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Nota di contenuto

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1.4.3. MICRON: a handheld robotized instrument for ophthalmic surgery1.5. Conclusion; Chapter 2 Intracorporeal Microrobotics; 2.1. Introduction; 2.2. Novel paradigms for intracorporeal robotics; 2.2.1. Classification of intracorporeal robots; 2.2.2. Physical principles in use at microscale; 2.3. Methods; 2.3.1. Models; 2.3.2. Design; 2.3.3. Actuation; 2.3.4. Sensing; 2.3.5. Control; 2.4. Devices; 2.4.1. Magnetically guided catheters; 2.4.2. Distal tip mobility for endoluminal microphonosurgery; 2.4.3. Autonomous active capsules; 2.4.4. Magnetically guided capsules; 2.5. Conclusion
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4.2.2. Energy sources4.2.3. How far away is this future?; Bibliography; Index

Sommario/riassunto

A promising long-term evolution of surgery relies on intracorporeal microrobotics. This book reviews the physical and methodological principles, and the scientific challenges to be tackled to design and control such robots. Three orders of magnitude will be considered, justified by the class of problems encountered and solutions implemented to manipulate objects and reach targets within the body: millimetric, sub-millimetric in the 10- 100 micrometer range, then in the 1-10 micrometer range. The most prominent devices and prototypes of the state of the art will be described to illustrate th