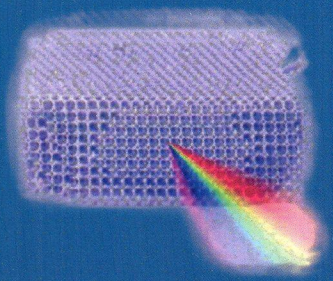
УНИВЕРЗИТЕТ У БЕОГРАДУ

Институт за физику Београд



Конференција

Десета радионица фотонике (2017)

Зборник апстраката

PHOTONICS CENTER

10th Photonics Workshop
Book of Abstracts
Kopaonik, 26.2-2.3 2017

Копаоник, 26.2–2.3 2017.

Конференција **Десета радионица фотонике (2017)**

Зборник апстраката

Копаоник 26.2.-2.3.2017.

Издаје

Институт за физику Универзитета у Београду

За издавача

др Александар Богојевић, директор

Уредник

др Драган Лукић

Тираж

100 примерака

ИСБН 978-86-82441-45-8

Штампа

Развојно-истраживачки центар,
Технолошко-металуршког факултета у Београду

Карнегијева 4, Београд

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

535(048)
681.7(048)
66.017/.018(048)

PHOTONICS Workshop (10 ; 2017 ; Kopaonik)
Book of Abstracts / 10th Photonics Workshop, Kopaonik, 26.2-2.3.2017. = Зборник апстраката / Конференција Десета радионица фотонике (2017), Копаоник, 26.2-2.3.2017. ; [urednik Dragan Lukić]. - Београд : Институт за физику Универзитета, 2017 (Београд : Развојно-истраживачки центар графичког инжењерства ТМФ). - X, 46 str. : ilustr. ; 25 cm

Тираж 100. - Реч уредника: str. VII. - Registar.

ISBN 978-86-82441-45-8

a) Оптика - Апстракти b) Оптоелектроника - Апстракти c) Технички материјали - Апстракти
COBISS.SR-ID 229745420

Luminescence and structural properties of Eu^{3+} doped Sr_2CeO_4 nanopowders

D. Šević[1], M.S. Rabasović[1], J. Križan[2], S. Savić-Šević[1], M.D. Rabasović[1]

(1) *Institute of Physics, University of Belgrade, Belgrade, Serbia*

(2) *AMI d.o.o., Ptuj, Slovenia*

Contact: Dragutin Sevic (sevic@ipb.ac.rs)

Abstract. Strontium cerium oxide (Sr_2CeO_4) doped by rare earths received renewed interest recently [1-4]. In this study we investigate time resolved luminescence spectra of nano powder samples of Sr_2CeO_4:Eu^{3+}. Our experimental setup is described in detail in [4]. For excitation we used OPO (Optical Parametric Oscillator). The output of the OPO can be continuously tuned from 320 nm to 475 nm, enabling us to determine the excitation spectra of measured samples. For measurements presented here the output energy of OPO was about 5 mJ. The structure of material was preliminary checked by high resolution scanning electron microscope (SEM).

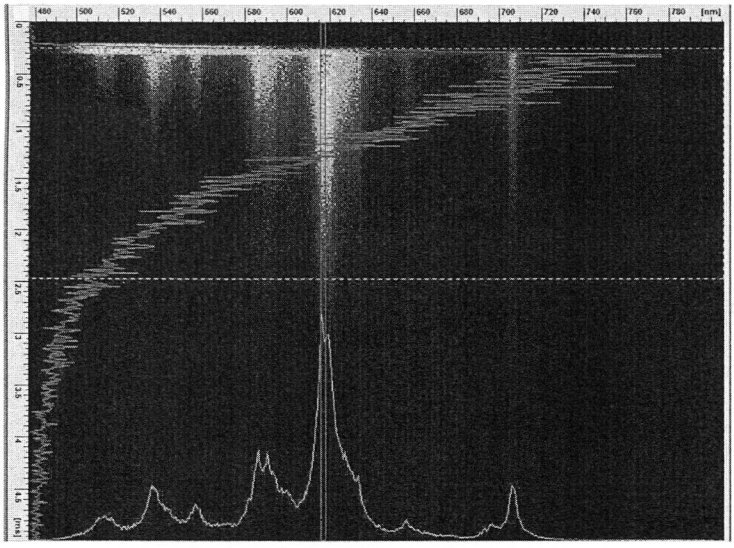


Figure 1. Streak images of Eu doped Sr_2CeO_4 nanopowder. Laser excitation is at 350 nm.

By using the CIE chromaticity diagram of emission spectra, we showed that this material could be used as red component of optical displays. The luminescence lifetime of this phosphor was determined by streak camera (HPD-TA) software. Our results show that Eu doped Sr_2CeO_4 nanopowder is suitable for many optical applications and fabrication of various optical devices.

REFERENCES

[1] T. Grzyb, A. Szczeszak, et al, *J. Phys. Chem. C* **116** (2012), 3219-3226.
[2] C.A. Rao, P.R.V. Nannapaneni, K.V.R. Murthy , *Adv. Mat. Lett.* **4** (2013), 207–212.
[3] B.W.R. Kumar, K.V.R. Murthy, et al, *Int. J. of Sci. Innov. and Disc.* **1** (2011), 145-150.
[4] M. S. Rabasovic J. Krizan, et al, *Opt. Quant. Electron.* **48** (2016) 163.

Comparison of the securities of two-state and four-state quantum bit-commitment protocols

Ricardo Loura[1,2], Dušan Arsenović[3], Nikola Paunković[1,2], Duška B. Popović[3], Slobodan Prvanović[3]

(1) *Instituto de Telecomunicações, Avenida Rovisco Pais 1, 1049-001 Lisboa, Portugal*

(2) *Departamento de Matemática, Instituto Superior Técnico, Universidade de Lisboa, Avenida Rovisco Pais 1, 1049-001 Lisboa, Portugal*

(3) *Institute of Physics, University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia*

Contact: D.B. Popović (duska@ipb.ac.rs)

Abstract. Cheating strategies for two-state and four-state bit-commitment protocols were analyzed in the case of noisy quantum channels and when the cheating party is limited to using only single-qubit measurements. Cheating is subjected to current technological constrains-the lack of long-term quantum memories and, in the case of optical realization, the nonexistence of photon non-demolition measurements. The fact that any device that is used to prepare photons in a specific state has a non-negligible probability of creating not a single, but a pair (or more) of photons in the same state enhances the possibility of cheating.

The results show that the four-state protocol is superior to the two-state version regarding the resources needed for the same level of security to be achieved.

REFERENCES

Á. J. Almeida, A. D. Stojanović, N. Paunković, R. Loura, N. J. Muga, N. A. Silva, P. Mateus, P. S. André and *J. Opt.* **18** (2016), 015202.

R. Loura, Á. J. Almeida, P. S. André, A. N. Pinto, P. Mateus, and N. Paunković, *Phys. Rev. A.* **89** (2014), 052336.

A. Danan and L. Vaidman, *Quant. Info.Proc.* **11** (2012), 769.