

1. Record Nr.	UNINA9910817246103321
Titolo	Inkjet-based micromanufacturing / / edited by Jan G. Korvink, Patrick J. Smith, and Dong-Youn Shin
Pubbl/distr/stampa	Weinheim, Germany, : Wiley-VCH, c2012
ISBN	9786613909404 9781283596954 1283596954 9783527647118 3527647112 9783527647101 3527647104
Edizione	[1st ed.]
Descrizione fisica	1 online resource (389 p.)
Collana	Advanced micro & nanosystems ; ; v. 9
Altri autori (Persone)	KorvinkJ. G (Jan G.) SmithPatrick J., Dr. ShinDong-Youn
Disciplina	621.319
Soggetti	Microelectronics - Design Microfabrication Ink-jet printing Microelectromechanical systems - Design and construction
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Inkjet-based Micromanufacturing; Contents; List of Contributors; 1 Overview of Inkjet-Based Micromanufacturing; 1.1 Introduction; 1.2 Inkjet Technology; 1.2.1 Continuous Mode Inkjet (CIJ) Technology; 1.2.2 Demand Mode Inkjet Technology; 1.3 Fluid Requirements; 1.4 Pattern Formation: Fluid/Substrate Interaction; 1.5 Micromanufacturing; 1.5.1 Introduction; 1.5.2 Limitations and Opportunities in Micromanufacturing; 1.5.3 Benefits of Inkjet in Microfabrication; 1.6 Examples of Inkjet in Micromanufacturing; 1.6.1 Chemical Sensors; 1.6.2 Optical MEMS Devices; 1.6.3 Bio-MEMS Devices 1.6.4 Assembly and Packaging 1.7 Conclusions; Acknowledgments; References; 2 Combinatorial Screening of Materials Using Inkjet Printing

as a Patterning Technique; 2.1 Introduction; 2.2 Inkjet Printing - from Well-Defined Dots to Homogeneous Films; 2.3 Thin-Film Libraries Prepared by Inkjet Printing; 2.4 Combinatorial Screening of Materials for Organic Solar Cells; 2.5 Conclusion and Outlook; References; 3 Thermal Inkjet; 3.1 History of Thermal Inkjet Technology; 3.2 Market Trends for Inkjet Products and Electrophotography; 3.3 Structures of Various TIJ Heads
3.4 Research on Rapid Boiling and Principle of TIJ3.5 Inkjetting Mechanism of TIJ; 3.6 Basic Jetting Behavior of TIJ; 3.6.1 Input Power Characteristics; 3.6.2 Frequency Characteristics; 3.6.3 Dependency on Temperature; 3.7 TIJ Behavior Analysis Using Simulation; 3.7.1 Cylindrical Thermal Propagating Calculation Based on the Finite Element Method (Software Name: Ansys); 3.7.2 Fluidic Free Boundary Calculation Based on the Finite Differentiation Method (Software name: Flow3D); 3.8 Issues with Reliability in TIJ; 3.9 Present and Future Evolution in TIJ Technology; References
4 High-Resolution Electrohydrodynamic Inkjet4.1 Introduction; 4.2 Printing System; 4.3 Control of Jet Motions; 4.4 Drop-on-Demand Mode Printing; 4.5 Versatility of Printable Materials and Resolutions; 4.6 Applications in Electronics and Biotechnology; 4.7 High-Resolution Printing of Charge; References; 5 Cross Talk in Piezo Inkjet; 5.1 Introduction; 5.2 Electrical Cross Talk; 5.3 Direct Cross Talk; 5.4 Pressure-Induced Cross Talk; 5.5 Acoustic Cross Talk; 5.6 Printhead Resonance; 5.7 Residual Vibrations; References; 6 Patterning; 6.1 Introduction; 6.1.1 Droplet Impact and Final Droplet Radius
6.1.2 Evaporation of Inkjet-Printed Droplets at Room Temperature6.1.3 Morphological Control for Ink Droplets, Lines, and Films; 6.2 Conclusion; References; 7 Drying of Inkjet-Printed Droplets; 7.1 Introduction; 7.2 Modeling of Drying of a Droplet; 7.2.1 Fluid Model; 7.2.2 Lubrication Approximation; 7.2.3 Solute Concentration; 7.2.4 Evaporation Velocity; 7.2.5 Numerical Method; 7.3 Results; 7.3.1 Droplet Shape Evolution; 7.3.2 Layer Thickness; 7.3.3 Effect of Diffusion; Acknowledgments; References; 8 Postprinting Processes for Inorganic Inks for Plastic Electronics Applications
8.1 Introduction

Sommario/riassunto

Inkjet-based Micromanufacturing Inkjet technology goes way beyond putting ink on paper: it enables simpler, faster and more reliable manufacturing processes in the fields of micro- and nanotechnology. Modern inkjet heads are per se precision instruments that deposit droplets of fluids on a variety of surfaces in programmable, repeating patterns, allowing, after suitable modifications and adaptations, the manufacturing of devices such as thin-film transistors, polymer-based displays and photovoltaic elements. Moreover, inkjet technology facilitates the large-scale production of flexible RFID tr