

<<碳纳米管的物理属性PHYSICAL PR>>

图书基本信息

书名：<<碳纳米管的物理属性PHYSICAL PROPERTIES OF CARBON NANOTUBES>>

13位ISBN编号：9781860942235

10位ISBN编号：1860942237

出版时间：1998-12

出版时间：World Scientific Pub Co Inc

作者：Saito, R.

页数：259

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

## 内容概要

This is an introductory textbook for graduate students and researchers from various fields of science who wish to learn about carbon nanotubes. The field is still at an early stage, and progress continues at a rapid rate. This book focuses on the basic principles behind the physical properties and gives the background necessary to understand the recent developments. Some useful computational source codes which generate coordinates for carbon nanotubes are also included in the appendix. --This text refers to the Hardcover edition.

书籍目录

1 Carbon Materials 1.1 History 1.2 Hybridization in A Carbon Atom 1.2.1 sp Hybridization: Acetylene, HC=CH 1.2.2 sp<sup>2</sup> Hybridization: Polyacetylene, (HC=CH-)<sub>n</sub> 1.2.3 sp<sup>3</sup> Hybridization: Methane, (CH<sub>4</sub>) 1.2.4 Carbon Is Core Orbitals 1.2.5 Isomers of Carbon 1.2.6 Carbynes 1.2.7 Vapor Grown Fibers

2 Tight Binding Calculation of Molecules and Solids 2.1 Tight Binding Method for a Crystalline Solid 2.1.1 Secular Equation 2.1.2 Procedure for obtaining the energy dispersion 2.2 Electronic Structure of Polyacetylene 2.3 Two-Dimensional Graphite 2.3.1 Bands of Two-Dimensional Graphite 2.3.2 Bands of Two-Dimensional Graphite

3 Structure of a Single-Wall Carbon Nanotube 3.1 Classification of carbon nanotubes 3.2 Chiral Vector: Ch 3.3 Translational Vector: T 3.4 Symmetry Vector: R 3.5 Unit Cells and Brillouin Zones 3.6 Group Theory of Carbon Nanotubes 3.7 Experimental evidence for nanotube structure

4 Electronic Structure of Single-Wall Nanotubes 4.1 One-electron dispersion relations 4.1.1 Zone-Folding of Energy Dispersion Relations 4.1.2 Energy Dispersion of Armchair and Zigzag Nanotubes 4.1.3 Dispersion of chiral nanotubes 4.2 Density of States, Energy gap 4.3 Effects of Peierls distortion and nanotube curvature

5 Synthesis of Carbon Nanotubes 5.1 Single-Wall Nanotube Synthesis 5.2 Laser Vaporization Synthesis Method 5.3 Arc Method of Synthesizing Carbon Nanotubes 5.4 Vapor Growth and Other Synthesis Methods 5.4.1 Vapor Growth Method 5.4.2 Other Synthesis Methods 5.5 Purification 5.6 Nanotube Opening, Wetting, Filling and Alignment 5.6.1 Nanotube Opening 5.6.2 Nanotube Wetting 5.6.3 Nanotube Filling 5.6.4 Alignment of Nanotubes 5.7 Nanotube Doping, Intercalation, and BN/C Composites . . 5.8 Temperature Regimes for Carbonization and Graphitization 5.9 Growth Mechanisms

6 Landau Energy Bands of Carbon Nanotubes 6.1 Free Electron in a Magnetic Field 6.2 Tight Binding in a Magnetic Field 6.3 Cosine Band in a Magnetic Field 6.4 Landau Energy Bands 6.5 Landau Energy Bands: Aharonov-Bohm 6.6 Landau Energy Bands: Quantum-Oscillation .7 Connecting Carbon Nanotubes 7.1 Net Diagrams of a Junction 7.2 The Rule for Connecting Two Nanotubes . . . . .8 Transport Properties of Carbon Nanotubes

9 Phonon Modes of Carbon Nanotubes

10 Raman Spectra of Carbon Nanotubes

11 Elastic Properties of Carbon Nanotubes

References

Index

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>