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Titolo	Neural Interface Engineering : Linking the Physical World and the Nervous System / / edited by Liang Guo
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Soggetti	Electronic circuits Biomedical engineering Nanotechnology Circuits and Systems Biomedical Engineering and Bioengineering Nanotechnology and Microengineering
Lingua di pubblicazione	Inglese
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Nota di contenuto	Introduction: The need of a neural interface -- Excitable membrane, ion channels and neural signals -- Principles of neural recording -- Principles of neural stimulation -- Planar cell culture microelectrode arrays -- 3-D cell culture microelectrode arrays -- Intracortical electrodes -- Peripheral neural electrodes -- Failure modes of neural electrodes -- Strategies to improve neural electrode performances -- Flexible neural electrodes -- Stretchable neural electrodes -- Electrocorticography electrodes -- Retinal Implants -- Regenerative neural electrodes -- Nano neural electrodes -- Passive RF neural electrodes -- Ultrasonic neural dust -- Transcutaneous electrical recording and stimulation -- Functional magnetic resonance imaging -- Ultrasonic stimulation -- Transcranial magnetic stimulation -- Fluorescent imaging of neural activities -- Localized surface plasmon resonance-based neural sensing -- Optical stimulation -- Acoustic stimulation -- Magnetic stimulation -- Voltage-sensitive fluorescent proteins for neural sensing -- Optogenetics -- Sonogenetics -- Magnetothermogentics -- Conclusions.

Sommario/riassunto

This book provides a comprehensive reference to major neural interfacing technologies used to transmit signals between the physical world and the nervous system for repairing, restoring and even augmenting body functions. The authors discuss the classic approaches for neural interfacing, the major challenges encountered, and recent, emerging techniques to mitigate these challenges for better chronic performances. Readers will benefit from this book’s unprecedented scope and depth of coverage on the technology of neural interfaces, the most critical component in any type of neural prostheses. Provides comprehensive coverage of major neural interfacing technologies; Reviews and discusses both classic and latest, emerging topics; Includes classification of technologies to provide an easy grasp of research and trends in the field.