

# Author's Accepted Manuscript

Photoluminescence of terbium doped oxyfluoro-titania-phosphate glasses for green light devices

G. Neelima, N. Ravi, C.S. Dwaraka Viswanath, K. Tyagarajan, K. Venkata Krishnaiah, T. Jayachandra Prasad



www.elsevier.com/locate/ceri

PII: S0272-8842(18)31324-5  
DOI: <https://doi.org/10.1016/j.ceramint.2018.05.176>  
Reference: CER118351

To appear in: *Ceramics International*

Received date: 1 April 2018  
Revised date: 18 May 2018  
Accepted date: 20 May 2018

Cite this article as: G. Neelima, N. Ravi, C.S. Dwaraka Viswanath, K. Tyagarajan, K. Venkata Krishnaiah and T. Jayachandra Prasad, Photoluminescence of terbium doped oxyfluoro-titania-phosphate glasses for green light devices, *Ceramics International*, <https://doi.org/10.1016/j.ceramint.2018.05.176>

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 galley proof before it is published in its final citable 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.

# Photoluminescence of terbium doped oxyfluoro-titania-phosphate glasses for green light devices

G. Neelima<sup>1,2</sup>, N. Ravi<sup>2\*</sup>, C.S. Dwaraka Viswanath<sup>3</sup>, K. Tyagarajan<sup>4</sup>, K. Venkata Krishnaiah<sup>2,5,6,\*</sup>, T. Jayachandra Prasad<sup>7</sup>

<sup>1</sup>Department of Physics, JNT University, Anantapuramu - 515002, India.

<sup>2</sup>Department of Physics, RGM College of Engineering & Technology, Nandyal - 518501, India.

<sup>3</sup>Department of Physics, Sri Venkateswara University, Tirupati - 517502, India.

<sup>4</sup>Department of Physics, JNT University College, Pulivendhula - 516390, India.

<sup>5</sup>Laser Applications Research Group, Ton Duc Thang University, Ho Chi Minh City, Vietnam.

<sup>6</sup>Faculty of Applied Sciences, Ton Duc Thang University, Ho Chi Minh City, Vietnam.

<sup>7</sup>Department of ECE, RGM College of Engineering & Technology, Nandyal - 518501, India.

kvkrishaniah@tdt.edu.vn

ravi2728@gmail.com

\*Corresponding authors.

## Abstract:

Terbium ( $Tb^{3+}$ ) doped oxyfluoro-titania-phosphate glasses of chemical composition (in mol%),  $(60 - x) P_2O_5 - 15 BaF_2 - 20 CaF_2 - 5 TiO_2 - x Tb_4O_7$ ,  $x = 0.05, 0.1$  and  $0.1$  were fabricated by usual melt-quenching technique. Photoluminescence (PL) properties of the samples have been investigated by excitation, emission and decay profiles. Upon excitation at 377 nm, the PL spectra exhibit an intense band at 541 nm which corresponds to the  $^5D_4 \rightarrow ^7F_5$  transition. The intensity ratio of green-to-blue ( $I_G/I_B$ ) was found to be 9.2 for 0.1 mol% of  $Tb^{3+}$ -doped glass. High-energy absorption bands were not resolved in the absorption spectrum but disclosed in the photoluminescence excitation spectrum. Decay curves were unveiled non-exponential and mono-exponential behaviours for the  $^5D_3$  and  $^5D_4$  levels, respectively. Lifetime of the  $^5D_3$  and  $^5D_4$  levels was decreased up to 0.1 mol%, and thereafter it was increased with the increase of  $Tb^{3+}$  ion concentration upon 377 nm excitation. The CIE chromaticity coordinates were supported that the green emission was predominant in  $Tb^{3+}$ -doped oxyfluoro-titania-phosphate glasses.

Download English Version:

<https://daneshyari.com/en/article/7886215>

Download Persian Version:

<https://daneshyari.com/article/7886215>

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