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Titolo	Nanotechnology and Neuroscience: Nano-electronic, Photonic and Mechanical Neuronal Interfacing / / edited by Massimo De Vittorio, Luigi Martiradonna, John Assad
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Nanotechnology and Neuroscience: nano-electronic, photonic and mechanical neuronal interfacing -- Carbon nanotubes for neuron-electrode interface with improved mechanical performance -- Nanoscale field-effect transistors for minimally invasive, high spatial resolution and three-dimensional action potential recording -- In-cell recording and stimulation by engulfment mechanisms.-Micromachining Techniques for Realization of Three-Dimensional Microelectrode Arrays -- Focused ion beam technology as a fabrication and inspection tool in neuron interfacing -- Active Pixel Sensor Multi Electrode Array for high spatio-temporal resolution -- Multi electrode and multi transistor arrays for in vivo recording -- Optogenetics.
Sommario/riassunto	This book provides an overview of the different ways in which the “nano-world” can be beneficial for neuroscientists. The volume encompasses the latest developments in the field of micro- and nanotechnology applied to neuroscience, discussing technological approaches applied to both in-vitro and in-vivo experiments. A variety

of different nanotechnologies are presented that include nanostructured electrodes and their electrical, mechanical and biochemical properties, active and passive 2D and 3D multi-electrode arrays (MEAs), nanoscale transistors for sub-cellular re-cordings and an overview on methods, tools and applications in optoge-netics. The book focuses specifically on fabrication strategies, to offer a compre-hensive guide for developing and applying micro- and nanostructured tools for neuroscientific applications. It is intended as a reference both for neuroscientists and nanotechnologists on the latest developments in neu-rotechnological tools. • Provides readers with state-of-the-art information about developing advanced nanotechnology tools for communicating with the brain; • Includes discussion of the compatibility of fabrication techniques optimized for different target devices, such as electric sensors/transducers based on metallic or semiconductor interfaces and optical probes to guide light into the brain; • Offers a single-source reference to the mechanical, electrical and optical effects of nanostructures on neurons. .