

1. Record Nr.	UNINA9910807194203321
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Titolo	One-dimensional nanostructures : principles and applications // edited by Tianyou Zhai, Jiannian Yao
Pubbl/distr/stampa	Hoboken, N.J., : Wiley, 2013
ISBN	1-118-31034-9 1-283-91714-9 1-118-31032-2
Edizione	[1st ed.]
Descrizione fisica	1 online resource (610 p.)
Classificazione	TEC027000
Altri autori (Persone)	ZhaiTianyou <1980-> YaoJiannian <1953->
Disciplina	621.3815
Soggetti	Nanowires Semiconductors - Materials One-dimensional conductors Nanostructured materials
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	ONE-DIMENSIONALNANOSTRUCTURES; CONTENTS; Foreword; Preface; Contributors; 1 One-Dimensional Semiconductor Nanostructure Growth with Templates; 1.1 Introduction; 1.2 Anodic Aluminum Oxide (AAO) as Templates; 1.2.1 Synthesis of Self-Organized AAO Membrane; 1.2.2 Synthesis of Polycrystalline Si Nanotubes; 1.2.3 AAO as Template for Si Nanowire Epitaxy; 1.3 Conclusion and Outlook; Acknowledgments; References; 2 Metal-Ligand Systems for Construction of One-Dimensional Nanostructures; 2.1 Introduction; 2.2 Microstructures Based on 1D Coordination Polymers; 2.2.1 Preparation Methods; 2.2.2 Structures 2.2.3 Shape and Size Control 2.2.4 Methods for Study of Microstructures; 2.2.5 Formation Mechanisms; 2.2.6 Properties and Applications; 2.3 Bundles and Single Molecules on Surfaces Based on 1D Coordination Polymers; 2.3.1 Isolation Methods and Morphological Characterization; 2.3.2 Tools for the Studies at the Molecular Level; 2.3.3 Properties Studied at Single-Molecule Level; 2.4 Conclusion and Outlook; Acknowledgments; References; 3 Supercritical Fluid-Liquid-

Solid (SFLS) Growth of Semiconductor Nanowires; 3.1 Introduction; 3.2 The SFLS Growth Mechanism  
3.2.1 Supercritical Fluids as a Reaction Medium for VLS-Like Nanowire Growth  
3.2.2 SFLS-Grown Nanowires; 3.3 Properties and Applications of SFLS-Grown Nanowires; 3.3.1 Mechanical Properties; 3.3.2 Printed Nanowire Field-Effect Transistors; 3.3.3 Silicon-Nanowire-Based Lithium Ion Battery Anodes; 3.3.4 Semiconductor Nanowire Fabric; 3.3.5 Other Applications; 3.4 Conclusion and Outlook; Acknowledgments; References; 4 Colloidal Semiconductor Nanowires; 4.1 Introduction; 4.2 Theoretical Calculations; 4.2.1 Effective Mass Multiband Method (EMMM); 4.2.2 Empirical Pseudopotential Method (EPM)  
4.2.3 Charge Patching Method (CPM)  
4.3 Synthesis of Colloidal Semiconductor Nanowires; 4.3.1 Oriented Attachment; 4.3.2 Template Strategy; 4.3.3 Solution-Liquid-Solid Growth; 4.4 Properties of Colloidal Semiconductor Nanowires; 4.4.1 Optical Properties of Semiconductor Nanowires; 4.4.2 Electronic Properties of Semiconductor Nanowires; 4.4.3 Magnetic Properties of Semiconductor Nanowires; 4.5 Applications of Colloidal Semiconductor Nanowires; 4.5.1 Semiconductor Nanowires for Energy Conversion; 4.5.2 Semiconductor Nanowires in Life Sciences; 4.6 Conclusion and Outlook; Acknowledgments  
References  
5 Core-Shell Effect on Nucleation and Growth of Epitaxial Silicide in Nanowire of Silicon; 5.1 Introduction; 5.2 Core-Shell Effects on Materials; 5.3 Nucleation and Growth of Silicides in Silicon Nanowires; 5.3.1 Nanoscale Silicide Formation by Point Contact Reaction; 5.3.2 Supply Limit Reaction in Point Contact Reactions; 5.3.3 Repeating Event of Nucleation; 5.4 Core-Shell Effect on Nucleation of Nanoscale Silicides; 5.4.1 Introduction to Solid-State Nucleation; 5.4.2 Stepflow of Si Nanowire Growth at Silicide/Si Interface  
5.4.3 Observation of Homogeneous Nucleation in Silicide Epitaxial Growth

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Sommario/riassunto

"This book consolidates a wealth of current and complex information regarding one-dimensional nanostructures into one volume for practicing chemists, physicists, materials scientists, and engineers in industry and academia. One-dimensional nanostructures are not only in the forefront of the hottest fundamental materials research, but they are also becoming part of our daily lives. 69 experts from around the world provide in-depth chapters on their specific areas of expertise, covering all important applications such as: photodetectors, gas sensors, biosensors, chemical sensors, field-emitters, lasers, lithium-ion batteries, supercapacitors, light emitting diodes (LED), photovoltaics, nanogenerators, thermoelectrics, piezoelectrics and field-effect transistors"--

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