

The Serbian Society for Ceramic Materials
Institute for Multidisciplinary Research (IMSI), University of Belgrade
Institute of Physics, University of Belgrade
Center of Excellence for the Synthesis, Processing and Characterization of
Materials for use in Extreme Conditions "CEXTREME LAB" - Institute of
Nuclear Sciences "Vinča", University of Belgrade
Faculty of Mechanical Engineering, University of Belgrade
Center for Green Technologies, Institute for Multidisciplinary Research,
University of Belgrade
Faculty of Technology and Metallurgy, University of Belgrade
Faculty of Technology, University of Novi Sad

A microscopic image of ceramic particles, showing a transition from white to red. The particles are spherical and densely packed. The top half is white, and the bottom half is red, with a horizontal boundary line.

PROGRAMME and the BOOK of ABSTRACTS

5CSCS-2019

5th Conference of
the Serbian Society for Ceramic Materials
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Edited by:
Branko Matović
Zorica Branković
Aleksandra Dapčević
Vladimir V. Srdić

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P-2

THE POTENTIAL OF HYBRID GEOPOLYMER COMPOSITES

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Hybrid geopolymers represent a new class of composite materials formed by incorporating organic polymer into a geopolymer matrix. The properties of hybrid geopolymer depend on the addition of organic phase and the starting raw material composition (concentration of NaOH in alkaline activator, Si/Al mass ratio and solid/liquid mass ratio). In addition to these relevant parameters, this paper examines the synthesis conditions of these materials through the influence of the type, amount and manner of adding organic modifiers (commercial epoxy resins and 3-(methoxyl) propyl methacrylates) on forming the structure with significantly reduced pore distribution and decreased pore size, which exhibits good mechanical properties.

The purpose of this research is to define the optimal conditions of the hybrid geopolymers' synthesis through the examination of relevant parameters. Expected improvement of mechanical properties was confirmed through values of compressive strength. Characterization of hybrid geopolymer composites was performed by XRD analysis, DRIFT spectroscopy and SEM analysis.

Keywords: hybrid geopolymer composites, XRD, SEM, DRIFT spectroscopy, compressive strength