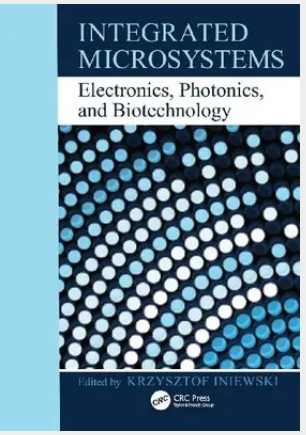
Iniewski

Integrated Microsystems

Electronics, Photonics, and Biotechnology



As rapid technological developments occur in electronics, photonics, mechanics, chemistry, and biology, the demand for portable, lightweight integrated microsystems is relentless. These devices are getting exponentially smaller, increasingly used in everything from video games, hearing aids, and pacemakers to more intricate biomedical engineering and military applications. Edited by Kris Iniewski, a revolutionary in the field of advanced semiconductor materials, Integrated Microsystems: Electronics, Photonics, and Biotechnology focuses on techniques for optimized design and fabrication of these intelligent miniaturized devices and systems. Composed of contributions from experts in academia and industry around the world, this reference covers processes compatible with CMOS integrated circuits, which combine computation, communications, sensing, and actuation capabilities. Light on math and physics, with a greater emphasis on microsystem design and configuration and electrical engineering, this book is organized in three sections—Microelectronics and Biosystems, Photonics and Imaging, and Biotechnology and MEMs. It addresses key topics, including physical and chemical sensing, imaging, smart actuation, and data fusion and management. Using tables, figures, and equations to help illustrate concepts, contributors examine and explain the potential of emerging applications for areas including biology, nanotechnology, micro-electromechanical systems (MEMS), microfluidics, and photonics.

Written by experts from industry and academia around the world, this book focuses on electrical engineering and elaborates on how electrical circuits interface with biology, microfluidics, and photonics. Including only light math and physics, with greater focus on explanation, it covers integrated devices and other emerging structures required for future micro- and nanotechnologies. This material addresses physical and chemical sensing, imaging, smart actuation, and data fusion and management. Providing tables, figures, and equations to help illustrate concepts, the book's contributors examine and explain the potential of emerging applications that are in integrated microsystems.

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