

1. Record Nr.	UNINA9910972913103321
Titolo	Carbon nanotubes : new research / / Avery P. Ottenhouse, editor
Pubbl/distr/stampa	New York, : Nova Science Publishers, c2009
ISBN	1-60876-700-0
Edizione	[1st ed.]
Descrizione fisica	1 online resource (508 p.)
Altri autori (Persone)	OttenhouseAvery P
Disciplina	620.1/93
Soggetti	Carbon Nanostructured materials Nanotubes
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	""Carbon Nanotubes: New Research""; ""Contents""; ""Preface""; ""On the Drude Model to Explain Quantum Transport in Carbon Nanotubes""; ""Abstract""; ""1. Introduction""; ""2. Theory""; ""Conclusion""; ""References""; ""Asymptotic Analysis of Coagulation- Fragmentation Equations""; ""Abstract""; ""Introduction""; ""Computational Method""; ""Description of the Asymptotic Coagulation- Fragmentation Equations""; ""Calculation Results and Discussion""; ""Perspectives""; ""References""; ""Gas-Carbon Nanotubes Interactions: A Review of ultra-high vacuum Surface Science Studies on CNTs"" ""Abstract"" ""Abbreviations""; ""1. Introduction""; ""2. Sample Preparation for Surface Science Studies""; ""3. Brief Literature Survey of HOPG - Highly Ordered Pyrolytic Graphite""; ""4. Brief Literature Overview - UHV Surface Science Studies on Clean Nanotubes""; ""5. Detailed Examples of Specific Systems""; ""6. Future Directions""; ""Summary""; ""Acknowledgments""; ""References""; ""On Residual Metallic Catalyst Impurities in Carbon Nanotubes""; ""Abstract""; ""Main Text""; ""References"" ""Insight of the Kinetics Carbon Nanotubes Growth and Funcinalization with Freestanding Silicon Nanocrystals"" ""Abstract""; ""1. Introduction""; ""2. Experimental""; ""3. Kinetcis of the Carbon Nanotubes Growth""; ""4. Filling Carbon Nanotube Cavity by Silicon Nanocrystals""; ""Conclusion""; ""Acknowledgments""; ""References""; ""Carbon Nanotube Array Thermal Interfaces""; ""Abstract""; ""X.1. Introduction"";

""X.2 Thermal Transport Through Carbon Nanotube Array Interfaces"";
 ""X.3. Photoacoustic Characterization of Thermal Properties""; ""X.4
 Types of Carbon Nanotube Array Interfaces""
 ""X.5. Thermal Resistances of Carbon Nanotube Array Interfaces""""X.6.
 Conclusion""; ""References""; ""Computational Analysis of the Interfacial
 Bonding Characteristics of Carbon Nanotube/Polymer Composites"";
 ""Abstract""; ""1. Introduction and Background""; ""2. Experimental"";
 ""3. Investigation of Molecular Interactions between SWNT and
 Polyethylene/Polypropylene/Polystyrene/Polyaniline Molecules""; ""4.
 Influence of Chirality on the Interfacial Bonding Characteristics of
 Carbon Nanotube Polymer Composites""
 ""5. Effect of Chemisorption on the Interfacial Bonding Characteristics
 of Carbon Nanotube Polymer Composites""""Conclusions"";
 ""Acknowledgment""; ""References""; ""Mechanical Properties of Carbon
 Nanotubes""; ""Abstract""; ""Introduction""; ""Mechanical Properties of
 SWCNTs""; ""Mechanical Properties of DWCNTs""; ""Conclusion"";
 ""Acknowledgments""; ""References""; ""Electrical Properties of a Carbon
 Nanotube/Polymer Nanocomposite and its Application as Highly
 Sensitive Strain Sensors""; ""Abstract""; ""1. Introduction""
 ""2. A Statistical Percolation Model for Prediction of Percolation
 Threshold of Nanocomposites""

Sommario/riassunto

This new and important book presents significant research on carbon nanotubes (CNTs) which are allotropes of carbon with a nanostructure that can have a length-to-diameter ratio greater than 1,000,000. These cylindrical carbon molecules have novel properties that make them potentially useful in many applications in nanotechnology, electronics, optics and other fields of materials science, as well as extensive use in arcology and other architectural fields. They exhibit extraordinary strength and unique electrical properties, and are efficient conductors of heat. Inorganic nanotubes have also been synthesised. Nanotubes are members of the fullerene structural family, which also includes the spherical buckyballs. The cylindrical nanotube usually has at least one end capped with a hemisphere of the buckyball structure. Their name is derived from their size, since the diameter of a nanotube is in the order of a few nanometres (approximately 1/50,000th of the width of a human hair), while they can be up to several millimetres in length (as of 2008). Nanotubes are categorized as single-walled nanotubes (SWNTs) and multi-walled nanotubes (MWNTs).
