Study of Firing Processes of a Ceramic Body Made from Illite and Fluidized Combustion Fly Ash

Tomáš Húlan [C, S], Anton Trník, Igor Štubňa and Libor Vozár
Department of Physics, Constantine the Philosopher University in Nitra, Nitra, Slovakia
tomas.hulan@ukf.sk

In this paper thermal and mechanical properties (dimension changes, mass changes, bulk density, Young's modulus and internal damping) of the green ceramic body based on illite and fluidized combustion fly ash during firing are presented. These results are also supplemented by a differential thermal analysis. The investigation is performed in the temperature range from 25 °C to 1100 °C with a heating rate 5 °C/min. The samples are made from illite and a varying amount of fluidized combustion fly ash (from 0 mass% to 40 mass%). The processes occurring in the studied samples during firing are identified. Addition of fly ash acts favorably on the firing shrinkage and bulk density. On the other hand, Young's modulus generally decreases with increasing amount of fly ash.