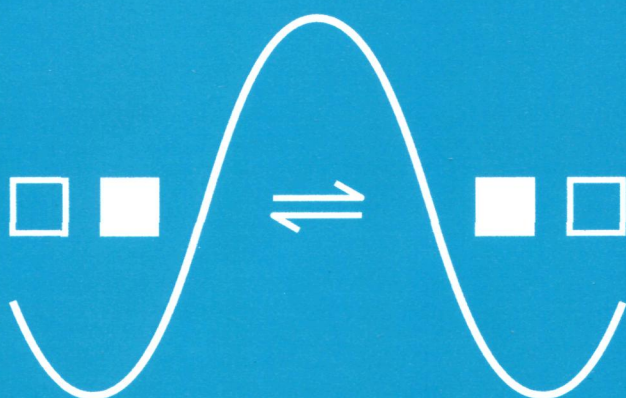


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DIFFUSION & REACTIONS



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Solid State Ionics

Volume 234, Pages 1-52 (7 March 2013)

Editorial Board

Page IFC

Electrochemical reduction of NiO in a composite electrode

Original Research Article

Pages 1-10

Qiang Hu, Torben Jacobsen, Karin Vels Hansen, Mogens Mogensen

Highlights

► The kinetics of electrochemical reduction of NiO is revealed. ► The morphology variation of NiO during electrochemical reduction is provided. ► The impedance spectra during the electrochemical reduction of NiO are studied.

High purity H₂/H₂O/Ni/SZ electrodes at 500 °C

Original Research Article

Pages 11-18

J. Høgh, K.V. Hansen, K. Norrman, I. Chorkendorff, T. Jacobsen, M. Mogensen

Highlights

► Segregation of impurities lower the electrode performance ► New hypothesis for positive effect of “blackening” on the Ni/SZ-electrode ► Determination of impurity layer thickness on stabilized zirconia ► Sulfur coverage on Ni in hydrogen atmosphere

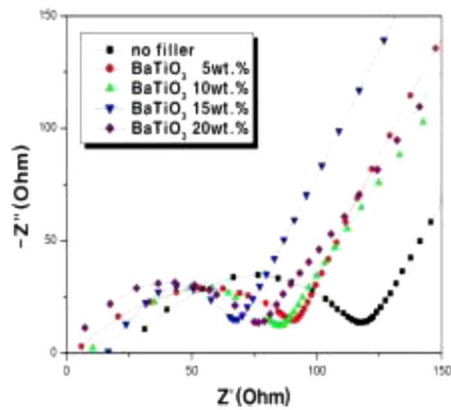
Effect of nano-sized barium titanate addition on PEO/PVDF blend-based composite polymer electrolytes

Original Research Article

Pages 19-24

Lyungyu Lee, Soo-Jin Park, Seok Kim

Graphical abstract



Highlights

- ▶ Polymer blend composite electrolytes were prepared by adding various filler contents of BaTiO₃
- ▶ Nanosize fillers influenced the structural, morphological, and conducting properties
- ▶ The polymer composites with filler showed the higher conductivity than pristine sample
- ▶ Improved conductivity was dependent on the dispersion and crystallinity changes due to filler effect.

Microstructure degradation of YSZ in Ni/YSZ anodes of SOFC operated in phosphine-containing fuels

Original Research Article

Pages 25-32

Yun Chen, Song Chen, Gregory Hackett, Harry Finklea, John Zondlo, Ismail Celik, Xueyan Song, Kirk Gerdes

Highlights

- ▶ Ni_xP_y are formed in samples operated in syngas or hydrogen containing phosphine.
- ▶ Pitting corrosion of Ni is observed in syngas-fueled, not in H₂ fueled samples.
- ▶ A YPO₄ secondary phase is observed only in the syngas/phosphine system.
- ▶ Y enrichment/depletion occurs and *t*-YSZ ribbons form along the Ni/YSZ boundaries.

Area specific resistance of the scale formed on Crofer 22APU ferritic steel in atmospheres containing SO₂

Original Research Article

Pages 33-39

Zbigniew Żurek, Tomasz Brylewski, Artur Jaroń, Edyta Chmura

Highlights

► Oxidation of Crofer 22APU in air + 1% SO₂ at 1073 K yielded a chromia-MnCr₂O₄ scale. ► Sulfide is observed in the outer layer of the MnCr₂O₄ spinel. ► Sulfide present in the scale does not significantly affect ASR of Crofer 22APU. ► ASR of samples containing sulfide is suitable for SOFC interconnect application.

Electrochemical performance of lithium gel polymer battery with nanostructured sulfur/carbon composite cathode

Original Research Article

Pages 40-45

Yan Zhao, Yongguang Zhang, Zhumabay Bakenov, P. Chen

Highlights

► PVDF-HFP/PMMA based gel polymer electrolyte offers the high ionic conductivity. ► Gel polymer electrolytes show a good thermal and electrochemical stability. ► The S/KB composite cathode is prepared by wet ball-milling with heat-treatment. ► The Li/S battery with gel polymer electrolyte shows a good cycle performance.

AFM tip-induced metal particle formation on laser-structured and on unstructured surfaces of solid-state ion conductors

Original Research Article

Pages 46-50

Julia Kruempelmann, Hendrik Reinhardt, Chihiro Yada, Fabio Rosciano, Norbert Hampp, Bernhard Roling

Highlights

► Metal particles were deposited on solid-state ion conductors. ► Metallic silver particles work perfectly as electrodes. ► Resistive layer between metallic lithium particle and lithium ion conducting glass ceramic ► Modification of silver glass surface by laser ablation technique ► Metallic silver was arranged in band-like structures for band-electrode application.

Calendar

Page 51