

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
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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

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Acknowledgments:



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 2013

P.S.B.18.

INFLUENCE OF MoO₃ ON CORDIERITE CERAMICS SINTERING AND CRYSTALLIZATION

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The influence of MoO₃ on the process of cordierite ceramics preparation, 2MgO-2Al₂O₃-5SiO₂ (MAS) was researched by sintering followed binary systems: MgO/MoO₃ (sintered at 850 °C and 1000 °C), Al₂O₃/Bi₂O₃ and SiO₂/Bi₂O₃ (sintered at 850 °C and 1000 °C). Composition of these systems was 80 % of oxide and 20 % MoO₃. 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 MoO₃, beside liquid phase, forms intermediary unstable compounds with MgO and Al₂O₃. The following research is planned to investigate the effect of 5 % mass of MoO₃ on the electrical properties of cordierite ceramics.

P.S.B.19.

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

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According to its low temperature thermal expansion coefficient, low dielectric constant, also good mechanical properties, cordierite, 2MgO-2Al₂O₃-5SiO₂, represents a very attractive high-temperature ceramic material. In this study, cordierite was prepared by solid state reaction of the MgO, Al₂O₃ and SiO₂ mixture. One of the components from the mixture, SiO₂, was mechanically activated in a high energy ball mill during 5 and 10 minutes. The applied pressure before the sintering process was 2 t/cm². Sintering process of mixtures containing non-activated and activated SiO₂ 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 SiO₂ component on the densities of green bodies as well as on the sintered samples, along with electrical properties of cordierite ceramics.