

Cambridge University Press

978-1-107-41349-8 - Materials Research Society Symposium Proceedings: Volume 494:

Science and Technology of Magnetic Oxides

Editors: Michael F. Hundley, Janice H. Nickel, Ramamoorthy Ramesh and Yoshinori Tokura

Table of Contents

[More information](#)

CONTENTS

Preface	xi
Acknowledgment	xiii
Materials Research Society Symposium Proceedings	xiv

PART I: MATERIALS PROCESSING OF METALLIC MAGNETIC OXIDES

Dry and Wet Etch Processes for NiMnSb, LaCaMnO₃, and Related Materials	3
<i>J. Hong, J.J. Wang, E.S. Lambers, J.A. Caballero, J.R. Childress, S.J. Pearton, K.H. Dahmen, S. von Molnar, F.J. Cadieu, and F. Sharifi</i>	
Epitaxial Growth Mechanism and Physical Properties of Ultrathin Films of La_{0.6}Sr_{0.4}MnO₃	9
<i>Yoshinori Konishi, Masahiro Kasai, Masashi Kawasaki, and Yoshinori Tokura</i>	
Thin-Film Growth and Magnetotransport Study of (La,Sr)MnO₃	15
<i>Takashi Manako, Takeshi Obata, Yuichi Shimakawa, and Yoshimi Kubo</i>	
Crystallinity and Magnetoresistance in Calcium-Doped Lanthanum Manganites	21
<i>E.S. Gillman and K.H. Dahmen</i>	
Microstructural Aspects of Nanocrystalline LiZn Ferrites Densified With Chemically-Derived Additives	27
<i>Yong S. Cho, Vernon L. Burdick, Vasantha R.W. Amarakoon, Elijah Underhill, and Leo Brissette</i>	

PART II: CHARACTERIZATION OF METALLIC MAGNETIC OXIDES

Lattice Deformation and Magnetic Properties in Epitaxial Thin Films of Sr_{1-x}Ba_xRuO₃	35
<i>Noburu Fukushima, Kenya Sano, Tatsuo Shimizu, Kazuhide Abe, and Shuichi Komatsu</i>	
*Magnetic Anisotropy and Lattice Distortions in the Doped Perovskite Manganites	41
<i>Y. Suzuki, H.Y. Hwang, S-W. Cheong, R.B. van Dover, A. Asamitsu, and Y. Tokura</i>	
Evidence for a Jahn-Teller Distortion in the CMR Layered Manganite La_{1.4}Sr_{1.6}Mn₂O₇	53
<i>Despina Louca, G.H. Kwei, and J.F. Mitchell</i>	

*Invited Paper

Cambridge University Press

978-1-107-41349-8 - Materials Research Society Symposium Proceedings: Volume 494:

Science and Technology of Magnetic Oxides

Editors: Michael F. Hundley, Janice H. Nickel, Ramamoorthy Ramesh and Yoshinori Tokura

Table of Contents

[More information](#)

Mn K-Edge X-ray-Absorption-Spectroscopy (XAS) Studies of $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$	59
<i>S.M. Mini, J.F. Mitchell, D.G. Hinks, Ahmet Alatas, D. Rosenmann, C.W. Kimball, and P.A. Montano</i>	
*X-ray-Induced Insulator-Metal Transitions in CMR Manganites	65
<i>V. Kiryukhin, D. Casa, B. Keimer, J.P. Hill, A. Vigliante, Y. Tomioka, and Y. Tokura</i>	
Resonant X-ray Fluorescence Spectroscopy at the V L-Edges of Vanadium Oxides	77
<i>L.C. Duda, C.B. Stagarescu, J.E. Downes, K.E. Smith, and G. Dräger</i>	
Phase Diagram and Anisotropic Transport Properties of $\text{Nd}_{1-x}\text{Sr}_x\text{MnO}_3$ Crystals	83
<i>H. Kuwahara, T. Okuda, Y. Tomioka, T. Kimura, A. Asamitsu, and Y. Tokura</i>	
Stoichiometry and Magnetic Properties of Iron Oxide Films	89
<i>D.V. Dimitrov, G.C. Hadjipanayis, V. Papaefthymiou, and A. Simopoulos</i>	
Paramagnetic Susceptibility of the CMR Compound $\text{La}_{1-x}\text{Ca}_x\text{MnO}_3$	95
<i>D.H. Goodwin, J.J. Neumeier, A.H. Lacerda, and M.S. Torikachvili</i>	
Effect of Domain Structure on the Magnetoresistance of Epitaxial Thin Films of Ferromagnetic Metallic Oxide SrRuO_3	101
<i>R.A. Rao, D.B. Kacedon, and C.B. Eom</i>	
The Local Atomic Structure of $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$: Effects Induced by the Spin-State and Nonmetal to Metal Transitions	107
<i>Despina Louca, J.L. Sarrao, and G.H. Kwei</i>	
Analysis of Cation Valences and Oxygen Vacancies in Magnetoresistive Oxides by Electron Energy-Loss Spectroscopy	113
<i>Z.L. Wang, J.S. Yin, Y. Berta, and J. Zhang</i>	
Negative Magnetoresistance in $(\text{Bi,Pb})_2\text{Sr}_3\text{Co}_2\text{O}_9$ Layered Cobalt Oxides	119
<i>I. Tsukada, T. Yamamoto, M. Takagi, T. Tsubone, and K. Uchinokura</i>	
Surface Morphology and Lattice Misfit in YIG and La:YIG Films Grown by LPE Method on GGG Substrate	125
<i>Duk-Yong Choi and Su-jin Chung</i>	

