

**FIFTEENTH ANNUAL CONFERENCE**

# **YUCOMAT 2013**

Hunguest Hotel Sun Resort Herceg Novi, Montenegro,  
September 2-6, 2013  
<http://www.mrs-serbia.org.rs>

## **Programme and The Book of Abstracts**

Organised by:  
**Materials Research Society of Serbia**

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

**Title:** THE FIFTEENTH ANNUAL CONFERENCE  
**YUCOMAT 2013**  
Programme and The Book of Abstracts

**Publisher:** Materials Research Society of Serbia  
Knez Mihailova 35/IV, 11000 Belgrade, Serbia  
Phone: +381 11 2185-437; Fax: + 381 11 2185-263  
<http://www.mrs-serbia.org.rs>

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

**Technical editor:** Aleksandra Stojičić

**Cover page:** Aleksandra Stojičić and Milica Ševkušić

**Copyright** © 2013 Materials Research Society of Serbia

**Acknowledgments:**



**Printed in:** Biro Konto  
Sutorina bb, Igalo – Herceg Novi, Montenegro  
Phones: +382-31-670123, 670025, E-mail: [bkonto@t-com.me](mailto:bkonto@t-com.me)  
Circulation: 220 copies. The end of printing: August 2013

P.S.B.18.

### INFLUENCE OF MoO<sub>3</sub> ON CORDIERITE CERAMICS SINTERING AND CRYSTALLIZATION

N. Djordjević<sup>1</sup>, A. Mihajlović<sup>2</sup>, A. Peleš<sup>3</sup>, N. Obradović<sup>3</sup>, V. Pavlović<sup>3</sup>

<sup>1</sup>*Institute for Technology of Nuclear and Other Mineral Raw Materials, Belgrade, Serbia,*

<sup>2</sup>*Institute of Nuclear Sciences Vinča, University of Belgrade, Belgrade, Serbia,* <sup>3</sup>*Institute of Technical Sciences of SASA, Belgrade, Serbia*

The influence of MoO<sub>3</sub> on the process of cordierite ceramics preparation, 2MgO-2Al<sub>2</sub>O<sub>3</sub>-5SiO<sub>2</sub> (MAS) was researched by sintering followed binary systems: MgO/MoO<sub>3</sub> (sintered at 850 °C and 1000 °C), Al<sub>2</sub>O<sub>3</sub>/Bi<sub>2</sub>O<sub>3</sub> and SiO<sub>2</sub>/Bi<sub>2</sub>O<sub>3</sub> (sintered at 850 °C and 1000 °C). Composition of these systems was 80 % of oxide and 20 % MoO<sub>3</sub>. The effects of sintering, the composition and morphology were followed by x-ray diffraction, scanning electron microscopy and EDS analysis. It has been found that MoO<sub>3</sub>, beside liquid phase, forms intermediary unstable compounds with MgO and Al<sub>2</sub>O<sub>3</sub>. The following research is planned to investigate the effect of 5 % mass of MoO<sub>3</sub> on the electrical properties of cordierite ceramics.

P.S.B.19.

### INFLUENCE OF ONE ACTIVATED COMPONENT ON THE SINTERING PROCESS OF THREE PHASE SYSTEM

N. Obradović<sup>1</sup>, A. Peleš<sup>1</sup>, N. Djordjević<sup>2</sup>, S. Marković<sup>1</sup>, M. Mitrić<sup>3</sup>, V. Pavlović<sup>1</sup>

<sup>1</sup>*Institute of Technical Sciences of SASA, Belgrade, Serbia,*

<sup>2</sup>*Institute for Technology of Nuclear and Other Raw Mineral Materials, Belgrade, Serbia,*

<sup>3</sup>*Institute of Nuclear Sciences Vinča, University of Belgrade, Belgrade, Serbia*

According to its low temperature thermal expansion coefficient, low dielectric constant, also good mechanical properties, cordierite, 2MgO-2Al<sub>2</sub>O<sub>3</sub>-5SiO<sub>2</sub>, represents a very attractive high-temperature ceramic material. In this study, cordierite was prepared by solid state reaction of the MgO, Al<sub>2</sub>O<sub>3</sub> and SiO<sub>2</sub> mixture. One of the components from the mixture, SiO<sub>2</sub>, was mechanically activated in a high energy ball mill during 5 and 10 minutes. The applied pressure before the sintering process was 2 t/cm<sup>2</sup>. Sintering process of mixtures containing non-activated and activated SiO<sub>2</sub> powder was performed at 1350 °C for 4h in the air atmosphere. The phase composition of starting oxides and sintered samples was analyzed by the X-ray diffraction method. Particle size analysis was performed to investigate the differences between starting components. Scanning electron microscopy was done to analyze the microstructure of both components and sintered samples. This paper investigates the influence of one mechanically activated SiO<sub>2</sub> component on the densities of green bodies as well as on the sintered samples, along with electrical properties of cordierite ceramics.