

**The Serbian Ceramic Society
Vinča Institute of Nuclear Sciences, University of Belgrade
Institute for Multidisciplinary Research, University of Belgrade
Institute of Physics, University of Belgrade**

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**PROGRAM I KNJIGA APSTRAKATA
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Gd_{9.33}(SiO₄)₆O₂ OXYAPATITE SYNTHESIZED BY SOL-GEL COMBUSTION METHOD

Slavica Zec, Svetlana Ilić, Marija Stojmenović, Dušan Bučevac, Branko Matović, Snežana Bošković

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Investigations of Ln-silicates with the apatite type of structure have shown high oxide-ion conductivity and therefore can be used as new solid electrolytes. In this study synthesis of Gd_{9.33}(SiO₄)₆O₂ oxyapatite was performed from ethanol-water solution of gadolinium nitrate, tetraethyl orthosilicate (TEOS) and glycine by sol-gel combustion method. X-ray diffraction (XRD) analyses confirmed that the nanocrystalline structure of Gd_{9.33}(SiO₄)₆O₂ was formed during combustion reaction at the molar ratio glycine:nitrate ion=0.4. Produced Gd_{9.33}(SiO₄)₆O₂ powder was calcined at 600 °C, then uniaxially pressed and sintered at 1550 °C for 4 h. Relative density of sintered material was 83%.

SYNTHESIS AND CHARACTERIZATION OF ANODIC SUBSTRATES FOR IT-SOFCs BASED ON PROTON CONDUCTORS

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Cermet anode substrates based on high temperature proton conductors Ni-BaCe_{0.9}Y_{0.1}O_{3-δ} (Ni-BCY10) were prepared using wet chemical method. The microstructural properties of sintered pellets were investigated using X-ray diffraction analysis and field emission scanning electron microscopy. Impedance spectroscopy measurements were used for evaluation of electrical properties of the anode pellets. The high conductivity values of reduced anodes confirmed the percolation through Ni particles even for anode with reduced amount of nickel. Fuel cell tests were carried out and fuel cells with the cermet anode showed higher power output comparing to the fuel cells with platinum electrode.