

## **Journal Of Nanoelectronics And Optoelectronics**

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This issue of ECS Transactions covers emerging materials, process and technology options for large-area silicon wafers to enhance advanced IC performance or to enable revolutionary device structures with entirely new functionalities. Topics : high-mobility channel materials, (e.g. strained Si/Ge, compound semiconductors and graphene), high-performance gate stacks and low-resistivity junctions and contacts on new, Si-compatible materials; new materials and processes for 3-D (TSV) integration ; synthesis of nano-structures including wires, pores and membranes of Si-compatible materials; novel MEMS/NEMS structures and their integration with the mainstream Si-IC technology.

"Guyanese Achievers, USA and Canada" is the result of collaboration between Vidur Dindayal and the Guyanese diaspora, who shared with him its recommendations on whom to identify as examples of achievement. This volume chronicles Guyanese people who reflect their nation's rich multi-ethnic heritage. These people demonstrate that Guyanese have been successful in North America for a long time. For example, Sir James Douglas became the governor of the colony of Vancouver Island and later the colony of British Columbia in the 1850s. Today, he is considered the "father of British Columbia." For Guyanese, he is Guyana's "first gift to Canada." A statue of Sir James Douglas was unveiled in 2008 at his birthplace in Belmont, Mahaica. At the end of the first decade of the twenty-first century, the list of Guyanese who have been gifts to the United States and Canada is impressive.

"Guyanese Achievers, USA and Canada" celebrates the academics, actors, doctors, educators, entrepreneurs, and others who, by demonstrating inventiveness and persistence, have been recognized as exemplars of Guyanese achievement in North America.

Zinc Compounds—Advances in Research and Application: 2012 Edition

Transition Elements: Advances in Research and Application: 2011 Edition

Safety, Security, and Reliability of Robotic Systems

Biological Factors: Advances in Research and Application: 2011 Edition

Kallikreins—Advances in Research and Application: 2012 Edition

***The primary aim of this book is to discuss various aspects of nanoscale device design and their applications including transport mechanism, modeling, and circuit applications. . Provides a platform for modeling and analysis of state-of-the-art devices in nanoscale regime, reviews issues related to optimizing the sub-nanometer device performance and addresses simulation aspect and/or fabrication process of devices Also, includes design problems at the end of each chapter***

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*With recent advancements in electronics, specifically nanoscale devices, new technologies are being implemented to improve the properties of automated systems. However, conventional materials are failing due to limited mobility, high leakage currents, and power dissipation. To mitigate these challenges, alternative resources are required to advance electronics further into the nanoscale domain. Carbon nanotube field-effect transistors are a potential solution yet lack the information and research to be properly utilized. Major Applications of Carbon Nanotube Field-Effect Transistors (CNTFET) is a collection of innovative research on the methods and applications of converting semiconductor devices from micron technology to nanotechnology. The book provides readers with an updated status on existing CNTs, CNTFETs, and their applications and examines practical applications to minimize short channel effects and power dissipation in nanoscale devices and circuits. While highlighting topics including interconnects, digital circuits, and single-wall CNTs, this book is ideally designed for electrical engineers, electronics engineers, students, researchers, academicians, industry professionals, and practitioners working in nanoscience, nanotechnology, applied physics, and electrical and electronics engineering.*

**Minerals—Advances in Research and Application: 2012 Edition**

**Guyanese Achievers USA & Canada**

**Nitriles—Advances in Research and Application: 2012 Edition**

**Gram-Positive Endospore-Forming Rods—Advances in Research and Application: 2013 Edition**

**Proton Pumps—Advances in Research and Application: 2012 Edition**

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**Oxides: Advances in Research and Application: 2011 Edition**

**A Special Issue on Nanocarbon Photonics and Optoelectronics  
Nanotechnology**

**Advances in Carbon Research and Application: 2011 Edition**

**Silicon-Based Hybrid Nanoparticles**

ICICS-2020 is the third conference initiated by the School of Electronics and Electrical Engineering at Lovely Professional University that explored recent innovations of researchers working for the development of smart and green technologies in the fields of Energy, Electronics, Communications, Computers, and Control. ICICS provides innovators to identify new opportunities for the social and economic benefits of society. This conference bridges the gap between academics and R&D institutions, social visionaries, and experts from all strata of society to present their ongoing research activities and foster research relations between them. It provides opportunities for the exchange of new ideas, applications, and experiences in the field of smart technologies and finding global partners for future collaboration. The ICICS-2020 was conducted in two broad categories, Intelligent Circuits & Intelligent Systems and Emerging Technologies in Electrical Engineering.

