
Contents

<i>Preface</i>	<i>v</i>
<i>Contributors</i>	<i>ix</i>

PART I FUNCTIONALIZATION

1 Non-covalent Attachment of Proteins to Single-Walled Carbon Nanotubes	3
<i>Luis F.F. Neves, Ta-Wei Tsai, Naveen R. Palwai, David E. Martyn, Yongqiang Tan, David W. Schmidtke, Daniel E. Resasco, and Roger G. Harrison</i>	
2 Covalent Conjugation of Multi-walled Carbon Nanotubes with Proteins	9
<i>Changqing Yi, Suijian Qi, Dawei Zhang, and Mengsu Yang</i>	
3 Covalently Linked Deoxyribonucleic Acid with Multi-walled Carbon Nanotubes: Synthesis and Characterization	19
<i>Weiwei Chen, Changqing Yi, Tzang Chi-Hung, Shuit-Tong Lee, and Mengsu Yang</i>	
4 Temperature and pH-Responsive “Smart” Carbon Nanotube Dispersions	27
<i>Dan Wang and Liwei Chen</i>	

PART II TOXICITY

5 Effects of Carbon Nanotubes on the Proliferation and Differentiation of Primary Osteoblasts	41
<i>Dawei Zhang, Changqing Yi, Suijian Qi, Xinsheng Yao, and Mengsu Yang</i>	
6 Carbon Nanotube Uptake and Toxicity in the Brain	55
<i>Leying Zhang, Darya Alizadeh, and Behnam Badie</i>	
7 In Vitro and In Vivo Biocompatibility Testing of Functionalized Carbon Nanotubes	67
<i>Gianni Ciofani, Vittoria Raffa, Orazio Vittorio, Alfred Cuschieri, Tommaso Pizzorusso, Mario Costa, and Giuseppe Bardi</i>	
8 Real-Time Monitoring of Cellular Responses to Carbon Nanotubes	85
<i>Qingxin Mu, Shumei Zhai, and Bing Yan</i>	
9 Reducing Nanotube Cytotoxicity Using a Nano-Combinatorial Library Approach	95
<i>Qiu Zhang, Hongyu Zhou, and Bing Yan</i>	
10 DNA Damage by Carbon Nanotubes Using the Single Cell Gel Electrophoresis Technique	109
<i>Olga Zeni and Maria Rosaria Scarfi</i>	

PART III TRAFFICKING

11 Assessment of Cellular Uptake and Cytotoxicity of Carbon Nanotubes Using Flow Cytometry	123
<i>Khuloud T. Al-Jamal and Kostas Kostarelos</i>	

12	Cell Trafficking of Carbon Nanotubes Based on Fluorescence Detection	135
	<i>Monica H. Lamm and Pu Chun Ke</i>	
13	Carbon Nanotubes as Intracellular Carriers for Multidrug Resistant Cells Studied by Capillary Electrophoresis–Laser-Induced Fluorescence	153
	<i>Ruibin Li, Hanfa Zou, Hua Xiao, and Renan Wu</i>	
PART IV SCAFFOLDS		
14	Carbon Nanotube-Based Neurochips	171
	<i>Moshe David-Pur, Mark Shein, and Yael Hanein</i>	
15	Effect of Carbon Nanotubes on HepG2 Adhesion and Spreading	179
	<i>Suijian Qi, Changqing Yi, Dawei Zhang, and Mengsu Yang</i>	
PART V BIOSENSORS		
16	Enzymatic Detection Based on Carbon Nanotubes	197
	<i>Martin Pumera</i>	
17	Carbon Nanotube Biosensors Based on Electrochemical Detection	205
	<i>Martin Pumera</i>	
18	Biosensors Based on Carbon Nanotube-Network Field-Effect Transistors	213
	<i>Cristina C. Cid, Jordi Riu, Alicia Maroto, and F. Xavier Rius</i>	
19	Detection of Biomarkers with Carbon Nanotube-Based Immunosensors	227
	<i>Samuel Sánchez, Esteve Fàbregas, and Martin Pumera</i>	
20	Carbon Nanotube Biosensors with Aptamers as Molecular Recognition Elements.	239
	<i>Hye-Mi So, Dong-Won Park, Hyunju Chang, and Jeong-O Lee</i>	
	<i>Index</i>	251

Carbon Nanotubes

Methods and Protocols

Balasubramanian, K.; Burghard, M. (Eds.)

2010, XI, 254 p., Hardcover

ISBN: 978-1-60761-577-4

A product of Humana Press