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Descrizione fisica	1 online resource (XIX, 360 p. 227 illus., 166 illus. in color.)
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Soggetti	Nanomanufacturing Nanostructured materials - Design and construction Lasers - Industrial applications
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Nota di contenuto	Fundamental: Laser-micro-nano-material interaction -- Laser direct writing of micro-nanodevices and nanoscale additive manufacturing -- Laser induced nanoparticles in liquid phase -- Laser-induced synthesis of diamond//Laser direct writing of graphene -- Laser surface engineering -- Laser peening with femtosecond laser -- High power fiber picosecond laser processing of wide band semiconductors -- Femtosecond laser nanojoining -- Laser nanobrazing -- Laser sintering of nanoparticles for devices -- Laser direct writing of optical waveguides -- Laser 3D printing for energy devices -- Laser manufacturing for medical devices. Laser interference lithography for optical crystals and biosensors -- STED-inspired super-resolution manufacturing -- Laser induced front transfer for nanodevices -- Laser processing for batteries.
Sommario/riassunto	This book provides a comprehensive overview of the latest advances in laser techniques for micro-nano-manufacturing and an in-depth analysis of applications, such as 3D printing and nanojoining. Lasers have gained increasing significance as a precise tool for advanced manufacturing. Written by world leading scientists, the first part of the book presents the fundamentals of laser interaction with materials at the micro- and nanoscale, including multiphoton excitation and

nonthermal melting, and allows readers to better understand advanced processing. In the second part, the authors focus on various advanced fabrications, such as laser peening, surface nanoengineering, and plasmonic heating. Finally, case studies are devoted to special applications, such as 3D printing, microfluidics devices, energy devices, and plasmonic and photonic waveguides. This book integrates both theoretical and experimental analysis. The combination of tutorial chapters and concentrated case studies will be critically attractive to undergraduate and graduate students, researchers, and engineers in the relevant fields. Readers will grasp the full picture of the application of laser for micro-nanomanufacturing and 3D printing.
