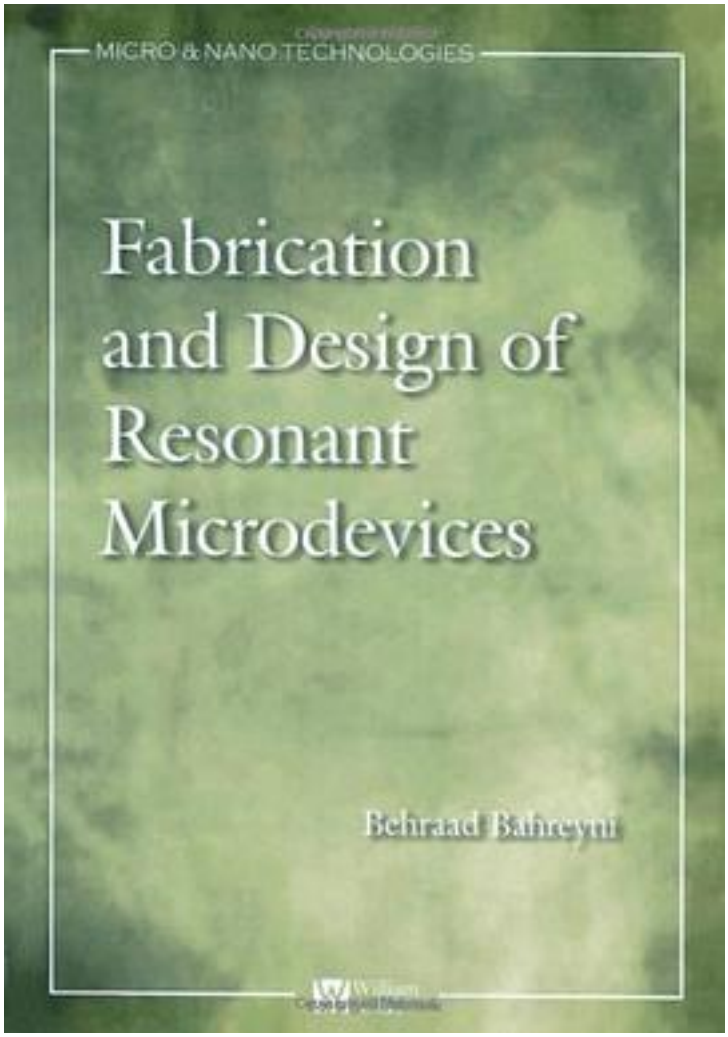
Fabrication & Design of Resonant Microdevices



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This book discusses the main issues on fabrication, design, and applications of

micromachined resonant devices as well as techniques that are commonly used for processing the output signal of resonant micro-electro-mechanical systems (MEMS). After a brief introduction to the concepts of resonance, an overview of the fabrication techniques for micromachined devices will be given. This section is a necessary part of the book as the options during the design of a resonant device strongly depend on how the device is going to be fabricated.

Resonant devices are generally two port systems: an input port to excite the structure and cause the resonance and an output port to monitor the behavior of the device. The next two chapters of the book are dedicated to excitation and signal detection methods. An analytic model of the device behavior is one of the most valuable design tools. A chapter is dedicated to this important issue followed by numerical simulation techniques. The book also covers the issues of damping and noise for resonant MEMS. These two topics are of particular importance for high-Q devices. Electronic interfacing and packaging issues are also discussed in separate chapters. The book concludes by giving numerous examples of resonant MEMS from the academia and industry with a brief analysis of them using the material that was presented in the earlier chapters.

* Offers numerous academic and industrial examples of resonant MEMS

* Provides an analytic model of device behavior

* Explains two-port systems in detail

* Devotes ample space to excitation and signal detection methods

* Covers issues of damping and noise for resonant MEMS, two topics of particular importance for high-Q devices

作者介绍:

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