

**MATERIALS RESEARCH SOCIETY  
SYMPOSIUM PROCEEDINGS VOLUME 1148**

# **Solid-State Chemistry of Inorganic Materials VII**

December 1-5, 2008  
Boston, Massachusetts, USA

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571  
[www.proceedings.com](http://www.proceedings.com)

**ISBN: 978-1-61567-774-0**

**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2008) by the Materials Research Society  
All rights reserved.

Printed by Curran Associates, Inc. (2009)

For permission requests, please contact the Materials Research Society  
at the address below.

Materials Research Society  
Proceedings  
506 Keystone Dr.  
Warrendale, PA 15086

Phone: 724-779-3004 x 531  
Fax: 724-779-4396

[eproceedings@mrs.org](mailto:eproceedings@mrs.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [currans@proceedings.com](mailto:currans@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

## TABLE OF CONTENTS

<b>Neutron Studies of the Iron-based Family of High Tc Magnetic Superconductors .....</b>	1
<i>J.W. Lynn</i>	
<b>New Aspects of Borate Chemistry under High-Pressure .....</b>	6
<i>H. Huppertz</i>	
<b>Topochemical Modification of Layered Perovskites .....</b>	12
<i>J. Choi, E.A. Josepha, X. Zhang, J.B. Wiley</i>	
<b>Noncentrosymmetry in Mixed Metal Oxide-Fluorides: Can We Control It? .....</b>	18
<i>R.A.F. Pinlac, M.R. Marvel, J.J.M. Lesage, K.R. Poeppelmeier</i>	
<b>Driving Electrons to Anti-Bonding States: On the Synthesis of New Niobium Cluster Chlorides by Electrochemical Lithium Intercalation .....</b>	30
<i>F. Garcia-Alvarado, A. Kuhn, E. Gonzalo, H.J. Meyer</i>	
<b>Electronic Structure, Magnetism and Spin-Fluctuations in Fe-As Based Superconductors .....</b>	36
<i>D.J. Singh, M. Du, L. Zhang, A. Subedi, J. An</i>	
<b>Sol-gel Synthesis and Characterization of YAG:Ce<sup>3+</sup> Phosphors by Various Pre-firing Temperatures .....</b>	45
<i>K. Hwang, S. Hwangbo, J. Jeong, Y.H. Lee, J. Kim</i>	
<b>A Study of [Cr-O<sub>6</sub>]-based Rutile Analogues by Means of EELS.....</b>	50
<i>A.M. Arevalo-Lopez, E. Castillo-Martinez, M.A. Alario-Franco</i>	
<b>Swelling of Layered Potassium Ruthenate into Nanosheet Crystallites .....</b>	56
<i>K. Fukuda, H. Kato, W. Sugimoto, Y. Takasu</i>	
<b>Fabrication of Electrically Active Si-based Thin Films by Pulsed Laser Deposition of SiO/C Dual Targets .....</b>	62
<i>Y. Ono, Y. Kato, Y. Akita, M. Hosaka, N. Shiraishi, M. Yamaguchi, O. Sakata, M. Yoshimoto</i>	
<b>Spin, Orbital and Lattice Coupling in the Double Perovskite Ba<sub>2</sub><sup>154</sup>SmMoO<sub>6</sub> .....</b>	68
<i>A.C. McLaughlin</i>	
<b>Ultrathin oxide films: CaO layers on BaO and SrO.....</b>	76
<i>C.E. Mohn, N.L. Allan, J.H. Harding</i>	
<b>Single-Crystal Thin Films of SrFeO<sub>2</sub> and LaNiO<sub>2</sub> with Infinite-Layer Structures .....</b>	82
<i>Y. Shimakawa, S. Inoue, M. Kawai, N. Ichikawa, M. Mizumaki, N. Kawamura</i>	
<b>Synthesis and Structures of Novel Lanthanide Benzenedicarboxylates .....</b>	88
<i>P. Gil-Mateo, X. Wang, A.J. Jacobson</i>	
<b>Synthesis of Porous Biomorphic Cu/CeO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> by Using Cotton as Templates.....</b>	94
<i>K.L. Chiu, F.L. Kwong, J. Jia, J. Li, H.L. Ng</i>	

