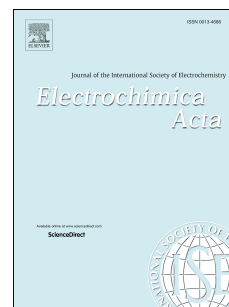


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The Effect of Pore-former Morphology on the Electrochemical Performance of Solid Oxide Fuel Cells under Combined Fuel Cell and Electrolysis Modes

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Abstract

The effect of the pore-former used in the Ni-YSZ fuel electrode on the electrochemical performance of solid oxide cells is studied. Three cells with the configuration of Ni-YSZ/YSZ/Nd₂NiO_{4+δ}-YSZ were fabricated with different pore-formers, such as graphite, PMMA (polymethyl methacrylate) or an equal mixture of both, which were added to the Ni-YSZ support during the fabrication process. The results show that the Ni-YSZ support containing graphite leads to a more porous support and formation of coarser pores in the vicinity of the electrolyte. This leads to a reduction in the triple phase boundary (TPB) length with a corresponding increase of activation polarization and, as a consequence, the overall cell performance decreases in both

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