1. Record Nr. UNINA9910741172903321

Autore	Stalmashonak Andrei
Titolo	Ultra-Short Pulsed Laser Engineered Metal-Glass Nanocomposites / / by Andrei Stalmashonak, Gerhard Seifert, Amin Abdolvand
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2013
ISBN	3-319-00437-9
Edizione	[1st ed. 2013.]
Descrizione fisica	1 online resource (76 p.)
Collana	SpringerBriefs in Physics, , 2191-5423
Disciplina	620.118
Soggetti	Lasers Photonics Optical materials Electronics - Materials Nanoscience Nanostructures Nanotechnology Optics, Lasers, Photonics, Optical Devices Optical and Electronic Materials Nanoscale Science and Technology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- Optical Properties of Nanocomposites Containing Metal Nanoparticles -- Interaction of Ultra-Short Laser Pulses with Metal Nanoparticles Incorporated in Dielectric Media -- Effect of Pulse Intensity and Writing Density on Nanoparticle Shape -- "Off-Resonant" Excitation: Irradiation Wavelength Dependence -- The Effect of Temperature on the Laser-Induced Modifications of Ag Nanoparticles -- Ultra-Short Pulsed Laser Engineering of Metal-Glass Nanocomposites -- Conclusions.
Sommario/riassunto	Glasses containing metallic nanoparticles exhibit very promising linear and nonlinear optical properties, mainly due to the surface plasmon resonances (SPRs) of the nanoparticles. The spectral position in the visible and near-infrared range and polarization dependence of the SPR are characteristically determined by the nanoparticles’ shapes. The

focus of Ultra-Short Pulsed Laser Engineered Metal-Glass Nanocomposites is the interaction of intense ultra-short laser pulses with glass containing silver nanoparticles embedded in soda-lime glass, and nanostructural modifications in metal-glass nanocomposites induced by such laser pulses. In order to provide a comprehensive physical picture of the processes leading to laser-induced persistent shape transformation of the nanoparticles, series of experimental results investigating the dependences of laser assisted shape modifications of nanoparticles with laser pulse intensity, excitation wavelength, temperature are considered. In addition, the resulting local optical dichroism allows producing very flexibly polarizing optical (sub-) microstructures with well-specified optical properties. The achieved considerable progress towards technological application of this technique, in particular also for long-term optical data storage, is also discussed.