1. Record Nr. UNINA9910131258403321

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Titolo	Optically induced nanostructures : biomedical and technical applications / / edited by Karsten Konig and Andreas Ostendorf
Pubbl/distr/stampa	Berlin, Germany, : De Gruyter, 2015 Berlin, Germany ; ; Boston, Massachusetts : , : De Gruyter, , 2015 ©2015
ISBN	1-5231-0465-1 3-11-038350-0
Edizione	[1st ed.]
Descrizione fisica	1 online resource (xl, 329 pages)
Disciplina	620.1/15 620.5
Soggetti	Nanostructured materials - Optical properties Biomedical engineering Nonlinear optics Femtosecond lasers
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Front matter -- Foreword 1 -- Foreword 2 -- Contents -- Authors -- Tutorial -- Part I: Technical applications -- 1. Nanoprocessing using near-infrared sub-15 femtosecond laser microscopes -- 2. Nanophotonic applications of fs-laser radiation induced nanostructures and their theoretical description -- 3. Temporally shaped femtosecond laser pulses for creation of functional sub-100nm structures in dielectrics -- 4. Design and fabrication of near- to far-field transformers by sub-100nm two-photon polymerization -- 5. Ultrashort pulse-induced periodic nanostructures in bulk glass: from fundamentals to applications in high-resolution microscopy -- 6. Nonlinear processing and multiphoton ablation of self-assembled monolayers for application as ultrathin resists and in biochemical sensors -- 7. Femtosecond laser-induced surface nanostructures for tribological applications -- Part II: Biomedical applications -- 1. Optical reprogramming and optical characterization of cells using femtosecond

lasers -- 2. Nanoscale biofunctionalization of polymer surfaces by laser treatment for controlled cellular differentiation -- 3. Laser-generated bioactive hydrogels as ion-release systems for burn wound therapy -- 4. Nanoparticle-loaded bioactive hydrogels -- 5. Two-photon polymerization of inorganic-organic polymers for biomedical and microoptical applications -- 6. Optical antennae for near-field induced nonlinear photochemical reactions of photolabile azo- and amine groups -- 7. Optical trap assisted sub diffraction limited laser structuring -- 8. STED lithography and protein nanoanchors -- Index

Sommario/riassunto

Nanostructuring of materials is a task at the heart of many modern disciplines in mechanical engineering, as well as optics, electronics, and the life sciences. This book includes an introduction to the relevant nonlinear optical processes associated with very short laser pulses for the generation of structures far below the classical optical diffraction limit of about 200 nanometers as well as coverage of state-of-the-art technical and biomedical applications. These applications include silicon and glass wafer processing, production of nanowires, laser transfection and cell reprogramming, optical cleaning, surface treatments of implants, nanowires, 3D nanoprinting, STED lithography, friction modification, and integrated optics. The book highlights also the use of modern femtosecond laser microscopes and nanoscopes as novel nanoprocessing tools.