

AMPL-2021
PULSED LASERS AND LASER APPLICATIONS

September 12–17, 2021
Tomsk, Russia

ABSTRACTS

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*Atmospheric and Oceanic Optics Journal, Tomsk, Russia
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Tomsk, 2021

products, the identification of drugs and drugs, the study of biological structures, incl. at the cellular level. The creation of simple and effective SERS substrates is an urgent task in the development of this method.

This paper presents the results of a study of SERS substrates based on gold nanoparticles (NPs). Gold NPs were obtained by pulsed laser ablation of an Au metal target in alcohol using a Nd:YAG laser (1064 nm, 7 ns, 150 mJ). The resulting colloidal solution was applied onto glass substrates by the drop method, varying the number of layers. The SERS characteristics were studied using a model dye rhodamine 6G using Renishaw inVia Basis Raman microscope. The samples were excited in the region of surface plasmon resonance of gold by laser radiation of 532 nm. The results of the study showed that with an increase in the number of deposited layers up to 5, the intensity of the Raman scattering of the dye increases linearly. With a further increase in the number of layers, the signal saturates. This data correlates with SEM data. At the beginning, an increase in the packing density of NPs in the plane of the substrate is observed. Accordingly, the number of "hot spots" increases, which contribute to the amplification of the signal. Further, the homogeneity of the NP layer deteriorates, and large bulk agglomerates appear. Thus, we have developed a simple method for obtaining SERS substrates, which made it possible to increase the signal intensity up to three orders of magnitude.

Y-27

PHOTO AND ELECTROLUMINESCENCE OF 2-CIANO-3-ARYL-DERIVATIVES OF PYRAZINE

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At present time area of creating organic light emitting diodes (OLED) is actively developing. Nowadays it is necessary to find new organic compounds that can be used as a light emitting layer in blue diodes. This work is devoted to making organic light emitting diodes that emit in the blue area of spectrum.

In this work six organic compounds were studied. First three compounds had pyrazine as an electron acceptor group. Triphenylamine and carbazole fragments were used as an electron donor groups. Three other compounds had pyrazine with added cyano group. Spectral characteristics of these organic compounds in polar and nonpolar solvents and vapor deposited organic films were investigated.

OLED cells based on organic compounds were fabricated using method of vapor deposition. For organic compound with cyano group OLED cells with doped light emitting layer were also made. Spectra of electroluminescence, volt ampere and volt luminance characteristics of created diodes were also measured.

Organic compounds that were used in this work showed promising results for practical application as a light emitting layer in blue OLED.

Y-28

APPLICATION OF WATER SOLUBLE LUMINESCENT EUROPIUM COMPLEXES AS TEMPERATURE SENSORS: PROSPECTS AND PROBLEMS

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Europium complexes with organic ligands are important in luminescence measurements: they are well suited for creating chemical, pH, and temperature probes. For biological and medical fields, the ligand must perform effective sensitization of the europium ion, the complex must be water soluble, non-toxic, stable in the desired temperature range. For successful temperature measurements, the europium complex must have more specific properties as thermal stability and reproducibility of the