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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.
