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Titolo	Micromachines for Biological Micromanipulation [[electronic resource] /] / by Qingsong Xu
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Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (233 pages) : illustrations (some color)
Disciplina	610.28
Soggetti	Biomedical engineering Nanotechnology Biomedical Engineering and Bioengineering Nanotechnology and Microengineering Biomedical Engineering/Biotechnology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Review of Microinjection Systems -- Design, Fabrication, and Testing of a Microforce Sensor for Microinjection -- Design and Control of a Piezoelectric-Driven Microinjector -- Design, Fabrication, and Testing of a Constant-Force Microinjector -- Design, Modeling, and Control of a Constant-Force Microgripper -- Design and Development of a Flexure-Based Compact Constant-Force Robotic Gripper -- Design and Implementation of a Force-Sensing MEMS Microgripper -- Design, Analysis and Development of a Piezoelectric Microsyringe Pump -- Visual Servo Control with Force Regulation for Microinjection.
Sommario/riassunto	Provides new mechanical designs of microinjectors, microsyringes, microgrippers, and microforce sensors with experimental verifications; Presents new position and force control of the microinjection systems for biological cell microinjection; Examples give the reader more practice in the design, modeling, and control of biological micromanipulation systems. This book provides an overview of the noteworthy developments in the field of micromachining, with a specific focus on microinjection systems used for biological

micromanipulation. The author also explores the design, development, and fabrication of new mechanical designs for micromachines, with plenty of examples that elucidate their modeling and control. The design and fabrication of a piezoelectric microinjector, constant force microinjector, constant force microgripper, PDVF microforce sensor, and a piezoelectric microsyringe are presented as examples of new technology for microinjection systems. This book is appropriate for both researchers and advanced students in bioengineering.
