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| Autore | Grimmer Andreas |
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| Nota di contenuto | Introduction -- Background -- Simulation of Droplet Microfluidic Networks -- Dimensioning of Droplet Microfluidic Networks -- Designing Meanders -- Passive Droplet Routing -- Designing Application-specific Architectures -- Generating Droplet Sequences -- Integrated Design Process -- Summary and Conclusion. |
| Sommario/riassunto | This book describes automatic methods for the design of droplet microfluidic networks. The authors discuss simulation and design methods which support the design process of droplet microfluidics in general, as well as design methods for a dedicated droplet routing mechanism, namely passive droplet routing. The methods discussed allow for simulating a microfluidic design on a high-abstraction level, which facilitates early validation of whether a design works as intended, automatically dimensioning a microfluidic design, so that constraints like flow conditions are satisfied, and automatically generating meander designs for the respective needs and fabrication settings. Dedicated methods for passive droplet routing are discussed and allow |

for designing application-specific architectures for a given set of experiments, as well as generating droplet sequences realizing the respective experiments. Together, these methods provide a comprehensive “toolbox" for designers working on droplet microfluidic networks in general and an integrated design flow for the passive droplet routing mechanism in particular. Provides both a comprehensive “toolbox" for designers working on droplet microfluidic networks in general and an integrated design flow for the passive droplet routing mechanism in particular; Describes for the first time CAD methods for droplet microfluidic networks, along with the first integrated design process; Includes open source implementations, in order to reach the largest possible user group within the domain of microfluidics.