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ADVANCED CERAMICS AND APPLICATION**

Organized by
Serbian Ceramic Society
&
Institute of Technical Sciences of SASA

PROGRAM AND THE BOOK OF ABSTRACTS

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Mechanochemical Preparation of CaO·ZnO – catalyst for Fatty Acids Methyl Esters Synthesis

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One of the catalysts that show excellent activity in the methanolysis of vegetable oil under moderate reaction conditions is the mixture of CaO and ZnO oxides. In this study CaO·ZnO catalyst was synthesized by mechanochemical treatment of ZnO and Ca(OH)₂ or CaO powder mixture (using molar ratio of CaO (or Ca(OH)₂):ZnO of 1:2) with the addition of required water amount to form calcium zinc hydroxide hydrate (CaZn₂(OH)₆·2H₂O) and subsequent calcinations at 700 °C in air atmosphere. The methanolysis of sunflower oil was studied at 60 °C with the molar ratio of methanol to oil of 10:1 and with 2 wt% of catalyst based on oil weight. Characterisation of the catalyst was performed by XRD, TGA/DSC, FTIR, the particle size distribution and Hammett indicator method. The solubility of the catalyst in methanol at 60 °C was also determined by measuring the calcium(II) and zinc(II) concentration. The results showed that whether Ca(OH)₂ or CaO were used as a starting material, after calcination an active catalyst composed of CaO and ZnO was obtained. When CaO was used in the starting mixture, basicity was slightly higher, while the amount of present carbonates was lower.