

determination of the nanoparticle size, depending on the duration of the laser pulse ablation.

IThL20

Nanoparticle motion under the action of light pressure in the field of a Gaussian laser beam, A. A. Afanas'ev, L. S. Gaida, D. V. Novitsky, E. V. Matuk, *Kupala State Univ. of Grodno, Belarus*. We study motion of a spherical transparent nanoparticle under the influence of radiation (gradient and scattering) forces in the field of a Gaussian laser beam. Appropriate solutions of the Langevin equation are derived and analyzed.

IThL21

Plasmon-assisted enhancement of spontaneous and stimulated emission of the dye thin films, N. A. Toropov, A. N. Kamaliev, and T. A. Vartanyan, *ITMO Univ., Russia*. Thin films of coumarin dye covering a layer of the metal nanoparticles were studied experimentally. Strong interaction between localized plasmons and molecular excitations result to spontaneous emission enhancement and laser-like narrowing of their fluorescent spectra.

IThL22

Observation of the second-harmonic generation from silicon nanodisks with electric and magnetic resonances, M.K. Kroychuk, E.V. Melik-Gaykazyan, A.S. Shorokhov, V.V. Zubuk, Duk-Yong Choi, T.V. Dolgova, M.R. Shcherbakov, D.N. Neshev, A.A. Fedyanin, Y.S. Kivshar, *Lomonosov Moscow State Univ., Russia*. We demonstrate experimentally and numerically the enhancement of the second-harmonic generation from silicon nanodisks. The process efficiency is shown to depend on the spectral positions of the dipolar Mie-type resonances excited in each nanodisk.

IThL23

Effect of silver nanoparticles on excitons in InAs epitaxial quantum dots, N. A. Toropov, P. V. Gladskikh, I. A. Gladskikh, V. V. Preobrazhenskiy, M. A. Putyato, B. R. Semyagin, A. Kosarev, A. A. Kondikov, V. V. Chaldyshev, T. A. Vartanyan, *ITMO Univ., Russia*. Method for preparation of silver nanoparticles on the GaAs substrate with MBE grown InAs quantum dots is presented. Results of spectral investigations of

plasmon resonance effect on quantum dots is described.

IThL24

Metal planar structures deposited on the silicon surface by atomic-force nanolithography, I. Skryabin, S. Kutrovskaya, A. Kucherik, A. Shagurina, S. Arakelian, *Stoletov Vladimir State Univ., Russia*. The method of electro-induced deposition of silver particles on the silicon surface is offered. The formation of planar structures for photonics is discussed.

IThL25

Tunable transverse magneto-optical Kerr effect in 2D gold-garnet nanogratings, G.A. Shein, A.I. Musorin, A.V. Chetvertukhin, T.V. Dolgova, H. Uchida, M. Inoue, A.A. Fedyanin, *Lomonosov Moscow State Univ., Russia*. Transverse magneto-optical Kerr effect is experimentally studied in two-dimensional magnetoplasmonic crystals. Optical response can be accurately controlled by an azimuthal angle of the sample. Corresponding tuning of the magneto-optical effect is observed.

IThL26

Hydrophilic quantum dots in cancer diagnostics, I.G. Motevich, N.D. Strekal, A.V. Shulha, S.A. Maskevich, *Yanka Kupala Grodno State Univ., Belarus*. Identify the spectral responses of the stromal and parenchymal environment of biological tissues with different levels of pathology: benign and malignant neoplasms and sigmoid colonic crypts, staining by hydrophilic quantum dots CdSe/ZnS.

IThL27

Self-action effects in GaAs metasurfaces with magnetic Mie-type resonances, A.N. Fedotova, P.P. Vabishchevich, M.R. Shcherbakov, S. Liu, I. Staude, I. Brener, A.A. Fedyanin, *Faculty of Physics, Lomonosov Moscow State Univ., Russia*. In this paper, we report on free-carrier-induced self-action in gallium arsenide nanodisk arrays enhanced by localized magnetic dipolar Mie-type resonances.

IThL28

Magneto-optical effects in plasmonic quasicrystals, N.E. Khokhlov, Achanta Venu Gopal, N.E. Gusev, A.N. Kalish, V.I. Belotelov, *Russian Quantum Center, Russia*. We investigate magne-

to-optical effects in plasmonic quasicrystals formed by a uniform magnetic dielectric and a metallic lattice. The Faraday effect demonstrate broadband enhancement, while the transverse Kerr effect is enhanced within a narrower band.

IThL29

Evolution of surface plasmon polariton wave in a thin metal film: the modulation instability effect, S. Moiseev, D. Korobko, I. Zolotovskii, A. Fotiadi, *Ulyanovsk State Univ., Russia*. The modulation instability development of intensive surface plasmon polariton wave in a thin metal film is studied. It is shown both analytically and numerically that the modulation instability effect can give rise to spatial redistribution and longitudinal localization of surface plasmon polariton wave energy in subwavelength scale.

