



AMPL

XV International
Conference

on pulsed lasers and laser applications

September
Tomsk, Russia **2021**

AMPL SCHOOL

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

UDC 533.9; 621.373.8+621.375.8; 535.14; 535.33:621.373.8;
535.33/.34:621.373.826; 61
P 97

P 97 **Pulsed Lasers and Laser Applications (AMPL-2021) :**
Abstracts of XV International Conference. – Tomsk : STT, 2021.
– 154 p.

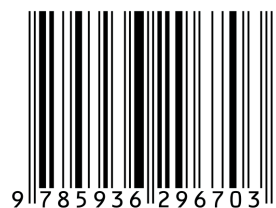
ISBN 978-5-93629-670-3

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

**UDC 533.9; 621.373.8+621.375.8; 535.14; 535.33:621.373.8;
535.33/.34:621.373.826; 61**

Printed from electronic forms presented by the authors.

ISBN 978-5-93629-670-3



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matrices and obtain completely new luminescent materials. The contribution of the amorphous and crystalline environment to the properties of the material as a whole can be varied through controlled bulk crystallization.

This work is devoted to the development of new luminescent glass ceramics based on amorphous oxide matrices doped with transition metal ions – chromium, of the composition $K_2O-Li_2O-Al_2O_3-B_2O_3:0.07Cr_2O_3$ with variable synthesis parameters. This work presents the results of a comprehensive characterization of the structural, spectral and optical properties of chromium containing glass ceramics depending on the parameters of the temperature regimes of annealing.

This work was funded by Russian Science Foundation (No. 19-72-10036).

1. *Deubenera J., Allix M et al.* Updated definition of glass-ceramics // *J. Non-Crystal. Solid.* 2018. P. 3–10.
2. *Basudeb Karmakar.* Functional glass-ceramics: processing, properties and applications. Oxford, United Kingdom: Elsevier Ltd. Butterworth-Heinemann, 2017. 164.

B-28

INVESTIGATION OF TEMPERATURE CHARACTERISTICS OF THE GLOW DISCHARGE BY MOLECULAR EMISSION

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The results of studies of the plasma of a glow discharge with liquid cathode at atmospheric pressure air are presented. The emission spectra of the glow discharge with an electrode based on distilled water at currents of 12 and 32 mA were obtained. The vibrational transitions between the electronic states $A^2\Sigma^+-X^2\Pi_i$ OH and $C^3\Pi_u-B^3\Pi_g$ N₂ have been identified. Using the R branch of the electron vibrational transition 337.13 nm $C^3\Pi_u(v=0) \rightarrow B^3\Pi_g(v=0)$ N₂, the rotational temperature of nitrogen molecules was calculated. To determine the rotational temperature of the hydroxyl radicals, the population distribution of the rotating states for $J = 17-20$ according to P branch (0–0) $A^2\Sigma^+-X^2\Pi_i$ OH was similarly used. The hydroxyl radical exists only in the plasma region, and nitrogen is the main part of the gas surrounding the plasma formation. Therefore, the temperature inside the plasma with increasing current decreases in the range of 0.32–0.26 eV, and on the outer shell of the plasma, the gas temperature increases from 0.028 to 0.043 eV.

B-29

ALUMINUM GARNET CERAMICS WITH VARIABLE COMPOSITIONS FOR LIGHTING APPLICATIONS

O.D Dudarenko, M.A. Andryushchenko, M.A. Vasil'ev, V.D. Paigin, and D.T. Valiev

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Yttrium aluminum garnet (Y₂Al₅O₁₂ or YAG) is a class of highly efficient luminescent materials with stable chemical and physical properties. YAG ceramics is often used as a base material for phosphors doped with rare earth elements. YAG ceramics with variable composition are considered as a material for use in laser active media, scintillators, displays, as phosphors for white LEDs, etc.

In present work, luminescent ceramics based on yttrium aluminum garnet of variable composition were obtained by uniaxial pressing methods. A comprehensive characterization of the microstructure and phase composition of consolidated ceramics with variable composition has been carried out. The

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НАУЧНОЕ ИЗДАНИЕ

Pulsed Lasers and Laser Applications (AMPL-2021)
Abstracts of XV International Conference

Дизайн обложки – К.О. Осиев
Техническое редактирование – С.В. Алексеев

Отпечатано с готового оригинал-макета,
предоставленного Оргкомитетом.

Издательство «СТТ»
(Scientific & Technical Translations)
Россия, 634028, г. Томск, проспект Ленина, 15/Б–1
Тел./факс: (3822) 421-455
E-mail: stt@sttonline.com



Формат 84x108/16. Усл. п. л. 16,2. Уч.-изд. л. 15,1.
Бумага SvetoСору. Гарнитура KudrashovС. Печать
цифровая. Тираж 300 экз. Заказ № 670.