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Carbon nanotubes (CNTs) are a fantastic member of the carbon family. Their crystal structures are very close to graphite, belonging to sp^2-bonded carbon. CNTs have not only attracted enormous research interest but also stimulated CNT-related applications and industrial development. This is proved by the fact that more than 70,000 articles about CNTs have been published (ISI database, August 2011) and many CNT products are available on the market.

This book gives an overview of the current status of research and development activities of CNTs. It is a very valuable reference for scientists, researchers, engineers, and students who wish to know more about CNTs. The information provided in the book will appeal to anyone involved in studying and researching nanodevices, nanomaterials, or nanofabrication processes. The book presents 16 state-of-the-art contributions that cover CNT synthesis technologies for growing highly orientated CNTs; chirality-pure CNTs and CNTs at a large throughput and low cost; CNT assembly techniques; CNT sorting and separation processes; CNT functionalization engineering for more functionalities; fundamental properties of CNTs; and their practical/potential electrical, electronic, optical, mechanical, chemical, and biological applications.

Qing Zhang is an associate professor at Nanoelectronics Centre of Excellence, School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore. His research interests cover carbon-based materials, silicon, and oxide nanostructures and devices. In 1999, he began to study carbon nanotube (CNT)-related unique physical phenomena and electronic devices. Dr. Zhang and his group have extended their research to the electron transport properties of CNTs, charge trapping/transfer between CNTs and metal electrodes/adsorbed atomic and molecular species, optical and thermal properties of CNTs, and a variety of CNT electronic devices, including CNT logic gates and simple circuits, pressure sensors, NH_3 sensors, glucose sensors, nitrophenol sensors, and organophosphate compound sensors. Dr. Zhang has published 200 peer-reviewed scientific journal papers, more than 70 of which address the physical properties and devices of CNTs.

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