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Nota di contenuto	Cover ; Title Page ; Contents ; Introduction ; Chapter 1. Design of Integrated Flexible Structures for Micromanipulation ; 1.1. Design and control problems for flexible structures in micromanipulation ; 1.1.1. Characteristics of manipulation on the microscale ; 1.1.2. Reliability and positioning precision 1.1.3. Micromanipulation station 1.1.4. Difficulties related to controlling robotic micromanipulators ; 1.2. Integrated design in micromechatronics ; 1.2.1. Modeling integrated flexible structures ; 1.2.2. Active transduction materials ; 1.2.3. Multiphysical models 1.2.4. Optimization strategies for micromechatronic structures 1.3. Example of an optimal synthesis method for flexible piezoelectric transduction structures

; 1.3.1. Block method ; 1.3.2. General design approach
; 1.3.3. Finite element model
1.3.4. Example applications: designing integrated flexible
microgrippers 1.4.
Conclusion ; 1.5. Bibliography ; Chapter 2.
Flexible Structures' Representation and Notable Properties in Control
; 2.1. State-space representation of flexible structures
; 2.1.1. Dynamic representation
2.1.2. Conservative model in the modal basis
2.1.3. Damping characteristics ; 2.1.4. Solving
equations ; 2.1.5. State-space representation in the
modal basis ; 2.1.6. Modal
identification and control ; 2.2. The
concepts of modal controllability and observability
2.2.1. Overview of state controllability and observability

Sommario/riassunto

The objective of this book is to provide those interested in the field of flexible robotics with an overview of several scientific and technological advances in the practical field of robotic manipulation. The different chapters examine various stages that involve a number of robotic devices, particularly those designed for manipulation tasks characterized by mechanical flexibility. Chapter 1 deals with the general context surrounding the design of functionally integrated microgripping systems. Chapter 2 focuses on the dual notations of modal commandability and observability, which play a sig
