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ADVANCED CERAMICS AND APPLICATION II
New Frontiers in Multifunctional Material Science and Processing

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

PROGRAM AND THE BOOK OF ABSTRACTS

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spectroscopy and the incorporation of TMA in the smectite structure was confirmed. Cyclic voltammetry was used for electrochemical investigation. The presence of TMA increased the current density of the *p*-NP oxidation wave in comparison with the oxidation signals obtained using a Na-enriched based electrode. It can be assumed that the increased electrochemical activity of TMA-S based electrodes toward *p*–NP oxidation was achieved due to the adsorption of *p*–NP on the electrode surface, since the adsorption commonly precedes the electro-oxidation process. The adsorption of *p*–NP was favored by the presence of TMA.

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Characterization of mechanochemically synthesized $CaO{\cdot}ZnO{\cdot}K_2CO_3$

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The mixed oxide of $CaO{\cdot}ZnO$ and K_2CO_3 were prepared by ball milling of CaO and ZnO powders and water, with addition of K_2CO_3 and afterward by calcination at 700 ^oC. Influence of different molar ratio of K_2CO_3 and CaO (x=1, 2 and 4 moles of K_2CO_3 per 10 moles of CaO) was studied . The prepared samples were characterized by X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), thermogravimetric analysis (TGA), infrared spectroscopy (FTIR), scanning electron microscopy/energy-dispersive spectroscopy (SEM/EDS) and the particle size laser diffraction (PSLD) distribution. The addition of smaller amount of K_2CO_3 at the beginning of ball miling ($x \leq 2$), favors the formation of calcium zinc hydroxide hydrate, while it is not the case when K_2CO_3 larger addition was used ($x > 2$). A larger amount of potassium carbonate in the initial composition of powder mixture negatively affected formation of $CaZn_2(OH)_6{\cdot}2H_2O$. Bimodal distribution were detected for all samples after calcination at 700 ^oC and the results showed that the distribution of elements in the bulk is not homogeneous and that surface of formed mixed oxide $CaO{\cdot}ZnO$ (XPS analysis) after calcination is mainly covered by potassium species. That evidence indicate that the K_2CO_3 was not fully incorporated into the matrix. Prepared samples could be used for methanolysis of vegetable oil and fatty acid methyl esters (FAME, i.e. biodiesel) synthesis.