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Organisations

Risø National Laboratory for Sustainable Energy

09/04/2008 → 03/09/2013 Former
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29/10/2008 → 03/09/2013 Former
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Fuel Cells and Solid State Chemistry Division

25/02/2012 → 10/05/2012 Former
VIP

Ceramic processing

25/02/2012 → 10/05/2012 Former
VIP

Publications:

A combined SEM, CV and EIS study of multi-layered porous ceramic reactors for flue gas purification

The effect of sintering temperature of 12-layered porous ceramic reactors (comprising 5 cells) was studied using scanning electron microscopy (SEM), cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS). The difference in microstructures of the reactors was evaluated by SEM. Additional information on the influence of sintering temperature on the properties of the reactors could be gained by the use of EIS. The present work has provided the first set of fundamental electrochemical data and their interpretation in terms of fabrication conditions, for the multi-layered porous ceramic reactors.

General information

State: Published

Organisations: Department of Energy Conversion and Storage, Ceramic Engineering & Science, Secretariat, IT, Fundamental Electrochemistry

Authors: He, Z. (Intern), Andersen, K. B. (Intern), Nygaard, F. B. (Intern), Kammer Hansen, K. (Intern)

Keywords: (Multi-layered electrochemical reactors, Porous ceramic, Scanning electron microscopy (SEM), Electrochemical impedance spectroscopy (EIS))

Pages: 847-851

Publication date: 2013

Main Research Area: Technical/natural sciences

Publication information

Journal: Ceramics International

Volume: 39

Issue number: 1

ISSN (Print): 0272-8842

Ratings:

BFI (2015): BFI-level 1

Scopus rating (2015): 0.865 1.253

BFI (2014): BFI-level 1

Scopus rating (2014): 0.887 1.662

BFI (2013): BFI-level 1

Scopus rating (2013): 0.818 1.572

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 1

Scopus rating (2012): 0.814 1.776

ISI indexed (2012): ISI indexed yes

BFI (2011): BFI-level 1

Scopus rating (2011): 0.912 1.774

ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): 0.859 1.307
BFI (2009): BFI-level 1
Scopus rating (2009): 0.934 1.481
BFI (2008): BFI-level 1
Scopus rating (2008): 0.856 1.642
Scopus rating (2007): 0.896 1.432
Scopus rating (2006): 0.794 1.226
Scopus rating (2005): 0.521 1.002
Scopus rating (2004): 0.672 1.49
Scopus rating (2003): 0.695 0.999
Scopus rating (2002): 0.631 0.875
Scopus rating (2001): 0.553 0.844
Scopus rating (2000): 0.48 0.772
Scopus rating (1999): 0.507 0.797
Original language: English
Electronic versions:
A_combined_SEM.pdf
DOIs:
10.1016/j.ceramint.2012.05.097
Source: dtu
Source-ID: n::oai:DTIC-ART:elsevier/373232501::21273
Publication: Research - peer-review › Journal article – Annual report year: 2013

Enhanced mass diffusion phenomena in highly defective doped ceria

The densification and grain growth of the solid state ionic conductor material $\text{Ce}_{0.9}\text{Gd}_{0.1}\text{O}_{1.95-\delta}$ (i.e. GDC10, gadolinium-doped ceria, with Gd 10mol.%) are analysed for nanometric and fine powders of various particle sizes, both in air and in a 9vol.% $\text{H}_2\text{-N}_2$ mixture. Due to a dominant solute drag effect in aliovalent highly doped ceria, the starting morphology of the powders controls the diffusion mechanisms of the material in air. Conversely, highly enhanced densification and grain growth are achieved by firing the materials at reduced temperatures (800

General information

State: Published

Organisations: Department of Energy Conversion and Storage, Ceramic Engineering & Science, Mixed Conductors, Imaging and Structural Analysis, Fundamental Electrochemistry

Authors: Esposito, V. (Intern), Ni, D. W. (Intern), He, Z. (Intern), Zhang, W. (Intern), Prasad, A. S. (Intern), Glasscock, J. (Intern), Chatzichristodoulou, C. (Intern), Ramousse, S. (Intern), Kaiser, A. (Intern)

Keywords: (Gadolinium-doped ceria, Solute drag, Defects, Sintering, Grain growth)