*Invited Paper

Cambridge University Press

978-1-107-41349-8 - Materials Research Society Symposium Proceedings: Volume 494:
Science and Technology of Magnetic Oxides

Editors: Michael F. Hundley, Janice H. Nickel, Ramamoorthy Ramesh and Yoshinori Tokura

Table of Contents

[More information](#)

**Magnetotransport in Thin Films of $\text{La}_{n-nx}\text{Ca}_{1+nx}\text{Mn}_n\text{O}_{3n+1}$
($n = 2, 3, \text{ and } \infty$)** 131
H. Asano, J. Hayakawa, and M. Matsui

**Micromorphology, Microstructure and Magnetic Properties
of Sputtered Garnet Multilayers** 137
*R. Marcelli, G. Padeletti, N. Gambacorti, M.G. Simeone,
and D. Fiorani*

**Improvement of Thermal Stability of Metal/Oxide
Interface for Electronic Devices** 143
*Yo Ichikawa, Masayoshi Hiramoto, Nozomu Matsukawa, Kenji Iijima,
and Masatoshi Kitagawa*

**Room-Temperature Magnetoresistive Response in CMR
Perovskite Manganite Thin Films** 149
Michael A. Todd, Charles Seegel, and Thomas H. Baum

PART III: METALLIC MAGNETIC OXIDE THEORY AND DEVICES

**The Magnetic Susceptibility in Ultrathin Films of Magnetic
Materials** 157
Kamakhya P. Ghatak, P.K. Bose, and Gautam Majumder

***Polaron Formation and Motion in Magnetic Solids** 163
David Emin

**Calculated Transport and Magnetic Properties of Some
Perovskite Metallic Oxides AMO_3** 175
G. Santi and T. Jarlborg

**Experimental Determination of the Key Energy Scales
in the Colossal Magnetoresistive Manganites** 181
*D.S. Dessau, T. Saitoh, C-H. Park, Z-X. Shen, Y. Moritomo, and
Y. Tokura*

***Spin Tunneling in Conducting Oxides** 187
Alexander Bratkovsky

***Formation of Ferromagnetic/Ferroelectric Superlattices
by a Laser MBE and Their Electric and Magnetic Properties** 201
Hitoshi Tabata, Kenji Ueda, and Tomoji Kawai

**Low-Energy k -Dependent Electronic Structure of the
Layered Magnetoresistive Oxide $\text{La}_{1.2}\text{Sr}_{1.8}\text{Mn}_2\text{O}_7$** 213
*T. Saitoh, D.S. Dessau, C-H. Park, Z-X. Shen, P. Villeda,
N. Hamada, Y. Moritomo, and Y. Tokura*

*Invited Paper

Cambridge University Press

978-1-107-41349-8 - Materials Research Society Symposium Proceedings: Volume 494:
Science and Technology of Magnetic Oxides

Editors: Michael F. Hundley, Janice H. Nickel, Ramamoorthy Ramesh and Yoshinori Tokura

Table of Contents

[More information](#)**PART IV: METALLIC MAGNETIC OXIDE DEVICES AND MULTILAYERS**

*Sub-200 Oe Giant Magnetoresistance in Manganite Tunnel Junctions	221
<i>Gang Xiao, A. Gupta, X.W. Li, G.Q. Gong, and J.Z. Sun</i>	
Low-Field Colossal Magnetoresistance in Manganite Tunnel Junctions	231
<i>J. Nassar, M. Viret, M. Drouet, J.P. Contour, C. Fermon, and A. Fert</i>	
Observation of Large Low-Field Magnetoresistance in Ramp-Edge Tunneling Junctions Based on Doped Manganite Ferromagnetic Electrodes and a SrTiO₃ Insulator	237
<i>C. Kwon, Q.X. Jia, Y. Fan, M.F. Hundley, D.W. Reagor, M.E. Hawley, and D.E. Peterson</i>	
Fabrication of La_{0.7}Sr_{0.3}MnO₃/La_{0.5}Sr_{0.5}CoO₃/La_{0.7}Sr_{0.3}MnO₃ Heterostructures for Spin-Valve Applications	243
<i>M.C. Robson, S.B. Ogale, R. Godfrey, T. Venkatesan, M. Johnson, and R. Ramesh</i>	
Fabrication of High-Temperature Superconductor-Colossal Magnetoresistor Spin Injection Devices	249
<i>J. Kim, R.M. Stroud, R.C.Y. Auyeung, C.R. Eddy, D. Koller, M.S. Ososky, R.J. Soulen, Jr., J.S. Horwitz, and D.B. Chrisey</i>	

