vaporization 30
2.6 Growth mechanisms of SWNTs in the arc and laser methods 31
   2.6.1 Vapour–liquid–solid models 32
   2.6.2 Solid-state models 34
2.7 Arc-evaporation synthesis of double-walled nanotubes 36
2.8 Discussion 37
References 38

3 Synthesis II: catalytic chemical vapour deposition and related methods 43
3.1 Catalytic synthesis of multiwalled nanotubes: pre-1991 work 44
3.2 Catalytic synthesis of multiwalled nanotubes: post-1991 work 46
  3.2.1 Growth of aligned MWNTs on substrates 48
  3.2.2 Direct spinning of nanotube yarns 51
3.3 Growth mechanisms of catalytically produced MWNTs 52
3.4 Catalytic synthesis of single-walled nanotubes 55
  3.4.1 Conditions required to produce SWNTs 55
  3.4.2 Large-scale catalytic synthesis of SWNTs 58
  3.4.3 Preparation of SWNT strands 59
  3.4.4 Directed growth of SWNTs 61
  3.4.5 Synthesis of SWNTs with defined structures 63
3.5 Growth mechanisms of catalytically produced SWNTs 65
  3.5.1 Vapour–liquid–solid mechanisms 65
  3.5.2 A solid-state mechanism for CVD growth? 66
3.6 Catalytic synthesis of double-walled nanotubes 68
3.7 Electrochemical synthesis of multiwalled nanotubes 70
3.8 Synthesis of MWNTs by heat treatment of metal-doped carbon 70
3.9 Discussion 71
References 72

4 Purification and processing 80
4.1 Purification of multiwalled tubes 80
  4.1.1 MWNTs produced by arc-evaporation 80
  4.1.2 Catalytically-produced MWNTs 81
4.2 Purification of single-walled tubes 83
  4.2.1 Acid treatment and oxidation 83
  4.2.2 Functionalization 85
  4.2.3 Physical techniques 85
  4.2.4 Assessing purity 86
4.3 Processing of multiwalled nanotubes 86
  4.3.1 Multiwalled nanotube suspensions and assemblies of pure MWNTs 86
  4.3.2 Alignment and arrangement of MWNTs 87
  4.3.3 Pure MWNT fibres 89
  4.3.4 MWNT sheets 91
  4.3.5 Breaking and cutting of MWNTs 91
4.4 Processing of single-walled tubes 92
  4.4.1 Alignment and arrangement of SWNTs 92
  4.4.2 Pure SWNT strands 95
4.4.3 SWNT sheets
4.4.4 Length control of SWNTs
4.5 Separating metallic and semiconducting single-walled nanotubes
  4.5.1 Selective elimination
  4.5.2 Dielectrophoresis
  4.5.3 Selective functionalization
4.6 Discussion
References

5 Structure
5.1 Bonding in carbon materials
5.2 The structure of carbon nanotubes: theoretical discussion
  5.2.1 Vector notation for carbon nanotubes
  5.2.2 Unit cells of nanotubes
  5.2.3 Symmetry classification of nanotubes
  5.2.4 Defects in the hexagonal lattice
  5.2.5 The layer structure of multiwalled nanotubes
  5.2.6 Theory of nanotube capping
5.3 Experimental studies: multiwalled nanotubes produced by arc-evaporation
  5.3.1 The layer structure: experimental observations
  5.3.2 Electron diffraction of MWNTs
  5.3.3 The cross-sectional shape of multiwalled nanotubes
  5.3.4 MWNT cap structure
  5.3.5 Elbow connections and branching structures
5.4 Experimental studies: multiwalled nanotubes produced by catalysis
5.5 Experimental studies: single-walled nanotubes
  5.5.1 General features
  5.5.2 Electron diffraction of SWNTs
  5.5.3 HRTEM of SWNTs
  5.5.4 Scanning tunnelling microscope of SWNTs
5.6 Neutron diffraction
5.7 Discussion
References

6 Physical properties I: electronic
6.1 Electronic properties of graphite
6.2 Electronic properties of nanotubes: theory
  6.2.1 Band structure of single-walled tubes
  6.2.2 Effect of curvature and of tube–tube interactions
  6.2.3 Electron transport in nanotubes
  6.2.4 Effect of a magnetic field
6.3 Electronic properties of nanotubes: experimental measurements
   6.3.1 Early studies of multiwalled nanotubes
   6.3.2 Correlation between electronic properties and structure of single-walled nanotubes
   6.3.3 Quantum conductance
   6.3.4 Electronic properties of nanotubes in a magnetic field
   6.3.5 Superconductivity
6.4 Nanoelectronic devices
   6.4.1 Diodes
   6.4.2 Field effect transistors
   6.4.3 Logic circuits
6.5 Magnetic properties of nanotubes
6.6 Nanotube field emitters
6.7 Conclusions
References

7 Physical properties II: mechanical, optical and thermal
7.1 Mechanical properties of carbon nanotubes
   7.1.1 Theoretical predictions
   7.1.2 Experimental observations: multiwalled nanotubes
   7.1.3 Experimental observations: single-walled nanotubes
7.2 Optical properties of nanotubes
   7.2.1 Optical absorption spectroscopy
   7.2.2 Fluorescence spectroscopy
7.3 Raman spectroscopy
7.4 Thermal properties of nanotubes
7.5 The physical stability of nanotubes
7.6 Discussion
References

