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Abstracts

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The 12th International Conference “Atomic and Molecular Pulsed Lasers”: Abstracts. — Tomsk: Publishing House of IAO SB RAS, 2015. —138 p.

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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ORGANIC THIN FILM LASER WITH QUASI-LONGITUDINAL OPTICAL PUMPING

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One of the field of organic electronics is the development of photoexcited thin-film lasers [1, 2]. These devices are characterized by compactness, low cost, the wavelength tuning and can be used as low-power sources of coherent radiation with the possibility to adjust the wavelength. Meanwhile, when organic thin films used as the active media, there are some difficulties associated with the input and output radiation, because of organic films are typically amorphous with rough edges, unlike inorganic.

In this regard, it is important to create effective pumping of thin films and realize emission output.

In this work, lasing of thin films in the red spectral region based on the set of the commercially available dyes is presented. The different pumping regimes of thin films in the transverse, longitudinal and quasi-longitudinal resonators are compared. The advantages and disadvantages of the proposed schemes of excitation and ways of improving of the lasing efficiency are discussed.

1. Chénais S. and Forget S. Recent advances in solid-state organic lasers // PolymInt. 2012. No. 61. P. 390–406.
2. Rabbani-Haghighi H., Forget S., Chénais S., Siove A. Analytical study of vertical external-cavity surface-emitting organic lasers // Eur. Phys. J. Appl. Phys. 2011. P. 34108.

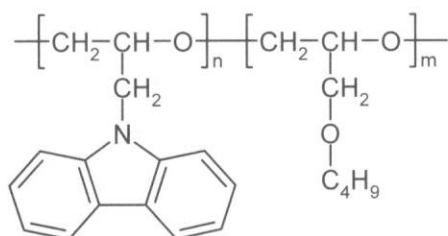
EFFECT OF THE NATURE OF COUNTERION OF SYMMETRICAL CATIONIC POLYMETHINE DYES ON PHOTOVOLTAIC PROPERTIES OF POLYMER COMPOSITES BASED ON THEM

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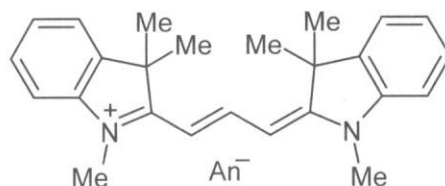
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Thin films photovoltaic cells based on photoconducting oligomer **GCBE** and cationic symmetrical polymethine dyes (PDs) with various counterions which possess high (PD 1–4) and low (PD 5–7) value of oxidation potential [1] have been created.



GCBE 1–7, where An = BF₄ (1), ClO₄ (2), PF₆ (3), Cl (4), Br (5), I (6), C₆H₄SO₃Me (7)



It has been found that photovoltaic properties of samples based on the organic dyes depending not only structure of the chromophore, but also the nature of a counterion. It has been investigated, that play a key role under this conditions Red-Ox ability of the counterion. Red-Ox properties of the counterion determine of the photo induced electron transfer in the ion pairs of the dye, leading to formation of radical spaces, which involved in photoprocesses, which occur in solar cell.