

THE DEVELOPMENT OF OPTICS AND OPTOELECTRONICS IN THE REPUBLIC OF BELARUS AND PERSPECTIVE DIRECTIONS OF COLLABORATION

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The investigations in the area of optics and laser physics in the Republic of Belarus are actively developed from the beginning of the sixties of the previous century after discovering lasers. The Belarussian scientists have essentially contributed to laser physics and nonlinear optics, to their application in science and technology.

I.I. Stepanov Institute of Physics of NAS Belarus is the main scientific center in the area of optics and laser physics in the republic. More than two tens of enterprises are the basis for industrial and scientific industrial potential of Belarus in the area of creation of laser-optic and optoelectronic technology and also development of corresponding technologies.

In the presentation there will be studied some results of fundamental and applied investigations in the Institute of Physics and the Center of Analytical and Spectral Measurements.

Main tendencies are defined for the development of laser technology and optoelectronics. Belarus has the potential for further development of these directions. The advanced technologies are determined for laser and optoelectronic applications. Modern problems of photonics of optical materials, optoelectronics and biophotonics are analyzed.

The perspective directions of cooperation with the Siberian RAS are discussed.

STUDYING THE PROPERTIES OF DERIVATIVES COUMARIN USING LUMINESCENCE METHOD

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We study the dependence of the conversion of some alcoholic solutions of derivatives coumarin of irradiation time. For this purpose, a variety of excilamps, namely XeBr and KrCl, with a wavelength of 280 and 222 nm, respectively. The results of phototransformation processes substituted coumarin recorded a spectrophotometer Shimadzu UV-180. The results are then chromatography program Sigma Plot V8.0. Also, using this device to test compounds, it was found positive effect of hydrogen peroxide on the reaction, which was confirmed for all test compounds when they are irradiated lamp XeBr, however irradiation of the same compounds lamp KrCl similar laws have been identified. Moreover, this reaction was investigated for different concentrations of hydrogen peroxide, and found that a significant improvement of the process (integration agent) occurs at a concentration H₂O₂ 1-2, thereafter, respectively increasing the proportion of its twice each material derivatives conversion was observed.

ELECTRONIC STRUCTURE, SPECTRAL-LUMINESCENT PROPERTIES AND GENERATION ABILITY OF POLYATOMIC MOLECULES

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The fundamental problem of photonics of optical materials on the basis of organic compounds is to establish patterns of connection of spectral-luminescent properties and lasing ability of molecules with the features of intra- and intermolecular interactions and excitation of the electromagnetic field.