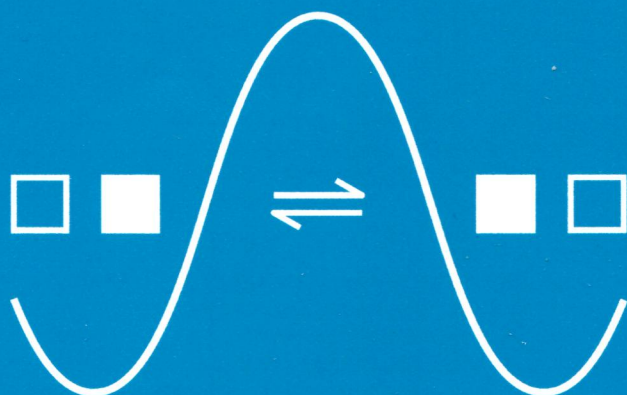


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# SOLID STATE IONICS

## DIFFUSION & REACTIONS



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# Solid State Ionics

## Volume 237, Pages 1-56 (15 April 2013)

### **Editorial Board**

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### ***Electrochemical synthesis and lithium storage performance of Sn-Cu alloy on three-dimensional porous Cu substrate***

Original Research Article

Pages 1-7

Xiao-Yong Fan, Yong-Xin Shi, Jing-Jing Wang, Jing Wang, Xiao-Yuan Shi, Lei Xu, Lei Gou, Dong-Lin Li

#### **Highlights**

► 3D porous Cu with stable and interconnected pores with the size of ~3 mm was produced by electroless plating. ► Sn-Cu alloy was electrodeposited in the 3D porous Cu and delivered excellent cycleability and large high-power capacity thanks to its porous structure. ► The porous structure can reversibly expand and contract during charging/discharging owing to the pores can accommodate the volume variation.

### ***Segregation to the grain boundaries in YSZ bicrystals: A Molecular Dynamics study***

Original Research Article

Pages 8-15

Robert L. González-Romero, Juan J. Meléndez, D. Gómez-García, F.L. Cumbreira, A. Domínguez-Rodríguez

#### **Highlights**

► Yttrium segregation to a  $\Sigma 5$  GB in YSZ by elastic misfit effect has been studied. ► Segregated cations accumulate preferentially at the GB planes. ► Segregation causes a local depletion of the number of zirconium and oxygen vacancies. ► Segregation increases the number of second neighbors for  $Y'_{Zr}-Y'_{Zr}$  pairs at the GBs. ► Segregation affects bulk diffusion of oxygen, but not GB diffusion.

### ***Three-dimensional microstructural mapping of poisoning phases in the Neodymium Nickelate solid oxide fuel cell cathode***

Original Research Article

Pages 16-21

William M. Harris, Jeffrey J. Lombardo, Matthew B. DeGostin, George J. Nelson, Henning Luebbe, J. Andreas Schuler, Jan Van herle, Joy C. Andrews, Yijin Liu, Piero Pianetta, Yu-Chen Karen Chen, Jun Wang, Wilson K.S. Chiu

#### **Highlights**

► Investigated 3-D microstructure of neodymium nickelate for fuel cell cathode. ► Three dimensional imaging performed using synchrotron-based x-ray nanotomography. ► Silicon contamination during fabrication created significant poisoning phases. ► 3-D imaging reveals detailed detrimental phases. ► Poisoning phases are expected to be detrimental to electrode performance.

## ***Electrochemical performances of vitreous materials in the system $\text{Li}_2\text{O}-\text{V}_2\text{O}_5-\text{P}_2\text{O}_5$ as electrode for lithium batteries***

Original Research Article

Pages 22-27

G. Delaizir, V. Seznec, P. Rozier, C. Surcin, P. Salles, M. Dollé

### ***Highlights***

► Electrochemical performance of glass in the system  $\text{Li}_2\text{O}-\text{V}_2\text{O}_5-\text{P}_2\text{O}_5$  is reported. ► Capacity of  $80 \text{ mAh g}^{-1}$  is obtained in the [3–4.5 V] range. ► Amorphous structure of glass remains upon cycling.

## ***Improved rate capability of lithium-ion batteries with Ag nanoparticles deposited onto silicon/carbon composite microspheres as an anode material***

Original Research Article

Pages 28-33

Eunji Kwon, Hyung-Seok Lim, Yang-Kook Sun, Kyung-Do Suh

### ***Highlights***

► Si/C composite microspheres were prepared by solution polymerization. ► Ag nanoparticles are evenly decorated onto the surface of Si/C microspheres. ► Ag/Si/C composite electrode shows higher capacity and improved rate capability. ► Ag nanoparticles decrease contact resistance between particles and electrolyte.

## ***Synthesis and properties of $\text{LiMn}_2\text{O}_4$ from hydrazine hydrate reduced electrolytic manganese dioxide***

Original Research Article

Pages 34-39

Donglei Guo, Zhaorong Chang, Bao Li, Hongwei Tang, Xiao-Zi Yuan, Haijiang Wang

### ***Highlights***

►  $\gamma\text{-Mn}_3\text{O}_4$  can be obtained from EMD reduced by hydrazine hydrate. ► The impurity ions of  $\gamma\text{-Mn}_3\text{O}_4$  can mostly be reduced after the reduction reaction. ► The electrochemical properties of  $\text{LiMn}_2\text{O}_4$  synthesized by  $\gamma\text{-Mn}_3\text{O}_4$  are better.

## ***Molecular dynamics and electric conductivity process efficiency in an anhydrous system. $^1\text{H}$ NMR study of benzimidazolium azelate***

Original Research Article

Pages 40-45

M. Zdanowska-Frańczek, K. Hołderna-Natkaniec, P. Ławniczak, Cz. Pawlaczyk

## ***Investigation of sodium ion depletion layers in electrothermally poled bioglasses by combining impedance spectroscopy with ToF-SIMS depth profiling***

Original Research Article

Pages 46-49

Julia Zakel, Vivane Heddinga, Sven Ole Steinmüller, Bernhard Roling

***Electrode contributions to the impedance of a high-energy density Li-ion cell designed for EV applications***

Original Research Article

*Pages 50-55*

Isabel Jiménez Gordon, Sylvie Grugeon, Aurélie Débart, Gwennaëlle Pascaly, Stéphane Laruelle

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