

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
June 11-13.2019. Belgrade Serbia

Edited by:
Branko Matović
Zorica Branković
Aleksandra Dapčević
Vladimir V. Srdić

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METAL-GLASS COMPOSITE MATERIAL

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The aim of the paper is to create a metal-glass composite material as well as to examine the possibility of using this composite material for industrial application. Powder of commercial austenitic stainless steel (SURFIT TM 316L) of the diameter from 45 to 63 μm was used in this the experiment. The steel powder of the spherical shape is obtained by atomization of gas. The source of glass was basalt rock from the locality "Vrelo" Kopaonik, Republic of Serbia, due to relative low melting point and low viscosity. Composite materials were manufactured by mechanical mixing steel powders with fresh crushed basalt rock in diameter below 45 μm . Mixtures of basalt content of 10, 30 and 50 wt.% were prepared.

Green compacts were obtained by pressing under pressure of 150 MPa using a steel mold. Thermal treatment is done at 1250 °C for 30, 45 and 60 minutes in a vacuum furnace. Starting powder as well as sintered composites were characterized by X-ray diffraction method (XRD). Morphology of powders and microstructural development were followed by scanning electron microscope (SEM). Mechanical properties were investigated by Vickers hardness.