

Accepted Manuscript

Rare earth-doped barium gallo-germanate glasses and their near-infrared luminescence properties

Joanna Pisarska, Marta Sołtys, Agata Górny, Marcin Kochanowicz, Jacek Zmojda, Jan Dorosz, Dominik Dorosz, Maciej Sitarz, Wojciech A. Pisarski



PII: S1386-1425(18)30416-5
DOI: doi:[10.1016/j.saa.2018.05.027](https://doi.org/10.1016/j.saa.2018.05.027)
Reference: SAA 16050

To appear in: *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*

Received date: 29 September 2017
Revised date: 8 April 2018
Accepted date: 7 May 2018

Please cite this article as: Joanna Pisarska, Marta Sołtys, Agata Górny, Marcin Kochanowicz, Jacek Zmojda, Jan Dorosz, Dominik Dorosz, Maciej Sitarz, Wojciech A. Pisarski, Rare earth-doped barium gallo-germanate glasses and their near-infrared luminescence properties. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Saa(2017), doi:[10.1016/j.saa.2018.05.027](https://doi.org/10.1016/j.saa.2018.05.027)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Rare earth - doped barium gallo-germanate glasses and their near-infrared luminescence properties

Joanna Pisarska^{1,*}, Marta Sołtys¹, Agata Górny¹, Marcin Kochanowicz², Jacek Zmojda², Jan Dorosz², Dominik Dorosz³, Maciej Sitarz³ and Wojciech A. Pisarski¹

¹ *University of Silesia, Institute of Chemistry, Szkolna 9 40-007 Katowice, Poland*

² *Bialystok University of Technology, Faculty of Electrical Engineering, Wiejska 45D, 15-351 Bialystok*

³ *AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Mickiewicza Av., 30-059 Cracow, Poland*

Abstract

Near-infrared luminescence properties of Nd³⁺ and Ho³⁺ ions in barium gallo-germanate glasses have been reported. Several spectroscopic parameters for Nd³⁺ and Ho³⁺ ions have been determined from the Judd-Ofelt analysis and absorption/luminescence measurements. Quite large luminescence lifetime, quantum efficiency and stimulated emission cross-section have been obtained for the main $^4F_{3/2} \rightarrow ^4I_{11/2}$ (Nd³⁺) and $^5I_7 \rightarrow ^5I_8$ (Ho³⁺) laser transitions of rare earths in barium gallo-germanate glasses. It suggests that barium gallo-germanate glass is promising for near-infrared laser application at emission wavelengths 1064 nm (Nd³⁺) and 2020 nm (Ho³⁺).

Keywords: germanate glasses; rare earth ions; luminescence; spectroscopic properties

*Corresponding author: Joanna Pisarska, University of Silesia, Institute of Chemistry, Szkolna 9, 40-007 Katowice, Poland, tel. (+48)323591775, e-mail: joanna.pisarska@us.edu.pl

Download English Version:

<https://daneshyari.com/en/article/7668629>

Download Persian Version:

<https://daneshyari.com/article/7668629>

[Daneshyari.com](https://daneshyari.com)