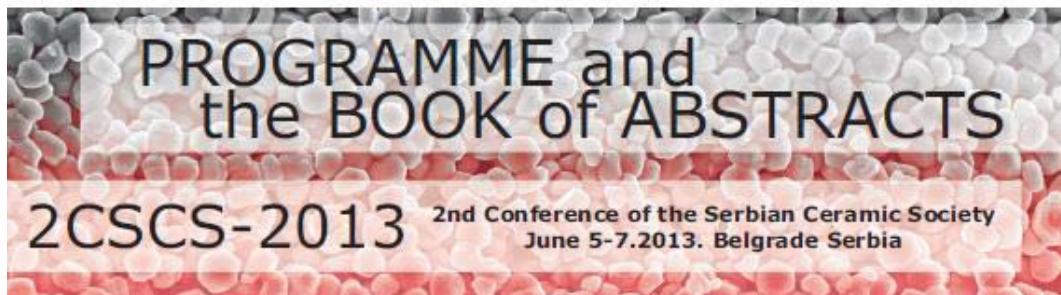


The Serbian Ceramic Society
The Academy of Engineering Sciences of Serbia
Institute for Multidisciplinary Research - University of Belgrade
Institute of Physics - University of Belgrade
Vinča Institute of Nuclear Sciences - University of Belgrade



Edited by:
Snežana Bošković
Vladimir V. Srdić
Zorica Branković

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PROGRAMME AND THE BOOK OF ABSTRACTS

2nd Conference of The Serbian Ceramic Society

**June 5-7, 2013
Belgrade, Serbia
2CSCS-2013**

Edited by:
**Snežana Bošković
Vladimir Srdić
Zorica Branković**

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Dear ceramists,

On behalf of all committees of the 2nd Conference of The Serbian Ceramic Society (2CSCS-2013), and also on behalf of the co-organizers of this Conference i.e. Academy of Engineering Sciences of Serbia, Institute for Multidisciplinary Research - University of Belgrade, Institute of Physics - University of Belgrade, Vinča Institute of Nuclear Sciences - University of Belgrade, it is our great pleasure to welcome you to Belgrade and Serbia on June 5-7th 2013.

The Serbian Ceramic Society is national society which brings together the scientists and engineers working in the fields of research and application of ceramic materials. There is rather large ceramic community in Serbia since it has long tradition which involves both traditional and advanced ceramic materials. The members of The Serbian Ceramic Society, are professionally dealing with very attractive topics like nanostructured ceramics, ceramics in energy conversion, eco- and bio-ceramics, as well as, ultra high temperature ceramic composites. The activities of The Serbian Ceramic Society include organizing highly interesting lectures for the members, but also Students Meetings, which has taken place in Novi Sad under the sponsorship of the European Ceramic Society each year since 1998. In addition, the Serbian Ceramic Society publishes, since 2007, the Journal "Processing and Application of Ceramics" which is becoming ever more attractive to authors from abroad.

The aim of the 2CSCS-2013 is to bring together the scientists working in the field of ceramic materials for the exchange of attractive results in the areas of the development, characterization and application of ceramic materials as well as, to improve contacts for future scientific cooperation.

The abstracts of the papers that are going to be presented at the 2nd Conference of The Serbian Ceramic Society are summarized in this book. They are divided according to topic to which the papers belong, i.e. into:

1. **Ceramic Powders, Characterization and Processing** (chemical routes, hydrothermal synthesis, non-conventional routes, dispersion and processing aids, wet processing, spray-drying, plastic forming, net shape forming and porous products)
2. **High Temperature Phenomena, Sintering and Microstructure Design** (high temperature reactions, phase diagrams, densification and grain growth, tailoring microstructure to properties, hard coatings and wear)
3. **Electro and Magnetic Ceramics** (ferroelectric and relaxors, piezoelectric, films, multilayer devices, interfaces, capacitor, microwave ceramics, varistors, conducting ceramics and electrodes, ionic conductors, resistors)
4. **Ceramic Composites, Membranes and Multimaterials** (ceramic matrix composites, fibres, nanocomposites and polymer transformation, laminates, biocomposites)
5. **Refractories, Cements, Glass and Corrosion** (raw materials and engineering, emission control, environment, recycling)
6. **Ceramic Heritage**

Four plenary lectures, fourteen invited lectures, twenty-two oral and fifty-seven poster presentations will be presented at the Conference. This book contains, as mentioned, all the received abstracts, and some of the papers, after regular peer review will be published in the international journal *The Processing and Application of Ceramics*.

June 5-7th, 2013.
Belgrade, Serbia

I-14

**NONDESTRUCTIVE EVALUATION OF DEGRADATION LEVEL
FOR REFRACTORY AND POLYMER COMPOSITE
MATERIALS IN EXTREME CONDITIONS**

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Non-destructive evaluation of degradation level in extreme condition caused by: thermal shock and cavitation erosion for refractory concrete (LCC) and durability of sulfur concrete in aggressive environment were goal of our investigation. Non-destructive testing methods such are image analysis and UPVT were used.

Thermal stability of refractory LCC samples was tested using standard laboratory procedure of water quench test (ICS 81.080 SRPS B.D8.308 former JUS B. D8. 306). Program for image analysis was applied for monitoring destruction at the surface and bulk of the sample before and during testing. Ultrasonic pulse velocity testing (UPVT) was applied to measure ultrasonic velocities changes during testing.

Cavitation damage ratio was monitored using mass loss during experiment as well as image analysis of the photographs of the samples before and during testing. Image analysis using different software allowed to measure ratio of the damaged surface during cavitation erosion. Results were presented as surface erosion ratio.

In order to predict service life of the sulfur-polymer composite, the samples were subjected to the induced destruction using 10% hydrochloric acid solution. Sulfur-polymer composite showed limited mechanical strength and mass loss, while physico-mechanical properties of Portland cement composite regressed rapidly. The Image Pro Plus software was used for surface destruction monitoring.

Key words: refractory concrete, sulfure concrete, thermal shock, cavitation erosion, durability testing, image analysis, UPVT