

FIFTEENTH YOUNG RESEARCHERS' CONFERENCE MATERIALS SCIENCE AND ENGINEERING

**December 7-9, 2016, Belgrade, Serbia
Serbian Academy of Sciences and Arts, Knez Mihailova 36**

Program and the Book of Abstracts

**Materials Research Society of Serbia
&
Institute of Technical Sciences of SASA**

December 2016, Belgrade, Serbia

Book title:

Fifteenth Young Researchers' Conference - Materials Science and Engineering:
Program and the Book of Abstracts

Publisher:

Institute of Technical Sciences of SASA
Knez Mihailova 35/IV, 11000 Belgrade, Serbia
Tel: +381-11-2636994, fax: 2185263
<http://www.itn.sanu.ac.rs>

Editor:

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Technical Editor:

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Cover page: Aleksandra Stojičić and Milica Ševkušić

Cover photo: Modified photo by Magelan Travel; Flickr

(<https://www.flickr.com/photos/whltravel/4275855745>) ; [CC BY-NC-SA 2.0](https://creativecommons.org/licenses/by-nc-sa/2.0/)

Printer:

Gama digital centar
Autoput No. 6, 11070 Belgrade, Serbia
Tel: +381-11-6306992, 6306962
<http://www.gdc.rs>

Edition:

120 copies

CIP - Каталогизacija у публикацији - Народна библиотека Србије, Београд

66.017/.018(048)

YOUNG Researchers Conference Materials Sciences and Engineering (15 ; 2016
; Beograd)

Program ; and the Book of Abstracts / Fifteenth Young Researchers'
Conference Materials Sciences and Engineering, December 7-9, 2016,
Belgrade, Serbia ; [organized by] Materials Research Society of Serbia &
Institute of Technical Sciences of SASA ; [editor Smilja Marković]. -
Belgrade : Institute of Technical Sciences of SASA, 2016 (Beograd : Gama
digital centar). - XX, 82 str. ; 23 cm

Tiraž 120. - Registar.

ISBN 978-86-80321-32-5

1. Materials Research Society of Serbia (Beograd)

a) Наука о материјалима - Апстракти б) Технички материјали - Апстракти
COBISS.SR-ID 227315468

Aim of the Conference

Main aim of the conference is to enable young researchers (post-graduate, master or doctoral student, or a PhD holder younger than 35) working in the field of materials science and engineering, to meet their colleagues and exchange experiences about their research.

Topics

Biomaterials
Environmental materials
Materials for high-technology applications
Nanostructured materials
New synthesis and processing methods
Theoretical modelling of materials

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Results of the Conference

Beside printed «Program and the Book of Abstracts», which is disseminated to all conference participants, selected and awarded peer-reviewed papers will be published in journals “Tehnika – Novi Materijali” and “Processing and Application of Ceramics“. The best presented papers, suggested by Session Chairpersons and selected by Awards Committee, will be proclaimed at the Closing Ceremony.

Sponsors



ANALYSIS
LABORATORY EQUIPMENT

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Acknowledgement

The editor and the publisher of the Book of abstracts are grateful to the Ministry of Education, Sciences and Technological Development of the Republic of Serbia for its financial support of this book and The Fifteenth Young Researchers' Conference - Materials Sciences and Engineering, held in Belgrade, Serbia.

~ 1,8 nm reflects the annihilation in the water "bubbles" with radius near 3 Å. Its number increases in accordance with intensity I3.

Thus, it is shown that lifetimes of third and fourth positronium (o-Ps)-related component of PAL spectra decreases in water-immersed MgO-Al₂O₃ ceramics reflected decreasing of free-volume after water-immersion. The amount of biggest nanopores decreases, while positronium trapping in smaller nanopores carried out simultaneously with annihilation in water "bubbles".

This research was funded by Ministry of Education and Science of Ukraine for young researchers (grant DB/Nanosensor, No 0116U004411).

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Ethylenediaminetetraacetic acid (EDTA) assisted hydro/solvothermal synthesis of up-converting rare earth fluorides

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Over the last decade, a lot of effort was directed toward developing of the representative methodologies for the preparation of up-converting (UC) particles which exhibit a unique narrow visible emission when excited by lower-energy photon radiation. This work presents the impact of different processing parameters on structural, morphological and optical properties of up-converting (UC) rare earth fluorides obtained by hydro/solvothermal synthesis. Monodisperse NaYF₄:Yb₃₊/Er₃₊ particles with different morphology, size and crystal phase were synthesized with a help of ethylenediaminetetraacetic acid (EDTA) through adjusting the precursor concentration, degree of doping, polarity of solvent and reaction time. They are characterized by X-ray powder diffraction, scanning and transmission electron microscopy, energy dispersive X-ray and Fourier transform infrared spectroscopy, as well as photoluminescence measurements. It was shown that particle size and phase composition are dependent on the precursor concentration, type of solvent and doping degree, while the cubic to hexagonal transformation of NaYF₄:Yb₃₊/Er₃₊ phase is affected by the reaction time. The crystallization of the orthorhombic YF₃:Yb₃₊/Er₃₊ phase is established either after decreasing concentration of dopants or increasing polarity of solvents. All of the synthesized particles exhibited efficient up-conversion emission which can be tuned from pure green to the yellowish-orange through control of particles size and phase composition.