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Soggetti	Polymers Biomaterials Robotics Automation Electronics Microelectronics Polymer Sciences Robotics and Automation Electronics and Microelectronics, Instrumentation
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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	Progress and Current Status of Materials and Properties of Soft Actuators -- Current Status of Applications and Markets of Soft Actuators -- Electromagnetic Heating.-Thermo-Responsive Nanofiber Mats Fabricated by Electrospinning -- Self-Oscillating Gels -- Ionic Conductive Polymers -- Conducting Polymers -- Humidity-Sensitive Conducting Polymer Actuators -- Carbon Nanotube/Ionic Liquid Composites -- Ion Gels for Ionic Polymer Actuators -- Ionic Liquid/Polyurethane/PEDOT:PSS Composite Actuators -- Dielectric Gels -- Dielectric Elastomers -- Development of Actuators Using Slide Ring Materials and Their Various Applications -- Piezoelectric Polymers --

Spiropyran-Functionalized Hydrogel Actuators -- Photomechanical Energy Conversion with Cross-linked Liquid-Crystalline Polymers -- Photoredox Reaction -- Magnetic Fluid Composite Gels -- Magnetic Particle Composite Gels -- Molecular Mechanism of Electrically Induced Volume Change of Porous Electrodes -- Material Modeling -- Distributed Parameter System Modeling -- Modeling and Feedback Control of Electro-Active Polymer Actuators -- Motion Design - A Gel Robot Approach -- Motion Control -- Application of Nano-Carbon Actuator to Braille Display -- Underwater Soft Robots -- IPMC Actuator-Based Multifunctional Underwater Microrobots -- Medical Applications -- Micro Pump Driven by a Pair of Conducting Polymer Soft Actuators -- Elastomer Transducers -- Tissue Engineering Approach to Making Soft Actuators -- ATP-Driven Bio-Machine -- Employing Cytoskeletal Treadmilling in Bio-Actuator.

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#### Sommario/riassunto

The subject of this book is the current comprehensive research and development of soft actuators, and encompasses interdisciplinary studies of materials science, mechanics, electronics, robotics, and bioscience. As an example, the book includes current research on actuators based on biomaterials to provide future perspectives for artificial muscle technology. Readers can obtain detailed, useful information about materials, methods of synthesis, fabrication, and measurements. The topics covered here not only promote further research and development of soft actuators, but also lead the way to their utilization and industrialization. One outstanding feature of the book is that it contains many color figures, diagrams, and photographs clearly describing the mechanism, apparatus, and motion of soft actuators. The chapter on modeling is conducive to more extensive design work in materials and devices and is especially useful in the development of practical applications. Readers can acquire the newest technology and information about the basic science and practical applications of flexible, lightweight, and noiseless soft actuators, which are quite unlike conventional mechanical engines and electric motors. The new ideas offered in this volume will provide inspiration and encouragement to researchers and developers as they explore new fields of applications for soft actuators.

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