IThL30

Spectral manifestations of photochromic transformations of composite nanostructures, G. Vasilyuk, S. Maskevich, N. Strekal, A. Lavysh, V. Minkin, B. Lukyanov, A. Starikov, *Yanka Kupala Grodno State Univ., Belarus*. The results of the comprehensive study indicate manifestation of photochromic properties by molecules in the solid state on quartz, and in the presence of a nanostructured metal surface. Manifestation of photochromism is reflected both in the absorbance spectra, and in the SERS spectra (the reversible photo-induced changes of the relative intensity of the SERS bands related to the vibrations of bond involved in the reversible photoisomerization reaction were detected)

IThM • 18:30-20:00

Nonlinear Optics and Novel Phenomena (ICONO-04): Posters

IThM1

Coherent excitation of nanoparticles ensembles vibrations in gigahertz and terahertz range, A.D. Kudryavtseva, M.A. Stokrov, N.V. Tcherniega, K.I. Zemskov, *P.N.Lebedev Physical Inst., RAS, Russia*. Stimulated low-frequency Raman scattering, caused by laser pulses interaction with acoustic vibrations of nanoparticles, has been studied in the wide range of nanoobjects both in high-ordered and random materials, in inorganic and organic substances.

IThM2

Slowdown and trapping of microparticles by light fields amplifying over time, A. Ch. Izmailov, *Inst. of Physics of Azerbaijan, NAS, Azerbaijan*. New methods are proposed for slowdown and trapping of microparticles in the high vacuum by nonresonance laser fields which induce deepening over time potentials wells with fixed spatial configurations. These methods may be applied in high resolution spectroscopy of various particles including atoms and molecules.

IThM3

Single-cycle THz generation from nonlinear interaction of femtosecond laser pulses and directed metallic micro-particle arrays, D. A. Fadeev, I. V. Oladyskhin, V. A. Mironov, *Inst. of Applied Physics RAS, Russia*. Numerical study of terahertz generation from dense plasma objects with different shapes is presented. New idea of effective THz generation from directed array of micro-particles is proposed.

IThM4

Femtosecond filamentation of double-charged optical vortex in fused silica, E.V. Vasilyev, S.A. Shlenov, *Faculty of Physics and International Laser Center, Lomonosov Moscow State Univ., Russia*. Self-action of double-charged optical vortex is numerically analyzed. It is shown a formation of cylindrical filament in fused silica. Analysis of pulse spatiotemporal dynamics and evolution of frequency-angular spectrum is performed.

IThM5

Second optical harmonic generation in ferroelectrics under femtosecond optical pumping, M. K. Tarabrin, V. A. Lazarev, S. O. Leonov, V. S. Bobkova, V. S. Gorelik, *Bauman Moscow State Technical Univ., Russia*. The second optical harmonic intensity dependence upon incident radiation of femtosecond laser is measured for different ferroelectrics: barium titanate in the form of ceramics, barium titanate in a water colloidal suspension and sodium nitrite.

IThM6

Two-photon absorption in graphene oxide/silver nanoparticles composite material, A. Gartman, S. Svyakhovskiy, S. Evlashin, N. Mitelto, A. Bykov, A. Maydykovskiy, T. Murzina,

Lomonosov Moscow State Univ., Russia. Single-beam open aperture z-scan technique was used to determine two-photon absorption coefficient of solvent—produced graphene oxide (GO) film decorated with silver nanoparticles (AgNP) in the spectral vicinity of the plasmon resonance.

IThM7

Spin-to-orbital angular momentum conversion for Bessel light beams propagating in electrically controlled liquid crystal cell, D. Gorbach, S. Nazarov, S. Kurilkina, A. Tolstik, *Belarusian State Univ., Belarus*. It is shown theoretically and experimentally that the liquid crystal cell can provide spin-to-orbital transformation in Bessel beams. It is grounded that, by changing the electric strength applied to the cell there arise the possibility of controlling with a high-speed switching the value of the total angular momentum and, hence, spatial structure for the emerging field.

IThM8

Polarization-Resolved Second Harmonic Generation Microscopy in Studies of Chirality of Planar G-Shaped Nanostructures, E.A. Mamonov, I.A. Kolmychek, S.A. Magnitskiy, T.V. Murzina, *Lomonosov Moscow State Univ., Russia*. Polarization-resolved second harmonic generation (SHG) microscopy is applied to study planar chiral nanostructures. It was found that this technique reveals chirality of localized SHG sources within the structures.

IThM9

Numerical simulation of the optical wave phase front controller based on MEMS structures, A.V. Popov, G.D. Demin, V.V. Svetikov, N.A. Djuzhev, *National Research Univ. of Electronic Technology (MIET), Russia*. The results of numerical modeling for two types of membrane deformable mirror (DM) on the basis of silicon microelectromechanical structures (MEMS), the first one with controlled membrane (OKO Technologies) and the second one with segmented membrane (Boston Micromachines Corp.), are presented. Membrane mirrors with different membrane materials (Si, SiO₂, Si₃N₄) were analyzed, whereupon the optimal thickness, material and frequency characteristics for these DM structures are defined.