Pages: 6290-6300

Publication date: 2013

Main Research Area: Technical/natural sciences

Publication information

Journal: Acta Materialia

Volume: 61

Issue number: 16

ISSN (Print): 1359-6454

Ratings:

BFI (2015): BFI-level 2

Scopus rating (2015): 3.683 2.861

BFI (2014): BFI-level 2

Scopus rating (2014): 4.054 3.385

BFI (2013): BFI-level 2

Scopus rating (2013): 3.291 2.743

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 2

Scopus rating (2012): 3.372 2.937

ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): 3.225 2.833
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): 3.692 2.73
BFI (2009): BFI-level 2
Scopus rating (2009): 3.735 2.629
BFI (2008): BFI-level 2
Scopus rating (2008): 3.646 2.768
Scopus rating (2007): 3.099 3.046
Scopus rating (2006): 3.467 3.13
Scopus rating (2005): 2.971 3.091
Scopus rating (2004): 3.223 3.135
Scopus rating (2003): 3.654 3.31
Scopus rating (2002): 3.824 3.178
Scopus rating (2001): 3.267 2.789
Scopus rating (2000): 2.729 2.205
Scopus rating (1999): 3.191 2.2
Original language: English
DOIs:
10.1016/j.actamat.2013.07.012
Source: dtu
Source-ID: n::oai:DTIC-ART:elsevier/390795381::31323
Publication: Research - peer-review › Journal article – Annual report year: 2013

Electrochemical characterisation of solid oxide cell electrodes for hydrogen production

Oxygen electrodes and steam electrodes are designed and tested to develop improved solid oxide electrolysis cells for H₂ production with the cell support on the oxygen electrode. The electrode performance is evaluated by impedance spectroscopy testing of symmetric cells at open circuit voltage (OCV) in a one-atmosphere set-up. For the oxygen electrode, nano-structured La_{0.75}Sr_{0.25}MnO₃ (LSM25) is impregnated into a LSM25/yttria stabilised zirconia (YSZ) composite, whereas for the steam electrode, nano-structured Ni and Ce_{0.8}Gd_{0.2}O_{2-δ} (CGO) is impregnated into a Sr_{0.94}Ti_{0.9}Nb_{0.1}O_{3-δ} (STN) backbone. In the present study, the best performing oxygen electrode is a LSM25-YSZ composite with 20% porosity and impregnated with a LSM25 solution measuring a polarisation resistance (R_p) of 0.12 Ω cm² at 850 °C in oxygen. For the steam electrode, the best performance is obtained for a STN backbone, sintered at 1200 °C and impregnated with CGO/Ni, with an R_p of 0.08 Ω cm² at 850 °C in 3% H₂O/H₂.

General information

State: Published
Organisations: Electrochemistry, Fuel Cells and Solid State Chemistry Division, Risø National Laboratory for Sustainable Energy, Ceramic processing, Electrochemical Evaluation, Electroceramics
Authors: Bernuy-Lopez, C. (Intern), Knibbe, R. (Intern), He, Z. (Intern), Mao, X. (Intern), Hauch, A. (Intern), Nielsen, K. A. (Intern)
Keywords: (Solid Oxide Fuel Cells, Fuel Cells and Hydrogen)
Pages: 4396-4403
Publication date: 2011
Main Research Area: Technical/natural sciences

Publication information

Journal: Journal of Power Sources
Volume: 196
Issue number: 9
ISSN (Print): 0378-7753
Ratings:
BFI (2015): BFI-level 1
Scopus rating (2015): 2.008 1.64
BFI (2014): BFI-level 1
Scopus rating (2014): 2.039 2.071
BFI (2013): BFI-level 1

Scopus rating (2013): 2.017 2.146
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): 2.339 2.025
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): 2.285 2.204
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): 2.333 1.974
BFI (2009): BFI-level 1
Scopus rating (2009): 2.136 1.796
BFI (2008): BFI-level 2
Scopus rating (2008): 1.978 1.752
Scopus rating (2007): 1.597 1.498
Scopus rating (2006): 1.807 2.245
Scopus rating (2005): 1.661 1.86
Scopus rating (2004): 1.829 1.872
Scopus rating (2003): 1.659 1.629
Scopus rating (2002): 1.964 1.451
Scopus rating (2001): 1.134 1.524
Scopus rating (2000): 1.112 0.959
Scopus rating (1999): 0.869 1.052
Original language: English

