Improved ceramic anodes for SOFCs with modified electrode/electrolyte interface - DTU Orbit (13/12/2018)

**Improved ceramic anodes for SOFCs with modified electrode/electrolyte interface**

The electrode performance of solid oxide fuel cell anode with Pd nanoparticles at the interface of ScYSZ electrolyte and Sr0.94Ti0.9Nb0.1O3 (STN) electrode introduced in the form of metal functional layer have been investigated at temperatures below 600 °C. A metal functional layer consisting of Pd was deposited by magnetron sputtering. Effecting from heat treatments, Pd nanoparticles with particle sizes in the range of 5–20 nm were distributed at the interface, and throughout the backbone. The polarization resistance of the modified STN reduced to 30 Ωcm2 at 600 °C, which is three times less than an unmodified STN backbone. In order to improve the anode performance further, Pd and Gd-doped CeO2 electrocatalysts were infiltrated into the STN backbone. The modified interface with Pd nanoparticles in combination with nanostructured electrocatalyst by infiltration resulted in polarisation resistances of 0.35 Ωcm2 at 600 °C in H2/3% H2O fuel.

**General information**

State: Published
Contributors: Abdul Jabbar, M. H., Høgh, J. V. T., Zhang, W., Stamate, E., Thydén, K. T. S., Bonanos, N.
Pages: 247-253
Publication date: 2012
Peer-reviewed: Yes

**Publication information**

Journal: Journal of Power Sources
Volume: 212
ISSN (Print): 0378-7753
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 7 SJR 2.202 SNIP 1.536
Web of Science (2017): Impact factor 6.945
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 6.22 SJR 1.944 SNIP 1.5
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 6.34 SJR 1.9 SNIP 1.667
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 6.3 SJR 1.964 SNIP 2.042
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 5.63 SJR 1.975 SNIP 2.137
Web of Science (2013): Impact factor 5.211
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 5.04 SJR 2.282 SNIP 2.006
Web of Science (2012): Impact factor 4.675
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 5.13 SJR 2.227 SNIP 2.172
Web of Science (2011): Impact factor 4.951