Nanowires are an important sector of circuit design whose applications in very-large-scale integration design (VLSI) have huge impacts for bringing revolutionary advancements in nanoscale devices, circuits, and systems due to improved electronic properties of the nanowires. Nanowires are potential devices for VLSI circuits and system applications and are highly preferred in novel nanoscale devices due to their high mobility and high-driving capacity. Although the knowledge and resources for the fabrication of nanowires is currently limited, it is predicted that, with the advancement of technology, conventional fabrication flow can be used for nanoscale devices, specifically nanowires. Innovative Applications of Nanowires for Circuit Design provides relevant theoretical frameworks that include device physics, modeling, circuit design, and the latest developments in experimental fabrication in the field of nanotechnology. The book covers advanced modeling concepts of nanowires along with their role as a key enabler for innovation in GLSI devices, circuits, and systems. While highlighting topics such as design, simulation, types and applications, and performance analysis of nanowires, this book is ideally intended for engineers, practitioners, stakeholders, academicians, researchers, and students interested in electronics engineering, nanoscience, and nanotechnology.

With the increasing demand of robots for industrial and domestic use, it becomes indispensable to ensure their safety, security, and reliability. Safety, Security and Reliability of Robotic Systems: Algorithms, Applications, and Technologies provides a broad and comprehensive coverage of the evolution of robotic systems, as well as industrial statistics and future forecasts. First, it analyzes the safety-related parameters of these systems. Then, it covers security attacks and related countermeasures, and how to establish reliability in these systems. The later sections of the book then discuss various applications of these systems in modern industrial and domestic settings. By the end of this book, you will be familiarized with the theoretical frameworks, algorithms, applications, technologies, and empirical research findings on the safety, security, and reliability of robotic systems, while the book's modular structure and comprehensive material will keep you interested and involved throughout. This book is an essential resource for students, professionals, and entrepreneurs who wish to understand the safe, secure, and reliable use of robotics in real-world applications. It is edited by two specialists in the field, with chapter contributions from an array of experts on robotics systems and applications.

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ScholarlyBrief

Logic Switches for Terascale Integrated Circuits

Advances in Oxygen Research and Application: 2011 Edition

Oxygen Compounds—Advances in Research and Application: 2012 Edition

Silicon Compatible Materials, Processes, and Technologies for Advanced Integrated Circuits and Emerging Applications

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Nanomaterials, Devices and Green Environment

Nanoscale Devices

Algorithms, Applications, and Technologies

Fullerenes: Advances in Research and Application: 2011 Edition

Issues in Nanotechnology and Micotechnology: Electronic and Photonic Research: 2011 Edition

**Silicon-Based Hybrid Nanoparticles: Fundamentals, Properties, and Applications** focuses on the fundamental principles and promising applications of silicon-based hybrid nanoparticles in nanoelectronics, energy storage/conversion, catalysis, sensors, biomedicine, environment and imaging. This book is an important reference source for materials scientists and engineers who are seeking to understand more about the major properties and applications of silicon-based hybrid nanoparticles. As the hybridization of silicon nanoparticles with other semiconductors or metal oxides nanoparticles may exhibit superior features, when compared to lone, individual nanoparticles, this book provides the latest insights. In addition, the silicon/iron oxide hybrid nanoparticles also possess excellent fluorescence, super-paramagnetism, and biocompatibility that can be effectively used for the diagnostic imaging system in vivo. Similarly, gold-silicon nanohybrids could be used as highly efficient near-infrared hyperthermia agents for cancer cell destruction. Outlines the major thermal, electrical, optical, magnetic and toxic properties of silicon-based hybrid nanoparticles Describes major applications in energy, environmental science and catalysis Assesses the major challenges to manufacturing silicon-based nanostructured materials on an industrial scale

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A Celebration

Alkenes—*Advances in Research and Application: 2012 Edition*

Major Applications of Carbon Nanotube Field-Effect Transistors (CNTFET)

Photodetectors

CMOS and Beyond

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Advances and Real-Life Applications

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Transition Elements—*Advances in Research and Application: 2012 Edition*

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Get up to speed with the future of logic switch design with this indispensable overview of the most promising successors to modern CMOS transistors. Learn how to overcome existing design challenges using novel device concepts, presented using an in-depth, accessible, tutorial-style approach. Drawing on the expertise of leading researchers from both industry and academia, and including insightful contributions from the developers of many of these alternative logic devices, new concepts are introduced and discussed from a range of different viewpoints, covering all the necessary theoretical background and developmental context. Covering cutting-edge developments with the potential to overcome existing limitations on transistor performance, such as tunneling field-effect transistors (TFETs), alternative charge-based devices, spin-based devices, and more exotic approaches, this is essential reading for academic researchers, professional engineers, and graduate students working with semiconductor devices and technology.

In this book some recent advances in development of photodetectors and photodetection systems for specific applications are included. In the first section of the book nine different types of photodetectors and their characteristics are presented. Next, some theoretical aspects and simulations are discussed. The last eight chapters are devoted to the development of photodetection systems for imaging, particle size analysis, transfers of time, measurement of vibrations, magnetic field, polarization of light, and particle energy. The book is addressed to students, engineers, and researchers working in the field of photonics and advanced technologies.

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