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Titolo	Computer-Aided Design of Microfluidic Very Large Scale Integration (mVLSI) Biochips : Design Automation, Testing, and Design-for-Testability // by Kai Hu, Krishnendu Chakrabarty, Tsung-Yi Ho
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Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Control-Layer Optimization -- Wash Optimization for Cross-Contamination Removal -- Fault Modeling, Testing, and Design-for Testability -- Techniques for Fault Diagnosis -- Conclusion and New Directions.
Sommario/riassunto	This book provides a comprehensive overview of flow-based, microfluidic VLSI. The authors describe and solve in a comprehensive and holistic manner practical challenges such as control synthesis, wash optimization, design for testability, and diagnosis of modern flow-based microfluidic biochips. They introduce practical solutions, based on rigorous optimization and formal models. The technical contributions presented in this book will not only shorten the product development cycle, but also accelerate the adoption and further development of modern flow-based microfluidic biochips, by facilitating the full exploitation of design complexities that are possible with current fabrication techniques. Offers the first practical problem formulation for automated control-layer design in flow-based

microfluidic biochips and provides a systematic approach for solving this problem; Introduces a wash-optimization method for cross-contamination removal; Presents a design-for-testability (DfT) technique that can achieve 100% fault coverage at the logic level, i.e., complete defect coverage for all valves and microchannels; Includes a method for fault diagnosis in flow-based microfluidic biochips, which detects leakage and blockage defects in both control and flow layers.
