

TWELFTH ANNUAL CONFERENCE

, citation and similar papers at core.ac.uk

brought to you by

provided by Serbian Academy of Science and Arts Digital Library

YUCOMAT 2010

Hotel "Plaža", Herceg Novi, Montenegro, September 6–10, 2010
<http://www.mrs-serbia.org.rs>

Programme and The Book of Abstracts

Organised by:
Materials Research Society of Serbia,
and
**Institute of Technical Sciences of the
Serbian Academy of Sciences and Arts, Belgrade**

under the auspices of
Federation of European Material Societies
and
Materials Research Society

Title: THE TWELFTH ANNUAL CONFERENCE
“YUCOMAT 2010”
Programme and The Book of Abstracts

Publisher: Institute of Technical Sciences of the Serbian Academy of Sciences & Arts
Knez Mihailova 35/IV; P.O. Box 377, 11000 Belgrade, Serbia
Phone: +381 11 2185-437; Fax: + 381 11 2185-263
<http://www.itn.sanu.ac.rs>

Editor: Prof. Dr. Dragan P. Uskoković

Technical editor: Aleksandra Stojičić

Cover page: Aleksandra Stojičić and Milica Ševkušić

Copyright © 2010 Institute of Technical Sciences of the Serbian Academy of Sciences & Arts

Acknowledgment:



Printed in: Printing office “Čigoja”
Studentski trg 15, 11000 Belgrade
Phones: + 381 11 2186-725; + 381 11 2625-954
Circulation: 260 copies. The end of printing: July 2010.

P.S.A.38.

**DENSE SPHERICAL RARE OXIDE PARTICLES SYNTHESIS VIA SPRAY
PYROLYSIS OF POLYMERIC PRECURSOR SOLUTION**

I. Dugandžić¹, V. Lojpur¹, L. Mančić¹, M.E. Rabanal², O. Milošević¹
¹*Institute of Technical Sciences of SASA, Belgrade, Serbia,*
²*University Carlos III, Madrid, Spain*

Europium-doped ($Y_{0.5}Gd_{0.5}$)₂O₃ phosphor powder is synthesized *via* spray pyrolysis of polymeric precursor solution obtained by dissolving the stoichiometric amount of corresponding metal nitrates in ethylenediaminetetraacetic acid (EDTA) - ethylene glycol (EG) mixture. The 0.1M true stable solution is obtained after pH correction with NH₄OH (final pH=8.7). Ultrasonically (1.3MHz) generated aerosol droplets are decomposed at 550 °C in argon atmosphere. Following the initial attempt for obtaining dense, nanostructured spherical particles of pure ($Y_{0.5}Gd_{0.5}$)₂O₃:Eu³⁺ phase, as-prepared dark-gray powder is additionally thermally treated for 12 h in air up to 1100 °C. The particle morphology is analyzed by scanning electron microscopy (SEM) and transmission electron microscopy (TEM). Phase identification is performed by X-ray powder diffraction (XRPD) based on which the structural refinement through Rietveld method was done. Particle chemical purity is confirmed through EDS analysis, while laser particle sizer is used for determination of the particle size distribution.

P.S.A.39.

**IMPROVEMENT OF SOLUBILITY OF DISPERSE MATERIALS
BY THE MEANS OF THE MECHANOCHEMICAL TREATMENT**

S. Makević¹, A. Stanković², D. Uskoković²
¹*Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia,*
²*Institute of Technical Sciences of the SASA, Belgrade, Serbia*

The solubility of drug is very important factor that determines its applicability, since solubility may act as rate-limiting step in absorption and therefore may affect the bioavailability of the drug. More than 40% of potential drug products suffer from poor water solubility which frequently results in potentially important products not reaching the market or not achieving their full potential.

In this work, an effort will be invested in order to improve solubility of verapamil hydrochloride by the means of mechanochemical treatment. Influence of mechanochemical parameters and surfactants on the physicochemical properties will be examined using a XRD, FE SEM technique and Malvern's Master Sizer instrument for particle size distribution. Finally, solubility of verapamil hydrochloride will be correlated with the particle size, structural and morphological characteristics of the drug via UV-VIS Cintra 101 spectrometer.