

1. Record Nr.	UNINA9910523898203321
Titolo	System-materials nanoarchitectonics // edited by Yutaka Wakayama and Katsuhiko Ariga
Pubbl/distr/stampa	Tokyo, Japan : , : Springer, , [2022] ©2022
ISBN	4-431-56912-X
Edizione	[1st edition.]
Descrizione fisica	1 online resource (332 pages) : (VIII, 338 p. 170 illus., 158 illus. in color)
Collana	NIMS Monographs
Disciplina	620.5
Soggetti	Optical materials Nanostructured materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	What is Nanoarchitectonics? --Synthesis of Semiconductor Nanowires --Nanoparticle Biomarkers Adapted for Near-Infrared Fluorescence Imaging --Frontiers in Mesoscale Materials Design --Wavelength-selective Photothermal Infrared Sensors --Functional Molecular Liquids --Ionic nanoarchitectonics: Creation of polymer-based atomic switch and decision-making device --Oxoporphyrinogens: Novel Dyes based on the Fusion of Calix[4]pyrrole, Quinonoids and Porphyrins --Growth and electronic and optoelectronic applications of surface oxides on atomically thin WSe <sub>2</sub> --Portable toxic gas sensors based on functionalized carbon nanotubes --Advanced Nanomechanical Sensor for Artificial Olfactory System: Membrane-type Surface Stress Sensor (MSS) --Quantum Molecular Devices toward Large-Scale Integration -- Nanostructured bulk thermoelectric materials for energy harvesting -- Artificial Photosynthesis: Fundamentals, Challenges, and Strategies -- Smart Polymers for Biomedical Applications --Geometrical and mechanical nanoarchitectonics at interfaces bridging molecules with cell phenotypes --Electrical measurement by Multiple-Probe Scanning Probe Microscope --Large-Scale First-principles Calculation Technique for Nanoarchitectonics: Local orbital and Linear-scaling DFT methods with the CONQUEST code --Machine Learning Approaches in Nanoarchitectonics.

This book is the first publication to widely introduce the contributions of nanoarchitectonics to the development of functional materials and systems. The book opens up pathways to novel nanotechnology based on bottom-up techniques. In fields of nanotechnology, theoretical and practical limitations are expected in the bottom-up nanofabrication process. Instead, some supramolecular processes for nano- and microstructure formation including molecular recognition, self-assembly, and template synthesis have gained great attention as novel key technologies to break through expected limitations in current nanotechnology. This volume describes future images of nanotechnology and related materials and device science as well as practical applications for energy and biotechnology. Readers including specialists, non-specialists, graduate students, and undergraduate students can focus on the parts of the book that interest and concern them most. Target fields include materials chemistry, organic chemistry, physical chemistry, nanotechnology, and even biotechnology.

---