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ATOMIC AND MOLECULAR PULSED LASERS

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Abstracts

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This book contains the materials on the fundamental and applied problems of pulsed lasers. It may be interesting for researches and engineers working in the sphere of quantum electronics, spectroscopy, plasma physics, medicine, remote sensing and laser technologies.

Designed by *Kirill O. Osiev, osiev@inbox.ru*

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In Raman scattering spectra the main band was diamond D-band at 1332 cm^{-1}. Two polycrystal samples showed amorphous carbon band at 570–580 cm^{-1}. In the sample with lower intensity of amorphous carbon band we managed to observe the photoluminescence of the electron-hole liquid.

We managed to observe the photoluminescence of the electron-hole liquid in the samples that showed the minimal absorption near the edge of fundamental absorption. This absorption is connected with optical transitions to the exciton state with phonon absorption and optical transitions through ionized doping and defect centers in energy gap. Small doping and defect centers are the traps for excitons, their presence makes the exciton condensation more difficult. Minimal value of fundamental absorption near it's edge is an attribute of high-quality sample with low concentration of doping and defect centers.

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D-14

GAS ANALYZER BASED ON HIGH PRESSURE XENON LAMP AND UV LEDS

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The high pressure xenon lamp and UV leds were used as an emission source for trace gas-analyzer. The principle of operation of the gas-analyzer is based on the method of differential optical absorption spectroscopy. A number of air pollutants: NO_2, SO_2, O_3, etc were trace measured with gas-analyzer, operating in UV spectral region. The results of the test measurements of pollutants are presented.

D-15

THE ORGANIC PHOTOEXCITED LASER IS RED RANGE OF A RANGE

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In this paper generation of Rhodamine 800 (Rh 800) in ethanol and also mixtures of Pirrometen 597 and Rh 800 in transversal pumping and longitudinal types is investigated. TGF PMMA, Rh 800 solvents with copolymer PMMA – IBMA films generation characteristics are obtained. Researches were conducted at exaltation by the pulse laser (wavelength of excitement is 532 nm, duration of an impulse is 10 ns, pumping power density is 13 MW/cm^2). Films doped with the dye were created a watering method (concentration of days = $5 \cdot 10^{-4}$ moll/l). Thickness of films was measured on the optical profilometer KLA – Tencor MicroXam 100 and was obtained 5.8 microns.

D-16

COEFFICIENT OF FRICTION IN THE SYSTEM OF CONJUGATE MOVING SURFACES AFTER LASER TREATMENT

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Adhesion processes caused by the intermolecular interactions play a crucial role in the consideration of the phenomena occurring in the contact zone. In the present work, hardening pulsed laser treatment (LT) is considered as one of the methods which provide purposeful regulation of the intensity of the processes occurring in the contact zone.