# Implantable Biomedical Microsystems: Design Principles and Applications (Micro and Nano Technologies)

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Research and innovation in areas such as circuits, microsystems, packaging, biocompatibility, miniaturization, power supplies, remote control, reliability, and lifespan are leading to a rapid increase in the range of devices and corresponding applications in the field of wearable and implantable biomedical microsystems, which are used for monitoring, diagnosing, and controlling the health conditions of the human body.

This book provides comprehensive coverage of the fundamental design principles and validation for implantable microsystems, as well as several major application areas. Each component in an implantable device is described in details, and major case studies demonstrate how these systems can be optimized for specific design objectives.

The case studies include applications of implantable neural signal processors, brain-machine interface (BMI) systems intended for both data recording and treatment, neural prosthesis, bladder pressure monitoring for treating urinary incontinence, implantable imaging devices for early detection and diagnosis of diseases as well as electrical conduction block of peripheral nerve for chronic pain management.

Implantable Biomedical Microsystems is the first comprehensive coverage of bioimplantable system design providing an invaluable information source for researchers in Biomedical, Electrical, Computer, Systems, and Mechanical Engineering as well as engineers involved in design and development of wearable and implantable bioelectronic devices and, more generally, teams working on low-power microsystems and their corresponding wireless energy and data links.

- First time comprehensive coverage of system-level and component-level design and engineering aspects for implantable microsystems.
- Provides insight into a wide range of proven applications and application specific design trade-offs of bioimplantable systems, including several major case studies
- Enables Engineers involved in development of implantable electronic systems to optimize applications for specific design objectives.

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