

1. Record Nr.	UNINA9910140815503321
Autore	Luryi Serge
Titolo	Future trends in microelectronics [[electronic resource] ] : from nanophotonics to sensors and energy // Serge Luryi, Jimmy Xu, Alexander Zaslavsky
Pubbl/distr/stampa	Oxford, : Wiley-Blackwell, c2010
ISBN	1-283-91618-5 0-470-64934-8 0-470-64933-X
Edizione	[1st edition]
Descrizione fisica	1 online resource (448 p.)
Altri autori (Persone)	XuJimmy ZaslavskyAlexander
Disciplina	621.381
Soggetti	Microelectronics Electronics
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	Future Trends in Microelectronics: From Nanophotonics to Sensors and Energy; CONTENTS; Preface; 1 OPTOELECTRONICS AND NANOPHOTONICS; Nanophotonics for Information Systems; What Will Modern Photonics Contribute to the Development of Future Optical Communication Technology?; Ultrafast Nanophotonic Devices For Optical Interconnects; Intersubband Quantum-Box Lasers: Progress and Potential as Uncooled Mid-Infrared Sources; GaSb-based Type-I Laser Diodes Operating at 3 m and Beyond; Bridging Optics and Electronics with Quantum Cascade Lasers, Antennas, and Circuits Towards Intersubband Polaritonics: How Fast Can Light and Electrons Mate?Si3N4/SiO2 Planar Photonic Structures Fabricated by Focused Ion Beam; 2 ELECTRONIC DEVICES AND SYSTEMS; Silicon-Based Devices and Materials for Nanoscale CMOS and Beyond-CMOS; Device Proposals Beyond Silicon CMOS; GeOI as a Platform for Ultimate Devices; Simulation of Self-Heating Effects in Different SOI MOS Architectures; Nanowires: Technology, Physics and Perspectives; Emerging Nanotechnology for Integration of Nanostructures in Nanoelectronic Devices

Scrolled Si/SiGe Heterostructures as Building Blocks for Tube-Like Field-Effect Transistors; Silicon Nanowire-Based Nonvolatile Memory Cells: Progress and Prospects; Prospects and Challenges of Next-Generation Flash Memory Devices; Chalcogenide Glassy Semiconductors - Could They Replace Silicon in Memory Devices?; Current Status and Recent Developments in RSFQ Processor Design; 1/f Noise: The Funeral is Cancelled (or Postponed); 3 PHYSICS, BIOLOGY, AND OTHER SISTER SCIENCES; Spin Hall Effect; Can Biology Provide Creative Solutions for Next-Generation Memory Devices? Spin Screening of Magnetization Due to Inverse Proximity Effect in Superconducting/Ferromagnetic Bilayers; Silicon for Spintronic Applications: Strain-Enhanced Valley Splitting; Graphene-Based Terahertz Devices: Concepts and Characteristics; Directed Self-Assembly - A Controllable Route to Optical and Electronic Devices Based on Single Nanostructures; 4 SENSORS, DETECTORS, AND ENERGY; Three-Dimensional Position-Sensitive Wide Bandgap Semiconductor Gamma-Ray Imaging Detectors; Semiconductor Scintillator for Three-Dimensional Array of Radiation Detectors; Semiconductor Gamma Radiation Detectors: Band Structure Effects in Energy Resolution; The Future of Microelectronics is ... Macroelectronics; An Integration Challenge: Information and Communication Technologies to Address Indoor Air Quality in Commercial Buildings; Quantum-Dot Infrared Photodetectors: In Search of the Right Design for Room-Temperature Operation; Treating the Case of Incurable Hysteresis in VO<sub>2</sub>; Exploratory Studies on Silicon-Based Oxide Fuel Cell Power Sources Incorporating Ultrathin Nanostructured Platinum and Cerium Oxide Films as Anode Components; INDEX

---

Sommario/riassunto

In the summer of 2009, leading professionals from industry, government, and academia gathered for a free-spirited debate on the future trends of microelectronics. This volume represents the summary of their valuable contributions. Providing a cohesive exploration and holistic vision of semiconductor microelectronics, this text answers such questions as: What is the future beyond shrinking silicon devices and the field-effect transistor principle? Are there green pastures beyond the traditional semiconductor technologies? This resource also identifies the direction the field is taking, enabling

---