<b>Single Step Synthesis of <math>Y_2O_3:Eu^{3+}</math> Nanophosphor Prepared by Flame Spray Pyrolysis.....</b>	100
<i>J.S. Lee, S. Kim, M.H. Oh, M.B. Ranade, R.K. Singh</i>	
<b>Porosity through Reduction in Metal Oxides.....</b>	106
<i>D.P. Shoemaker, S.A. Corr, R. Seshadri</i>	
<b>Organically-functionalised Supertetrahedra as Building Blocks for Hybrid Materials.....</b>	114
<i>P. Vaqueiro, M.L. Romero</i>	
<b>Mixed Valant Rhodates .....</b>	120
<i>H. Mizoguchi, A.W. Sleight, M.A. Subramanian</i>	
<b>Fabrication and Characterization of Electrically Functional Lanthanum Hexaboride Thin Films on Ultrasmooth Sapphire Substrates .....</b>	125
<i>Y. Kato, Y. Ono, Y. Akita, M. Hosaka, N. Shiraishi, N. Tsuchimine, S. Kobayashi, M. Yoshimoto</i>	
<b>Structural Complexity in AA'MM'O<sub>6</sub> Perovskites: A Transmission Electron Microscopy Study .....</b>	131
<i>S. Garcia-Martin, E. Urones-Garrote, M.C. Knapp, G. King, P.M. Woodward</i>	
<b>Solution-Combustion Synthesis and Study of <math>\gamma\text{-Fe}_{2-x}\text{Cr}_x\text{O}_3</math> (<math>0.75 \leq x \leq 1.25</math>) Maghemite-like Materials .....</b>	137
<i>M. Garcia-Guaderrama, M.A. Alario-Franco, O. Blanco, E. Moran</i>	
<b>Ion-exchange Reactions of A Layered Aluminophosphate, [AlPO<sub>4</sub>(OH)](C<sub>6</sub>H<sub>5</sub>C<sub>2</sub>H<sub>4</sub>NH<sub>3</sub>).....</b>	143
<i>M. Mesaki, F. Tando, S. Tahara, Y. Sugahara</i>	
<b>Single Source Routes for the Deposition of Metal Chalcogenide Materials.....</b>	149
<i>P. O'Brien, M.A. Malik</i>	
<b>Probing the Molecular Level Structure in Aluminum Containing Bifunctional Mesoporous Organosilicas: A Solid-State NMR Study.....</b>	161
<i>J.T.A. Jones, P.V. Wiper, Y.Z. Khimyak</i>	
<b>Deposition of Phosphorus Free PbSe Thin Film by Aerosol Assisted Chemical Vapour Deposition.....</b>	167
<i>J. Akhtar, J.C. Bruce, M.A. Malik, K.R. Koch, M. Afzaal, P. O'Brien</i>	
<b>Rational Design of New Oxo Centred tetrahedra Bi-based Compounds by Electron Microscopy.....</b>	173
<i>M. Colmont, O. Mentre, M. Huve</i>	
<b>Competing Orders in FeAs-based Superconductors .....</b>	179
<i>N.L. Wang</i>	
<b>Two-Step Intercalation Route to New Double- and Triple-Layered Perovskites.....</b>	184
<i>J. Choi, J.B. Wiley</i>	
<b>The Effect of Cr<sub>2</sub>O<sub>3</sub>/ZnO on Hydrogen Desorption Properties of MgH<sub>2</sub> .....</b>	190
<i>A. Patah, A. Takasaki, J.S. Szymyd</i>	

