Planar metal-supported SOFC with novel cermet anode

Metal-supported solid oxide fuel cells are expected to offer several potential advantages over conventional anode (Ni-YSZ) supported cells. For example, increased resistance against mechanical and thermal stresses and a reduction in material costs. When Ni-YSZ based anodes are used in metal supported SOFC, elements from the active anode layer may inter-diffuse with the metallic support during sintering. This work illustrates how the inter-diffusion problem can be circumvented by using an alternative anode design based on porous and electronically conducting layers, into which electrocatalytically active materials are infiltrated after sintering. The paper presents the electrochemical performance and durability of the novel planar metal-supported SOFC design. The electrode performance on symmetrical cells has also been evaluated. The novel cell and anode design shows a promising performance and durability at a broad range of temperatures and is especially suitable for intermediate temperature operation at around 650°C. © 2011 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.

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