DOIs:

10.1016/j.jpowsour.2010.10.102

Source: orbit

Source-ID: 272023

Publication: Research - peer-review › Journal article – Annual report year: 2010

Optimizing the Performance of Porous Electrochemical Cells for Flue Gas Purification using the DOE method

The DOE model was used to improve the performance of cells for electrochemical gas purification. Three factors were chosen: the amount of graphite, the Lanthanum Strontium Manganate/Gadolinium-doped Cerium oxide weight % ratio, and the Lanthanum Strontium Manganate pre-calcination temperature (with or without Lanthanum Strontium Manganate calcinated at 1000 °C). The effects of the following physical properties were measured: porosity, pore size, shrinkage, and conductivity. The sintered tapes were also characterized with scanning electron microscopy. Graphite was added as a pore former. The work shows, that a change in a factor not only changes the performance property that one would expect, but also influence other properties.

General information

State: Published

Organisations: Ceramic processing, Fuel Cells and Solid State Chemistry Division, Risø National Laboratory for Sustainable Energy, Electrochemistry

Authors: Andersen, K. B. (Intern), Nygaard, F. B. (Intern), He, Z. (Intern), Menon, M. (Intern), Kammer Hansen, K. (Intern)

Keywords: (Fuel Cells and Hydrogen, Flue gas purification)

Pages: 903-911

Publication date: 2011

Main Research Area: Technical/natural sciences

Publication information

Journal: Ceramics International

Volume: 37

Issue number: 3

ISSN (Print): 0272-8842

Ratings:

BFI (2015): BFI-level 1

Scopus rating (2015): 0.865 1.253

BFI (2014): BFI-level 1

Scopus rating (2014): 0.887 1.662
BFI (2013): BFI-level 1
Scopus rating (2013): 0.818 1.572
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): 0.814 1.776
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): 0.912 1.774
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): 0.859 1.307
BFI (2009): BFI-level 1
Scopus rating (2009): 0.934 1.481
BFI (2008): BFI-level 1
Scopus rating (2008): 0.856 1.642
Scopus rating (2007): 0.896 1.432
Scopus rating (2006): 0.794 1.226
Scopus rating (2005): 0.521 1.002
Scopus rating (2004): 0.672 1.49
Scopus rating (2003): 0.695 0.999
Scopus rating (2002): 0.631 0.875
Scopus rating (2001): 0.553 0.844
Scopus rating (2000): 0.48 0.772
Scopus rating (1999): 0.507 0.797
Original language: English
Electronic versions:
Optimizing the performance_kkha.pdf
DOIs:
10.1016/j.ceramint.2010.11.006
Source: orbit
Source-ID: 268296
Publication: Research - peer-review › Journal article – Annual report year: 2011

Densification and Grain Growth during Early-stage Sintering of Ce_{0.9}Gd_{0.1}O_{1.95-δ} in Reducing Atmosphere

The present work investigates the processes of densification and grain growth of Ce_{0.9}Gd_{0.1}O_{1.95-δ} (CGO10) during sintering in reducing atmosphere. Sintering variables were experimentally characterized and analyzed using defect chemistry and sintering constitutive laws. Based on the achieved results, the grain size-relative density trajectory, the densification rate, and the grain-growth rate were determined. The activation energies for densification and grain growth were evaluated, and the dominant densification mechanism was clarified. For comparison, the densification behavior of CGO10 during air-sintering was also studied. Accelerated densification was found in earlystage reducing-sintering of CGO10. This might be attributed to the oxygen vacancies generated by the reduction of Ce⁴⁺ to Ce³⁺ in reducing atmosphere, which facilitates the diffusion of ions through the lattice. The densification activation energy of CGO10 in reducing-sintering was evaluated as 290±20 KJ/mol in the relative density range of 0.64 to 0.82, which was much smaller than that of air-sintering (770±40 KJ/mol). The grain-growth activation energy of CGO10 in reducing-sintering was evaluated as 280±20 KJ/mol in the grain size range of 0.34 to 0.70 μm. The present work describes a systematic investigation of reducing-sintering behavior of CGO10, which contributes to the first known determination of the fundamental parameters associated with densification and grain growth during early-stage sintering of CGO10 in reducing atmosphere.