PART V: PHYSICAL PROPERTIES OF METALLIC MAGNETIC OXIDES

In-Plane Grain Boundary Effects on the Transport Properties of La_{0.7}Sr_{0.3}MnO_{3-δ} Thin Films	257
<i>J.Y. Gu, S.B. Ogale, K. Ghosh, T. Venkatesan, R. Ramesh, V. Radmilovic, U. Dahmen, G. Thomas, and T.W. Noh</i>	
Observation of Growth-Related Magnetic Structures in La_{0.67}Sr_{0.33}MnO₃	263
<i>M.E. Hawley, G.W. Brown, and C. Kwon</i>	
The Effect of Elastic Strain on the Electrical and Magnetic Properties of Epitaxial Ferromagnetic SrRuO₃ Thin Films	269
<i>Q. Gan, R.A. Rao, J.L. Garrett, Mark Lee, and C.B. Eom</i>	
*Effects of Localized Holes on Charge Transport, Local Structure, and Spin Dynamics in the Metallic State of CMR La_{1-x}Ca_xMnO₃	275
<i>R.H. Heffner, M.F. Hundley, and C.H. Booth</i>	
The Effect of Radiation-Induced Disorder on La_{0.7}Ca_{0.3}MnO_{3-δ}	287
<i>R.M. Stroud, V.M. Browning, J.M. Byers, D.B. Chrisey, W.W. Fuller-Mora, K.S. Grabowski, J.S. Horwitz, J. Kim, D.L. Knies, and M.S. Ososky</i>	

*Invited Paper

Cambridge University Press

978-1-107-41349-8 - Materials Research Society Symposium Proceedings: Volume 494:

Science and Technology of Magnetic Oxides

Editors: Michael F. Hundley, Janice H. Nickel, Ramamoorthy Ramesh and Yoshinori Tokura

Table of Contents

[More information](#)

*Volume-Based Considerations for the Metal-Insulator Transition of CMR Oxides	293
<i>J.J. Neumeier, A.L. Cornelius, M.F. Hundley, K. Andres, and K.J. McClellan</i>	
Raman Investigation of the Layered Manganese Perovskite $\text{La}_{1.2}\text{Sr}_{1.8}\text{Mn}_2\text{O}_7$	305
<i>D.B. Romero, V.B. Podobedov, A. Weber, J.P. Rice, J.F. Mitchell, R.P. Sharma, and H.D. Drew</i>	
High-Frequency Magneto-electrodynamics of $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$ Single Crystals	311
<i>H. Srikanth, B. Revcolevschi, S. Sridhar, L. Pinsard, and A. Revcolevschi</i>	
Magnetic and Electronic Transport Properties of Single-Crystal $\text{La}_{0.64}\text{Pb}_{0.36}\text{MnO}_3$	317
<i>Jihui Yang, Siqing Hu, Citrad Uher, P.D. Han, and D.A. Payne</i>	
Effects of Chromium Ion Implantation on the Magneto-transport Properties of $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ Thin Films	323
<i>P.S.I.P.N. de Silva, N. Maide, A.K.M.A. Hossain, L.F. Cohen, K.A. Thomas, R. Chater, J.D. MacManus-Driscoll, T.J. Tate, N.D. Mathur, M.G. Blamire, and J.E. Evetts</i>	
Evaluation of Raman Scattering in $\text{La}_{1-x}\text{M}_x\text{MnO}_3$ Single Crystals Due to Structural and Magnetic Transitions	329
<i>V.B. Podobedov, A. Weber, D.B. Romero, J.P. Rice, and H.D. Drew</i>	
*Pressure and Isotope Effects in the Manganese Oxide Perovskites	335
<i>J.B. Goodenough and J-S. Zhou</i>	
*Magnetotransport Properties in Layered Manganite Crystals	347
<i>T. Kimura, Y. Tomioka, T. Okuda, H. Kuwahara, A. Asamitsu, and Y. Tokura</i>	
Author Index	357
Subject Index	359

*Invited Paper