Micro/Nano manufacturing

Tosello, Guido

Published in:
Micromachines

Link to article, DOI:
10.3390/mi8100297

Publication date:
2017

Document Version
Publisher's PDF, also known as Version of record

Citation (APA):

General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain.
- You may freely distribute the URL identifying the publication in the public portal.

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.
Micro- and nano-scale manufacturing has been the subject of an increasing amount of interest and research effort worldwide in both academia and industry over the past 10 years. Traditional lithography-based technology forms the basis of silicon-based micro-electro-mechanical systems (MEMS) manufacturing, but also precision manufacturing technologies have been developed to cover micro-scale dimensions and accuracies. Furthermore, these fundamentally different technology ecosystems are currently combined in order to exploit strengths of both platforms. One example is the use of lithography-based technologies to establish nanostructures that are subsequently transferred to 3D geometries via injection molding.

Manufacturing processes at the micro-scale are the key-enabling technologies to bridge the gap between the nano- and the macro-worlds, to increase the accuracy of micro/nano-precision production technologies, and to integrate different dimensional scales in mass-manufacturing processes. Accordingly, the present Special Issue aims to provide the recent developments in the field of Micro/Nano Manufacturing in terms of production techniques and key enabling technologies that push the boundaries of the state of the art in mass-manufacturing of micro-scale and micro/nano structured components.

The Special Issue consists of 13 original research papers, which cover both fundamental process technologies developments as well as application of those technologies for the fabrication of micro/nano devices. The papers included in the Special Issue addresses research in four main domains of micro/nano manufacturing:


2. Micro/nano manufacturing technologies based on electrochemical processing. Bahr et al. [4] investigated the slurry application and injection system to advance the performance of the Chemical Mechanical Planarization (CMP) process; Blondiaux et al. [5] realized the fabrication of nanostructured steel mold inserts by applying a combination of nanosphere lithography and electrochemical etching; Guo et al. [6] demonstrated the fabrication of mesoscale channels by applying a micro electrochemical machining (µECM) process based on the scanning micro electrochemical flow cell (SMEFC).

3. Quality control of micro systems and processes. Baruffi et al. [7] demonstrated the application of the replica molding technology for quality control of micro milled surfaces; Cao et al. [8] investigated the effect of profile errors on the surface of micro lenses on laser beam homogenization; Choi et al. [9] presented a novel testing platform to characterize and predict the mechanical damage of miniaturized haptic actuator; Gao et al. [10] modeled the effect of micro manufacturing process variations on the characteristics of a micro machined doubly-clamped beam.

We wish to thank all authors who submitted their papers to the Special Issue “Micro/Nano Manufacturing”. We would also like to acknowledge all the reviewers whose careful and timely reviews ensured the quality of this Special Issue.

**Conflicts of Interest:** The author declares no conflict of interest.

**References**

13. Wilhelmi, P.; Schenck, C.; Kuhfuss, B. Handling in the Production of Wire-Based Linked Micro Parts. *Micromachines* 2017, 8, 169. [CrossRef]

© 2017 by the author. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).