General information

State: Published

Organisations: Ceramic processing, Fuel Cells and Solid State Chemistry Division, Risø National Laboratory for Sustainable Energy, Electroceramics

Authors: He, Z. (Intern), Yuan, H. (Intern), Glasscock, J. (Intern), Chatzichristodoulou, C. (Intern), Phair, J. (Intern), Kaiser, A. (Intern), Ramousse, S. (Intern)

Keywords: (Solid Oxide Fuel Cells, Fuel Cells and hydrogen, Ce_{0.9}Gd_{0.1}O_{1.95-δ} (CGO10), grain growth, densification, reducing atmosphere)

Pages: 3860-3866

Publication date: 2010
Main Research Area: Technical/natural sciences

Publication information

Journal: Acta Materialia

Volume: 58

Issue number: 11

ISSN (Print): 1359-6454

Ratings:

BFI (2015): BFI-level 2

Scopus rating (2015): 3.683 2.861

BFI (2014): BFI-level 2

Scopus rating (2014): 4.054 3.385

BFI (2013): BFI-level 2

Scopus rating (2013): 3.291 2.743

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 2

Scopus rating (2012): 3.372 2.937

ISI indexed (2012): ISI indexed yes

BFI (2011): BFI-level 2

Scopus rating (2011): 3.225 2.833

ISI indexed (2011): ISI indexed yes

BFI (2010): BFI-level 2

Scopus rating (2010): 3.692 2.73

BFI (2009): BFI-level 2

Scopus rating (2009): 3.735 2.629

BFI (2008): BFI-level 2

Scopus rating (2008): 3.646 2.768

Scopus rating (2007): 3.099 3.046

Scopus rating (2006): 3.467 3.13

Scopus rating (2005): 2.971 3.091

Scopus rating (2004): 3.223 3.135

Scopus rating (2003): 3.654 3.31

Scopus rating (2002): 3.824 3.178

Scopus rating (2001): 3.267 2.789

Scopus rating (2000): 2.729 2.205

Scopus rating (1999): 3.191 2.2

Original language: English

DOIs:

10.1016/j.actamat.2010.03.046

Source: orbit

Source-ID: 255235

Publication: Research - peer-review › Journal article – Annual report year: 2010

Improvement of Niobium Doped SrTiO₃ by Nanostructuring

General information

State: Published

Organisations: Thermo Ceramics, Fuel Cells and Solid State Chemistry Division, Risø National Laboratory for Sustainable Energy, Ceramic processing, Fuel Cells and Solid State Chemistry Division. Management

Authors: Sonne, M. (Intern), Van Nong, N. (Intern), He, Z. (Intern), Pryds, N. (Intern), Linderoth, S. (Intern)

Keywords: (Magnetic refrigeration)

Pages: 175-178

Publication date: 2010

Host publication information

Title of host publication: Proceedings

Main Research Area: Technical/natural sciences

Conference: 8th European Conference on Thermoelectrics, Como, Italy, 22/09/2010 - 22/09/2010

Electronic versions:

Sonne_paper].pdf

Source: orbit

Source-ID: 275397

Publication: Research - peer-review › Article in proceedings – Annual report year: 2011

Processing and Characterization of ZnO-based Thermoelectric Materials

General information

State: Published

Organisations: Ceramic processing, Fuel Cells and Solid State Chemistry Division, Risø National Laboratory for Sustainable Energy, Thermo Ceramics, Fuel Cells and Solid State Chemistry Division. Management

Authors: He, Z. (Intern), Van Nong, N. (Intern), Sonne, M. (Intern), Pryds, N. (Intern), Linderoth, S. (Intern)

Keywords: (Magnetic refrigeration)

Pages: 274-277

Publication date: 2010

Host publication information

Title of host publication: Proceedings

Main Research Area: Technical/natural sciences

Conference: 8th European Conference on Thermoelectrics, Como, Italy, 22/09/2010 - 22/09/2010

Electronic versions:

Zeming He_paper.pdf

Source: orbit

Source-ID: 275398

Publication: Research - peer-review › Article in proceedings – Annual report year: 2011

Sintering behavior of $\text{Ce}_{0.9}\text{Gd}_{0.1}\text{O}_{1.95-\delta}$ in reducing atmosphere

