

1. Record Nr.	UNINA9910346841703321
Autore	Tosello Guido
Titolo	Product/Process Fingerprint in Micro Manufacturing / Guido Tosello
Pubbl/distr/stampa	MDPI - Multidisciplinary Digital Publishing Institute, 2019 Basel, Switzerland : , : MDPI, , 2019
ISBN	9783039210350 3039210351
Descrizione fisica	1 electronic resource (274 p.)
Soggetti	Technology: general issues
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	<p>The continuous miniaturization of products and the growing complexity of their embedded multifunctionalities necessitates continuous research and development efforts regarding micro components and related micro manufacturing technologies. Highly miniaturized systems, manufactured using a wide variety of materials, have found application in key technological fields, such as healthcare devices, micro implants, mobility, communications, optics, and micro electromechanical systems. Innovations required for the high-precision manufacturing of micro components can specifically be achieved through optimizations using post-process (i.e., offline) and in-process (i.e., online) metrology of both process input and output parameters, as well as geometrical features of the produced micro parts. However, it is of critical importance to reduce the metrology and optimization efforts, since process and product quality control can represent a significant portion of the total production time in micro manufacturing. To solve this fundamental challenge, research efforts have been undertaken in order to define, investigate, implement, and validate the so-called "product/process manufacturing fingerprint" concept. The "product manufacturing fingerprint" concept refers to those unique dimensional outcomes (e.g., surface topography, form error, critical dimensions, etc.) on the produced component that, if kept under control and within</p>

specifications, ensure that the entire micro component complies to its specifications. The "process manufacturing fingerprint" is a specific process parameter or feature to be monitored and controlled, in order to maintain the manufacture of products within the specified tolerances. By integrating both product and process manufacturing fingerprint concepts, the metrology and optimization efforts are highly reduced. Therefore, the quality of the micro products increases, with an obvious improvement in production yield. Accordingly, this Special Issue seeks to showcase research papers, short communications, and review articles that focus on novel methodological developments and applications in micro- and sub-micro-scale manufacturing, process monitoring and control, as well as micro and sub-micro product quality assurance. Focus will be on micro manufacturing process chains and their micro product/process fingerprint, towards full process optimization and zero-defect micro manufacturing.
