Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION X
New Frontiers in Multifunctional Material Science and Processing

Serbian Ceramic Society
Institute of Technical Sciences of SASA
Institute for Testing of Materials
Institute of Chemistry Technology and Metallurgy
Institute for Technology of Nuclear and Other Raw Mineral Materials

PROGRAM AND THE BOOK OF ABSTRACTS

Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 26-27. September 2022.

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P17
Application of methyl methacrylate for pressing and machining of alumina green ceramics

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The addition of methyl methacrylate (MMA) in the amount of 2 mas% in the alumina mixture improved the pressing of alumina and achieved excellent quality of machining of green compacts. The compressibility test determined the optimal pressing pressure of alumina with MMA of 60 MPa. The value of green densities was analyzed depending on applied pressure up to 150 MPa. The exceptionally smooth and shiny surface of green compact indicates good pressing of alumina with MMA. After pressing, the samples were thermally treated at 115 ^{o}C to activate the side groups of MMA polymer chains at a temperature slightly higher than the glass transition temperature (103 ^{o}C) of PMMA. This way was to improve the strength of the green compact. Compacts prepared with MMA had higher values of green density and lower values of sintered density, total and open porosity than compacts without MMA. After sintering at 1620 ^{o}C, the relative linear shrinkage was about 15% for the entire range of applied pressing pressures. The machining of the green compact enables the precise production of complicated forms of technical ceramics for the needs of many areas of the economy.

P18
Aluminosilicate matrix of alkali activated mixture of metakaolin/fly ash and wood ash/metakaolin

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Presented research related to the structure of a different kind of alumosilicate matrix of alkali activated materials (AAM). Fly ash (FA), wood ash (WA) and metakaolin (MK) were used as a solid precursors of final AAM samples. Synthesis of the AAM was conducted by mixing in a determined ratio solid precursors and an alkali activator (sodium silicate solution, NaOH solutions concentration-4 mol dm^{-3} and 12 mol dm^{-3}). AAM samples were synthesized by a two-component system: MK/FA and WA/MK. The ratio of components MK/FA and WA/MK