General information

State: Published

Organisations: Electroceramics, Fuel Cells and Solid State Chemistry Division, Risø National Laboratory for Sustainable Energy, Ceramic processing

Authors: Kaiser, A. (Intern), Phair, J. (Intern), Foghmoes, S. P. V. (Intern), Ramousse, S. (Intern), He, Z. (Intern)

Keywords: (Solid Oxide Fuel Cells, Fuel Cells and Hydrogen)

Number of pages: 454

Pages: 3-11

Publication date: 2010

Host publication information

Title of host publication: Advances in Sintering Science and Technology

Volume: 209

Publisher: Wiley

ISBN (Print): 978-0-470-40849-0

Series: Ceramic Transactions

ISSN: 1042-1122

Main Research Area: Technical/natural sciences

Conference: International conference on sintering, La Jolla, CA (US), 16-20 Nov., 01/01/2009

DOIs:

10.1002/9780470599730.ch1

Source: orbit

Source-ID: 266593

Publication: Research - peer-review › Article in proceedings – Annual report year: 2010

Sintering effect on material properties of electrochemical reactors used for removal of nitrogen oxides and soot particles emitted from diesel engines

In the present work, 12-layered electrochemical reactors (comprising five cells) with a novel configuration including supporting layer lanthanum strontium manganate (LSM)-yttria stabilised zirconia (YSZ), electrode layer LSM-gadolinia-doped cerium oxide (CGO) and electrolyte layer CGO were fabricated via the processes of slurry preparation, tape casting and lamination and sintering. The parameters of porosity, pore size, pore size distribution, shrinkage, flow rate of the sintered reactors and the electrical conductivities of the supporting layer and the electrode in the sintered reactors were characterised. The effect of sintering temperature on microstructures and properties of the sintered samples was discussed, and 1,250 °C was determined as the appropriate sintering temperature for reactor production based on the

performance requirements for applications. Using the present ceramic processing route, porous, flat and crack-free electrochemical reactors were successfully achieved. The produced electrochemical reactors have the potential application in the removal of NO_x and soot particles emitted from the diesel engines.

General information

State: Published

Organisations: Ceramic processing, Fuel Cells and Solid State Chemistry Division, Risø National Laboratory for Sustainable Energy, Electroceramics, Electrochemistry

Authors: He, Z. (Intern), Andersen, K. B. (Intern), Keel, L. (Intern), Nygaard, F. B. (Intern), Bonanos, N. (Intern), Menon, M. (Intern), Kammer Hansen, K. (Intern)

Keywords: (Fuel Cells and hydrogen, Flue gas purification)

Pages: 636-642

Publication date: 2010

Main Research Area: Technical/natural sciences

Publication information

Journal: Fuel Cells

Volume: 10

Issue number: 4

ISSN (Print): 1615-6846

Ratings:

BFI (2015): BFI-level 1

Scopus rating (2015): 0.723 0.769

BFI (2014): BFI-level 1

Scopus rating (2014): 0.649 0.814

BFI (2013): BFI-level 1

Scopus rating (2013): 0.845 0.849

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 1

Scopus rating (2012): 1.257 0.994

ISI indexed (2012): ISI indexed yes

BFI (2011): BFI-level 1

Scopus rating (2011): 1.671 1.236

ISI indexed (2011): ISI indexed yes

BFI (2010): BFI-level 1

Scopus rating (2010): 1.602 1.212

BFI (2009): BFI-level 1

Scopus rating (2009): 1.318 1.063

BFI (2008): BFI-level 1

Scopus rating (2008): 1.511 1.233

Scopus rating (2007): 1.343 1.085

Scopus rating (2006): 1.197 1.29

Scopus rating (2005): 0.453 0.529

Scopus rating (2004): 0.212 0.147

Original language: English

DOIs:

10.1002/fuce.200900090

Bibliographical note

The definitive version is available at www3.interscience.wiley.com

Source: orbit

Source-ID: 257995

Publication: Research - peer-review › Journal article – Annual report year: 2010

Visualization of Electronically Conducting Paths in Solid Oxide Fuel Cells by Low-voltage SEM and Charge Contrast

General information

State: Published

Organisations: Electroceramics, Fuel Cells and Solid State Chemistry Division, Risø National Laboratory for Sustainable Energy, Electrochemistry, Ceramic processing

