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

PROGRAMME and the BOOK of ABSTRACTS

2CSCS-2013

2nd Conference of the Serbian Ceramic Society
June 5-7.2013. Belgrade Serbia

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Snežana Bošković
Vladimir V. Srdić
Zorica Branković

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process. The obtained powders were heat treated at 800 °C for 4 h to remove retained organic substances. Afterwards, the powders were uniaxially pressed into pellets and sintered at 1550 °C for 4 h to produce mullite solid solutions. The obtained compositions with up to 15 wt.% of Fe_2O_3 were investigated. XRD analysis confirmed that the powders were amorphous while sintered samples depicted single mullite phase. Also, the lattice parameters of mullite increase with increasing Fe content due to replacement of Al^{3+} - by larger Fe^{3+} -ions in crystal structure. TGA/DSC analysis showed a decrease of crystallization temperature of Fe-doped mullite. Density of sintered samples have increased with enhenced Fe content. Microstructure and composition of powder particles as well as sintered pellets were examined by SEM and EDAX. SEM images indicate that powder particles are highly agglomerated while the grains of sintered pellets have a rod-like shape.

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NANOSTRUCTURED Fe_2O_3/TiO_2 THICK FILMS

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Thick films of nanostructured pure TiO_2, α-Fe_2O_3, Fe_2O_3/TiO_2 (ratio 2:3 and 3:2) and a hetero-junction in the form of a TiO_2 layer over a Fe_2O_3 layer have been fabricated by screen printing technology on a glass substrate. The pastes used for film preparation were obtained by adding an organic vehicle to the oxide powders together with a small percentage of binding glass frit. Samples were dried up to 100°C and sintered at 650°C/60 minutes. Structural, morphological and optical studies have been carried out using XRD, SEM, EDS analysis and UV/Vis spectroscopy. Fe_2O_3/TiO_2 thick films had a homogenous nanostructure and no new compounds were formed. Indirect band gaps were determined from the measured transmission spectra.