

Programme & The Book of Abstracts

Twenty-first Annual Conference

YUCOMAT 2019

&

Eleventh World Round Table Conference

on Sintering –

Science of Sintering & Its Future: Fifty Years Later

WRTCS 2019

Herceg Novi, Montenegro September 2 - 6, 2019

Organised by



Endorsed by



ENDORSED MEETINGS



Twenty-first Annual Conference
YUCOMAT 2019
&
Eleventh World Round Table Conference
on Sintering
WRTCS 2019

**Programme
and
The Book of Abstracts**

Organised by:
Materials Research Society of Serbia
&
International Institute for the Science of Sintering

Hunguest Hotel Sun Resort Herceg Novi, Montenegro,
September 2-6, 2019, <http://www.mrs-serbia.org.rs>

Title: Twenty-first Annual Conference **YUCOMAT 2019** &
Eleventh World Round Table Conference on Sintering
WRTCS 2019
Programme and The Book of Abstracts

Publisher: Materials Research Society of Serbia
Knez Mihailova 35/IV, P.O.Box 433, 11000 Belgrade,
Serbia
<http://www.mrs-serbia.org.rs>

Editors: Prof. Dr. Dragan P. Uskoković and Prof. Dr. Velimir R.
Radmilović

Technical editors: Maja Jovanović and Jasmina Jevtić

Cover page: Nenad L. Ignjatović

Front cover: Image is the property of MRS Serbia

Back cover: Modified Photo by Vlada Marinković; Wikimedia Commons
(https://commons.wikimedia.org/wiki/File:Belgrade_iz_balona.jpg); CC BY-SA 3.0

Copyright © 2019 Materials Research Society of Serbia and International Institute for the
Science of Sintering



Printed in: Biro Konto
Sutorina bb, Igalo – Herceg Novi, Montenegro
Phones: +382-31-670123, 670025, E-mail: bkonto@t-com.me. Circulation: 220 copies. The end of printing:
August 2019

P.S.C.7.

Citrate assisted solvothermal synthesis of β -NaYF₄: Yb, Er up-converting nanoparticles

Ivana Dinić¹, Marina Vuković¹, Predrag Vulić², Marko Nikolić³, Olivera Milošević⁴ and Lidija Mančić⁴

¹Innovation Center of the Faculty of Chemistry, University of Belgrade, Serbia; ²Faculty of Mining and Geology, University of Belgrade, Serbia; ³Photonic Center, Institute of Physics Belgrade, University of Belgrade, Serbia; ⁴Institute of Technical Sciences of SASA, Belgrade, Serbia

Thanks to the unique optical properties, up-converting nanoparticles (UCNPs) have a wide application in optoelectronics, forensics, security and biomedicine. The synthesis of the most efficient hexagonal β -NaYF₄: Yb/Er phase is usually performed through thermal decomposition of organic precursors which could cause the UCNP cytotoxicity. Since cubic polymorph is kinetically more stable than hexagonal, we used citric acid and Na-citrate for the nucleation of hexagonal NaYF₄: Yb, Er phase in nanosized particles. Additionally, effect of different precipitation agents (NaF, NH₄F and NH₄HF₂) used during solvothermal synthesis is explored. The XRPD analysis showed that using of citric acid led to a product composed from mixture of cubic and hexagonal NaYF₄: Yb/Er phase, while the presence of Na-citrate influences the nucleation of well crystallized hexagonal β -NaYF₄: Yb/Er phase, regardless of precipitation agents used. All samples are composed of polycrystalline spherical particles which size is influenced by the precursor chemistry. UCNPs emit intense green emission due to the (²H_{11/2}, ⁴S_{3/2}) → ⁴I_{15/2} electronic transitions, after been excited with infrared light ($\lambda=978$ nm).

**CIP- Каталогизација у публикацији
Народна библиотека Србије**

66.017/.018(048)

621.762.5(048)

**DRUŠTVO za istraživanje materijala Srbije (Beograd). Godišnja konferencija (21 ; 2019 ;
Herceg Novi)**

Programme ; and The Book of abstracts / Twenty-first Annual Conference YUCOMAT 2019 & Eleventh World Round Table Conference on Sintering WRTCS 2019, Herceg Novi, Montenegro, September 2-6, 2019 ; organised by Materials Research Society of Serbia & International Institute for the Science of Sintering ; [editors Dragan P. Uskoković and Velimir R. Radmilović]. - Belgrade : Materials Research Society of Serbia, 2019 (Herceg Novi : Biro Konto). - XLVIII, 174 str. : ilustr. ; 23 cm

Tiraž 220. - Bibliografija uz pojedine apstrakte. - Registar.

ISBN 978-86-919111-4-0

1. World Round Table Conference on Sintering (11 ; 2019 ; Herceg Novi)

a) Наука о материјалима -- Апстракти б) Технички материјали -- Апстракти в) Синтеровање -- Апстракти

COBISS.SR-ID 278510092