<b>Magneto-Elastic Interactions in Complex Materials.....</b>	196
<i>J.L. Musfeldt, J. Cao, L.I. Vergara, A.P. Litvinchuk, Y.J. Wang, S. Park, S.W. Cheong</i>	
<b>Investigation of Zeolites as Templates for the Formation of Nickel Nanowires .....</b>	202
<i>L. Quinones, J. Huertas, M.M. Martinez-Inesta</i>	
<b>Light Scattering by White-Emitting CdSe Nanocrystals and Traditional YAG:Ce<sup>3+</sup> Phosphor Particles .....</b>	208
<i>J.D. Gosnell, S.M. Weiss</i>	
<b>Plasma Synthesized Boron Nano-sized Powder: The Effect of Processing Conditions on the Crystallographic and Microstructural Properties.....</b>	214
<i>J.V. Marzik, R.C. Lewis, M.E. Tillman, Y.Q. Wu, D.K. Finnemore, M. Rindfleisch, M. Tomsic, J. Yue, W.J. Croft</i>	
<b>Advanced Nitrides and Neutrons: New Nitridic Itinerant Ferromagnets and the High-Performance Time-of-Flight Neutron Diffractometer POWTEX .....</b>	220
<i>A. Houben, W. Schweika, T. Bruckel, R. Dronskowski</i>	
<b>Direct Current Electro-Deposition of Ternary Fe<sub>48</sub>Co<sub>36</sub>Ni<sub>16</sub> Alloy Nanorod Arrays .....</b>	231
<i>S. Xue, C. Cao, M. Li, X. Xu, J.F. Chiang</i>	
<b>Octahedral Metal Clusters as Molecular Building Blocks of Heterotrimetallic Super Expanded Prussian Blue Type Frameworks .....</b>	238
<i>J. Zhang, S.A. Gamboa, B.J. Davis, A. Lachgar</i>	
<b>Revisiting the High Pressure Ternary Oxides of Cr(IV): Structure and Microstructure .....</b>	249
<i>E. Castillo-Martinez, A.M. Arevalo-Lopez, M.A. Alario-Franco</i>	
<b>Preparation and Characterization of CeO<sub>2</sub> Nanoparticles .....</b>	261
<i>R.K. Hailstone, A.G. DiFrancesco, K.J. Reed</i>	
<b>Synthetic Approaches to Functionalized Chalcogenide Nanotubes .....</b>	265
<i>W. Tremel, A. Yella, M.N. Tahir, M. Panthofer, S. Meuer, R. Zentel</i>	
<b>Structural and Vibrational Studies of Nanoporous Silicon: A Novel Approach Using the Tersoff Interatomic Potential .....</b>	271
<i>J.C. Noyola, A. Valladares, R.M. Valladares, A.A. Valladares</i>	
<b>Structure and Ignition Properties of Nanoheaters Formed by Bimetallic Al-Ni Reactive Nanostructures .....</b>	277
<i>Q. Cui, H. Jogdand, J. Chen, Z. Gu</i>	
<b>Topochemical Manipulation of a Series of Ruddlesden-Popper Layered Perovskites.....</b>	283
<i>E.A. Josepha, J.B. Wiley</i>	
<b>Zn<sub>0.98</sub>Co<sub>0.02</sub>O, Zn<sub>0.99</sub>Al<sub>0.01</sub>O and Zn<sub>0.97</sub>Co<sub>0.02</sub>Al<sub>0.01</sub>O for Pigment, Anti-Infrared and Dilute Magnetic Applications .....</b>	289
<i>H. Serier, O. Toulemonde, M. Gaudon, A. Demourgues</i>	

<b>Synthesis and Thermoelectric Properties of the Pseudo-binary Skutterudites</b>	
<b>CoGe<sub>1.5</sub>Se<sub>1.5</sub> and CoSn<sub>1.5</sub>Te<sub>1.5</sub> .....</b>	294
<i>Q. Lin, M. Smeller, C. Heideman, A.L.E. Smalley, D.C. Johnson</i>	
<b>Author Index</b>	