Authors: Thydén, K. T. S. (Intern), Ramos, T. (Intern), Knibbe, R. (Intern), Mogensen, M. B. (Intern), He, Z. (Intern)
Keywords: (Solid Oxide Fuel Cells, Fuel Cells and Hydrogen)
Publication date: 2010

Host publication information

Title of host publication: Abstracts

Main Research Area: Technical/natural sciences

Conference: Scandinavian Society for Electron Microscopy Conference, Stockholm (SE), 8-10 Jun, 01/01/2010

Links:

[http://dlib.dtu.dk/registration/download/28825.843952869BAF7BB3A7F4C811A77270EF1291107505415.Poster_scandem_2010\(3\).pdf](http://dlib.dtu.dk/registration/download/28825.843952869BAF7BB3A7F4C811A77270EF1291107505415.Poster_scandem_2010(3).pdf)

http://dlib.dtu.dk/registration/download/28825.843952869BAF7BB3A7F4C811A77270EF1291107505415.K_Thyden_scan dem2010_abstract.pdf

Source: orbit

Source-ID: 270659

Publication: Research > Conference abstract in proceedings – Annual report year: 2010

Fabrication and characteristics of alumina-iron functionally graded materials

In the present work, five-layered alumina-iron functionally graded materials (FGMs) were fabricated via a simple route of die pressing and pressureless sintering. The shrinkage differences among the layers in the FGM were minimized by particle size selection and processing control. The microstructure and the composition of the prepared component were studied, and its flexural strength, fracture toughness, and fracture energy were tested and evaluated. The relative density and the Vickers hardness of each layer in the graded material were also measured. The correlation between microstructure and composition and mechanical properties was discussed. Flat, crack-free, and relatively high-density gradient components were obtained from this work. Compared to monolithic alumina ceramic, the remarkable improvement on fracture toughness and fracture energy of the investigated graded material system was achieved due to the toughening effect of iron and the crack deflection at the weak interfaces. This work provides a cost-effective manner to fabricate ceramic-metal gradient composites for armor applications.

General information

State: Published

Organisations: Ceramic processing, Fuel Cells and Solid State Chemistry Division, Risø National Laboratory for Sustainable Energy, Nanyang Technological University, DSO National Laboratories

Authors: He, Z. (Intern), Ma, J. (Ekstern), Tan, G. (Ekstern)

Keywords: (Solid Oxide Fuel Cells, Fuel Cells and hydrogen)

Pages: 815-818

Publication date: 2009

Main Research Area: Technical/natural sciences

Publication information

Journal: Journal of Alloys and Compounds

Volume: 486

Issue number: 1-2

ISSN (Print): 0925-8388

Ratings:

BFI (2015): BFI-level 1

Scopus rating (2015): 1.006 1.393

BFI (2014): BFI-level 1

Scopus rating (2014): 1.158 1.676

BFI (2013): BFI-level 1

Scopus rating (2013): 1.072 1.623

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 1

Scopus rating (2012): 1.258 1.598

ISI indexed (2012): ISI indexed yes

BFI (2011): BFI-level 1

Scopus rating (2011): 1.165 1.489

ISI indexed (2011): ISI indexed yes

BFI (2010): BFI-level 1

Scopus rating (2010): 1.07 1.223

BFI (2009): BFI-level 1

Scopus rating (2009): 0.957 1.337

BFI (2008): BFI-level 1

Scopus rating (2008): 0.894 1.21

Scopus rating (2007): 0.87 1.212

Scopus rating (2006): 0.879 1.144

Scopus rating (2005): 1.059 1.217

Scopus rating (2004): 0.908 1.355

Scopus rating (2003): 0.91 1.048

Scopus rating (2002): 0.797 1.038

Scopus rating (2001): 0.597 0.964

Scopus rating (2000): 0.754 0.948

Scopus rating (1999): 0.737 0.93

Original language: English

DOIs:

10.1016/j.jallcom.2009.07.073

Source: orbit

Source-ID: 253528

Publication: Research - peer-review › Journal article – Annual report year: 2009

Investigation on low room-temperature resistivity Cr/(Ba_{0.85}Pb_{0.15})TiO₃ positive temperature coefficient composites

