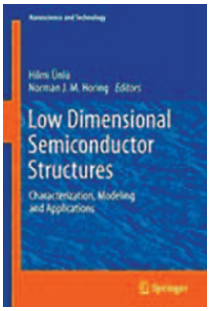
New titles at a glance

Low Dimensional Semiconductor Structures: Characterization, Modeling and Applications

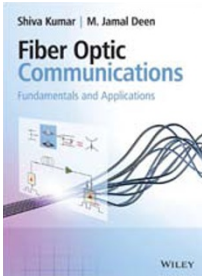
Edited by Hilmi Ünlü and Norman J. M. Horing
SPRINGER. 162PP. £94



After Richard Feynman first proposed the concept of low-dimensional nanoscience and nanotechnology in 1959, intensive research has led to an advanced level of understanding and control of the properties of matter on the nanoscale as well as the creation of a new generation of electronic and optical devices. The book investigates the properties of low-dimensional semiconductor structures, including heterostructures, superlattices, and quantum wells, wires and dots, with a special focus on graphene. It also describes new advances in the areas of fabrication and optical studies. The broad spectrum of topics covered, ranging from basic to advanced concepts, renders this handbook ideal for both those considering entering the field of nanotechnology and those already working in it.

Fiber Optic Communications: Fundamentals and Applications

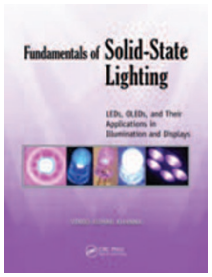
By Shiva Kumar and M. Jamal Deen
WILEY. 576PP. £70



This book is a pedagogical guide to all aspects of fibre optic communications, a field that has experienced enormous progress over the past decades. The first chapters discuss the basic principles of electromagnetism and optics. Subsequent chapters describe key topics (fibres, lasers and photodetectors) and the building blocks of fibre optic systems (receivers, amplifiers and transmitters). More-advanced topics, including performance analysis, channel multiplexing techniques, nonlinear effects and digital signal processing, are treated in the last chapters.

Fundamentals of Solid-State Lighting: LEDs, OLEDs, and their Applications in Illumination and Displays

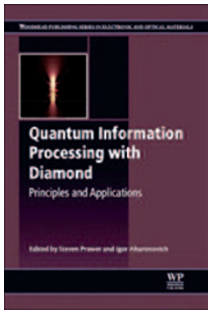
By Vinod Kumar Khanna
CRC PRESS. 604PP. £76



Light-emitting diodes (LEDs) and their organic counterparts, organic LEDs, are finding numerous applications in the areas of signalling, illumination and displays. Solid-state lighting is more efficient and reliable than traditional lighting schemes. This book covers topics related to these technologies, ranging from the physics of light generation and characterization to the various types of LEDs and recent state-of-the-art technological advances. It particularly focuses on future challenges and directions of the industry, including thermal management, reliability and smart lighting.

Quantum Information Processing with Diamond: Principles and Applications

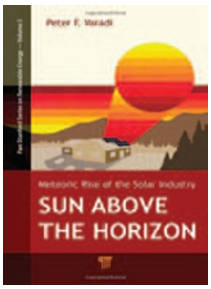
Edited by Steven Prawer and Igor Aharonovich
ELSEVIER 352PP. £150



Diamonds are not only a girl's best friend, they are also a useful material for quantum network applications. This handbook explores the potential of diamond with nitrogen–vacancy colour centres for applications in quantum information science. Leading experts in the field provide insights into the fabrication, capabilities and applications of engineered diamond materials. The book is divided in three parts. The first focuses on the principles of quantum information and fabrication techniques. The second outlines recent experimental demonstrations of important capabilities, such as the generation of single photons, entangled photon pairs and magnetic sensors. The third part discusses the exciting future of diamond as a possible platform for quantum information networks.

Sun above the Horizon: Meteoric Rise of the Solar Industry

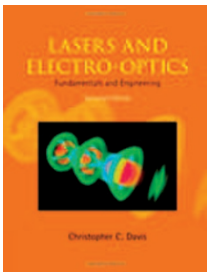
By Peter F. Varadi
PAN STANFORD. 548 PP. £36



The photovoltaic industry has revolutionized electric power generation over the past 40 years. This book tells the story behind this revolution — how a brilliant idea gave birth to an enormous market, which has millions of people working in it. Today, solar electricity provides a significant portion of the global demand for power and has triggered a re-evaluation of the way we perceive energy — both its production and environmental effects. Peter Varadi, a pioneer of the utilization of solar cells for terrestrial applications, explains various aspects of this technology, from a practical as well as an industrial point of view. He also provides valuable insights into what lies ahead for solar-cell power generation.

Lasers and Electro-optics, Fundamentals and Engineering (Second Edition)

By Christopher C. Davis
CAMBRIDGE UNIVERSITY PRESS. 867PP. £50



The second edition of this comprehensive textbook on lasers has been reorganized and includes many new and exciting topics. As well as describing the basic physics and operational principles of lasers, the book now covers recent advances in the areas of quantum-well lasers and modulators, free-electron lasers, imaging and non-imaging optical systems, squeezed light and ultrashort-pulse lasers. It also gives important derivations and results and offers insights into the design, construction and performance of such devices.