

1. Record Nr.	UNINA9910811210903321
Titolo	Organic bionics // Gordon G. Wallace ... [et al.]
Pubbl/distr/stampa	Weinheim, : Wiley-VCH, 2012
ISBN	3-527-64604-3 1-280-66286-7 9786613639790 3-527-64602-7 3-527-64605-1
Edizione	[1st ed.]
Descrizione fisica	1 online resource (240 p.)
Altri autori (Persone)	WallaceGordon G
Disciplina	620.11 628
Soggetti	Bionics Materials science Biomedical materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Organic Bionics; Contents; Foreword by Professor Graeme Clark; Acknowledgments; 1 Medical Bionics; 1.1 Medical Bionic Devices; 1.1.1 Electrodes and Electrode Arrays; 1.1.1.1 Bionic Hearing; 1.1.1.2 Bionic Vision; 1.1.1.3 Neural Prosthetic Applications; 1.1.1.4 Vagus Nerve Stimulation (Epilepsy and Pain Management); 1.1.1.5 Transcutaneous Electrical Nerve Stimulation; 1.1.1.6 Cardiovascular Applications; 1.1.1.7 Orthopedic Applications; 1.2 Key Elements of a Medical Bionic Device; 1.2.1 Organic Conductors; 1.2.1.1 Neural Stimulation and Recording 1.2.2 Emerging Areas of Application for Medical Bionics 1.2.2.1 Bionics for Peripheral Nerve Injury; 1.2.2.2 Bionics for Damaged or Diseased Muscle; 1.2.3 Outline of the Book; References; 2 Carbon; 2.1 Introduction to Carbon; 2.2 Graphene; 2.2.1 Properties of Graphene; 2.2.1.1 Electronic Properties; 2.2.1.2 Electrochemical Properties; 2.2.1.3 Chemical Properties; 2.2.1.4 Mechanical Properties; 2.3 Carbon Nanotubes; 2.3.1 Synthesis; 2.3.2 Electronic Properties of Carbon Nanotubes; 2.3.3 Electrochemistry of Carbon Nanotubes; 2.3.4

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## Sommario/riassunto

The first reference on this emerging interdisciplinary research area at the interface between materials science and biomedicine is written by pioneers in the field, who address the requirements, current status and future challenges. Focusing on inherently conducting polymers, carbon nanotubes and graphene, they adopt a systematic approach, covering all relevant aspects and concepts: synthesis and fabrication, properties, introduction of biological function, components of bionic devices and materials requirements. Established bionic devices, such as the bionic ear are examined, as are emerging

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