Low room-temperature resistivity positive temperature coefficient (PTC) Cr/(Ba_{0.85}Pb_{0.15})TiO₃ composites were produced via a reducing sintering and a subsequent oxidation treatment. The effects of metallic content and processing conditions on materials resistivity–temperature properties were discussed. Using these special processes, the prepared composite with 20 wt% Cr possessed low room-temperature resistivity (2.96 Ω cm at 25 °C) and exhibited PTC effect (resistivity jump of 10), which is considered as a promising candidate for over-current protector when working at low voltage. The grain-boundary potential barrier of the prepared PTC composite was evaluated based on the Heywang model and the experimental data. The potential barrier was from 0.00 to 0.11 V in the temperature range of 180–270 °C, which is believed to be the first reported intrinsic parameter for PTC composite, determined from the experiment.

General information

State: Published

Organisations: Ceramic processing, Fuel Cells and Solid State Chemistry Division, Risø National Laboratory for Sustainable Energy, Nanyang Technological University, Tianjin University

Authors: He, Z. (Intern), Ma, J. (Ekstern), Qu, Y. (Ekstern), Wang, C. (Ekstern)

Keywords: (Solid Oxide Fuel Cells, Fuel Cells and hydrogen)

Pages: 116-119

Publication date: 2009

Main Research Area: Technical/natural sciences

Publication information

Journal: Materials Science & Engineering: B. Solid-state Materials for Advanced Technology

Volume: 164

Issue number: 2

ISSN (Print): 0921-5107

Ratings:

Scopus rating (2015): 0.723 1.05

Scopus rating (2014): 0.809 1.346

Scopus rating (2013): 0.754 1.251

Scopus rating (2012): 0.781 1.162

Scopus rating (2011): 0.747 1.075

Scopus rating (2010): 0.907 1.058

Scopus rating (2009): 0.935 1.183

BFI (2008): BFI-level 1

Scopus rating (2008): 0.921 1.161

Scopus rating (2007): 0.912 0.998

Scopus rating (2006): 0.813 0.98

Scopus rating (2005): 0.794 0.987

Scopus rating (2004): 0.723 0.798

Scopus rating (2003): 0.857 0.828

Scopus rating (2002): 0.777 0.829

Scopus rating (2001): 0.818 0.807

Scopus rating (2000): 0.666 0.669

Scopus rating (1999): 0.776 0.733

Original language: English

DOIs:

10.1016/j.mseb.2009.08.003

Source: orbit

Source-ID: 251580

Publication: Research - peer-review › Journal article – Annual report year: 2009

Processing and characterization of porous electrochemical cells for flue gas purification

In the present work, porous electrode materials lanthanum strontium manganate (LSM)-gadolinium-doped cerium oxide (CGO) and electrochemical cells LSM-CGO+CGO were fabricated via the processes of slurry preparation, tape casting and lamination, and sintering. Graphite, wheat starch, and polyamide powders were used as pore formers, respectively, in order to investigate their effects on shrinkage, flow rate, porosity, and average pore size of the sintered samples. The observation from scanning electronic microscope (SEM) revealed different microstructures caused by different pore formers. Porous, flat, and crack-free electrochemical cells were successfully achieved using the present ceramic processing route. The produced cells could potentially be used for flue gas purification.

General information

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Organisations: Ceramic processing, Fuel Cells and Solid State Chemistry Division, Risø National Laboratory for Sustainable Energy, Electrochemistry

Authors: He, Z. (Intern), Andersen, K. B. (Intern), Keel, L. (Intern), Nygaard, F. B. (Intern), Menon, M. (Intern), Kammer Hansen, K. (Intern)

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Electrochemical cell for removing NO_x and soot from diesel exhaust

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Authors: Andersen, K. B. (Intern), He, Z. (Intern), Werchmeister, R. M. L. (Intern), Keel, L. (Intern), Nygaard, F. B. (Intern), Menon, M. (Intern), Kammer Hansen, K. (Intern)

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Sintering behaviour of Ce_{0.9}Gd_{0.1}O_{1.95-δ}; in reducing atmosphere

General information

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Organisations: Electroceramics, Fuel Cells and Solid State Chemistry Division, Risø National Laboratory for Sustainable Energy, Ceramic processing

Authors: Kaiser, A. (Intern), Phair, J. (Intern), Foghmoes, S. P. V. (Intern), Ramousse, S. (Intern), He, Z. (Intern)

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