8 Chemistry and biology of nanotubes
8.1 Covalent functionalization
   8.1.1 Functionalization of nanotube ends and defects
   8.1.2 Functionalization of sidewalls
8.2 Non-covalent functionalization
8.3 Characterizing chemically functionalized nanotubes
8.4 Biological functionalization
   8.4.1 Proteins
   8.4.2 Nucleic acids
8.5 Toxicity of carbon nanotubes
8.6 Discussion
References
## Contents

### 9 Carbon nanotube composites

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1 Preparation of carbon nanotube/polymer composites</td>
<td>227</td>
</tr>
<tr>
<td>9.1.1 Solution mixing</td>
<td>227</td>
</tr>
<tr>
<td>9.1.2 Melt processing</td>
<td>229</td>
</tr>
<tr>
<td>9.1.3 In situ polymerization</td>
<td>230</td>
</tr>
<tr>
<td>9.1.4 Effect of nanotubes on polymer structure</td>
<td>231</td>
</tr>
<tr>
<td>9.2 Properties of carbon nanotube/polymer composites</td>
<td>232</td>
</tr>
<tr>
<td>9.2.1 Mechanical properties</td>
<td>232</td>
</tr>
<tr>
<td>9.2.2 Electrical properties</td>
<td>235</td>
</tr>
<tr>
<td>9.3 Carbon nanotube/ceramic composites</td>
<td>237</td>
</tr>
<tr>
<td>9.4 Carbon nanotube/carbon composites</td>
<td>239</td>
</tr>
<tr>
<td>9.5 Carbon nanotube/metal composites</td>
<td>239</td>
</tr>
<tr>
<td>9.6 Discussion</td>
<td>240</td>
</tr>
<tr>
<td>References</td>
<td>241</td>
</tr>
</tbody>
</table>

### 10 Filled and heterogeneous nanotubes

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1 Filling by arc-evaporation</td>
<td>247</td>
</tr>
<tr>
<td>10.2 Opening and filling of multiwalled nanotubes using chemical methods</td>
<td>248</td>
</tr>
<tr>
<td>10.2.1 Early work</td>
<td>248</td>
</tr>
<tr>
<td>10.2.2 Opening by treatment with acid</td>
<td>249</td>
</tr>
<tr>
<td>10.2.3 Filling opened tubes</td>
<td>251</td>
</tr>
<tr>
<td>10.3 Filling catalytically-grown multiwalled nanotubes</td>
<td>252</td>
</tr>
<tr>
<td>10.4 Water in multiwalled nanotubes</td>
<td>255</td>
</tr>
<tr>
<td>10.5 Filling single- and double-walled nanotubes</td>
<td>255</td>
</tr>
<tr>
<td>10.5.1 Filling with inorganic materials</td>
<td>255</td>
</tr>
<tr>
<td>10.5.2 Filling with fullerenes: ‘nano-peapods’</td>
<td>257</td>
</tr>
<tr>
<td>10.6 Gases in nanotubes</td>
<td>263</td>
</tr>
<tr>
<td>10.6.1 Hydrogen</td>
<td>263</td>
</tr>
<tr>
<td>10.6.2 Other gases</td>
<td>264</td>
</tr>
<tr>
<td>10.7 Heterogeneous nanotubes</td>
<td>265</td>
</tr>
<tr>
<td>10.7.1 Boron–carbon–nitrogen tubes</td>
<td>265</td>
</tr>
<tr>
<td>10.7.2 Carbon–nitrogen tubes</td>
<td>267</td>
</tr>
<tr>
<td>10.7.3 Carbon–boron tubes</td>
<td>267</td>
</tr>
<tr>
<td>10.8 Discussion</td>
<td>268</td>
</tr>
<tr>
<td>References</td>
<td>269</td>
</tr>
</tbody>
</table>

### 11 Probes and sensors

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.1 Nanotube tips for atomic force microscopy</td>
<td>275</td>
</tr>
<tr>
<td>11.1.1 Preparing nanotube tips: mechanical assembly</td>
<td>275</td>
</tr>
<tr>
<td>11.1.2 Preparing nanotube tips: chemical vapour deposition</td>
<td>277</td>
</tr>
<tr>
<td>11.1.3 Imaging using nanotube AFM tips</td>
<td>278</td>
</tr>
<tr>
<td>11.2 Gas sensors</td>
<td>280</td>
</tr>
</tbody>
</table>
11.3 Biosensors 282
11.4 Physical sensors 283
11.5 Discussion 285
References 285

12 Conclusions 289
12.1 Highlights of carbon nanotube research 289
12.2 Final thoughts 292
References 293

Name Index 296
Subject Index 299
Preface

This book was originally conceived as a second edition of my earlier work Carbon nanotubes and related structures: new materials for the twenty-first century (Cambridge University Press, 1999). However, the field has expanded rapidly since 1999, and the tale grew in the telling, to the point where I realized I had essentially written a new book. The new title reflects this, as well as the fact that most of the material concerned with ‘related structures’ has been omitted: the book now focuses almost entirely on carbon nanotubes themselves. As with the first book, I have benefited enormously from the freely given assistance of colleagues from around the world, many of whom have also provided copies of images and preprints. The following list almost certainly fails to include all who have helped me, so I apologize for any omissions. I also stress that any errors which remain in the book are my responsibility alone.


I would also like to thank Cambridge University Press for their encouragement and patience.

Most importantly, I want to thank my wife, Elaine, and daughters Katy and Laura for their continuing love and support.

Peter Harris,
Twyford, November 2008