



## High performance anode supported SOFC produced by multilayer tape casting

Brodersen, Karen; Hauch, Anne; Hjalmarsson, Per; Hjelm, Johan

*Publication date:*  
2011

*Document Version*  
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

*Citation (APA):*

Brodersen, K., Hauch, A., Hjalmarsson, P., & Hjelm, J. (2011). *High performance anode supported SOFC produced by multilayer tape casting*. Abstract from 12th Conference of the European Ceramic Society, Stockholm, Sweden.

---

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

**For ECER's June 2011**

## **High performance anode supported SOFC produced by multilayer tape casting**

Karen Brodersen, Anne Hauch, Per Hjalmarsson and Johan Hjelm

Fuel Cells and Solid State Chemistry Division, Risø National Laboratory for Sustainable Energy,

Technical University of Denmark, Frederiksborgvej 399, DK-4000 Roskilde

### Abstract

Multilayer tape casting (MTC) is considered a cost-efficient method for production of planar anode supported solid oxide fuel cells (SOFC). The multilayered SOFC structure is produced by successive tape casting of anode support, anode and electrolyte layers on top of each other, followed by co-sintering of the half cell. Initial single cell testing results indicate significantly improved performance and stability of half-cells produced by multilayer tape casting, as compared to previously reported cells produced at Risø by tape casting of the support layer, and spraying of anode and electrolyte layers.

MTC half cells have been produced with different porosities, the influence of the porosity and microstructure distribution on cell performance will be presented in this work. Cell warpage (planarity), porosity and microstructure were characterized as a function of production parameters.

The porosity of the reduced Ni-YSZ cermet structure was characterized by means of mercury intrusion porosimetry. Microstructural analyses were carried out by SEM. Cell warpage was characterized by non-contact profilometry. Performance was evaluated by single cell testing. Polarization measurements and electrochemical impedance spectroscopy was used to determine the cell performance.