

ABSTRACT

The work contains 85 pages, 15 figures, 11 tables, 52 references to published data.

Object of study is a composite for the manufacture of ceramic fuel cell anode based on Y_2O_3 stabilized by ZrO_2 with different pore forming agent content (12, 18, 24, 32 vol.%).

The aim is to introduce 3,5YSZ as an alternative to 8YSZ – the main ceramic component for the manufacture of anode of CFC, to study the effect of different content of pore forming agent on the porosity and pore-mechanical behavior of NiO- ZrO_2 composite for anode for a ceramic fuel cell.

Methods and apparatus: manufacturing of the composite was conducted in the laboratory planetary mill, the samples were pressed by unilateral pressing on a hydraulic press, forming of products was conducted in a steel mold, sintering was conducted in Linn High Term furnace, brand VMK1600. By means of the method of hydrostatic weighing porosity was measured, strength tests were performed by biaxial bending, specific surface area was calculated by BET.

The optimal composition of cermet for making the anode of CFC, that meets the requirements to anode material in this study, namely high porosity, while maintaining sufficient strength and electrical conductivity, was obtained.

Keywords: **POWDER, CERAMICS, COMPOSITES, FUEL CELLS, ANODE, POROSITY, ELECTRICAL CONDUCTIVITY.**