MICHAEL FITZSIMMONS

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2019 President Materials Research Society

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EDUCATION

Ph.D., Materials Science and Engineering	Cornell University, 1988
M.S., Materials Science and Engineering	Cornell University, 1984
B.A., Physics	Reed College, 1982

EMPLOYMENT

Distinguish R&D Staff, Neutron Scattering Division	Oak Ridge National Laboratory 2019-present
Group Leader, Large Scale Structures in Neutron Scattering Division	Oak Ridge National Laboratory 2018-2019
Acting Group Leader, Large Scale Structures in Neutron Scattering Division	Oak Ridge National Laboratory 2017-2018
Professor of Physics (Joint Faculty Appointment)	University of Tennessee 2016-present
Group Leader, Thin Films and Nanostructures in Quantum Condensed Matter	Oak Ridge National Laboratory 2/2015-2017
Technical Staff Member; Scientist-4	1993-12/2014 Los Alamos National Laboratory
Postdoctoral Fellow	1990-1993 Los Alamos National Laboratory
Fulbright Junior Research Fellow	1989-1990 Maximilians Universität, München Germany

TEACHING

2016	PHYS 594 and MSE 576 X-ray and neutron scattering (UTK)
2017	PHYS 599 Graduate student research seminar, presentation skills (UTK)
2019	PHYS 342/555 Structure of Matter (UTK)

POSTDOCS MENTORED

Phil Yashar	Intel Corporation
Axel Hoffmann	Group leader, Argonne National Lab
Sungkyun Park	Professor, Pusan, Korea
Justin Olamit	U.S. Patent office
Brian Kirby	Instrument scientist, NIST
Mikhail Zhernenkov	Instrument scientist, NSLS-2
Surendra Singh	Instrument scientist, BARC India
Qiang Wang	Research professor, West Virginia University
Prashant Jain	CEO, Sirphey
Erjia Guo	Professor, Institute of Physics, Beijing
Ryan Desautels	Seagate
Thomas Farmer	Postdoc, Rutherford Lab
Tianhao Wang	ORNL

AWARDS AND HONORS

2014	**Fellow of the Neutron Scattering Society of America**
2014	Visiting scholar, University of California at San Diego
2008-11	Visiting scholar, the Laboratoire de Physique des Matériaux, Université H. Poincaré Vandœuvre les Nancy, France
2007	**Fellow of the American Physical Society**
2004	Los Alamos Neutron Science Director's Award
2001	Los Alamos National Laboratory Director's Award (individual)

SERVICE

Professional Society Governance

2019 President of the Materials Research Society
Materials Research Society, 1/1/2018-12/31/2020
VP in 2018, Pres. in 2019, Past Pres. in 2020.
Treasurer and Officer of the Board of Directors, Materials Research Society, 1/1/2010-12/31/2015
Chair, Finance Committee, Materials Research Society, 2013-2015
Member-at-large, topical Group on Magnetism and its Applications (GMAG), American Physical Society, 2007-2009
Chair, Nominating committee for GMAG 2009

Committees	**Chair**, Science Technical Advisory Panel (reflectometry) for the European Spallation Source, 2016-present **Member**, Basic Research Needs for Synthesis Science Basic Energy Sciences, panel 2016 **Member**, Neutron Optics Technical Advisory Panel for the European Spallation Source, 2012-2016 **Member**, Basic Energy Sciences review panel of the neutron scattering directorate, Oak Ridge National Laboratory, 2012
Conferences	**Member**, programming committee condensed matter programming committee International Conference on Neutron Scattering '17 **Member**, programming committee condensed matter programming committee American Conference on Neutron Scattering '16 **Member**, programming committee Surface X-ray and Neutron Scattering Conference, '15 **Member**, programming committee Magnetism and Magnetic Materials Conference '13 **Member**, programming committee condensed matter programming committee American Conference on Neutron Scattering '12 **Meeting Chair**, Fall 2008 Meeting of the Materials Research Society **Chair**, condensed matter programming committee American Conference on Neutron Scattering '08 **Symposium organizer,** Materials Research Society, 2002.
Neutron Scattering Schools	**Lecturer,** Neutron reflectometry and small angle neutron scattering, Comision Nacional de Energia Atomica, Buenos Aires, Argentina 2017 **Lecturer,** Neutron reflectometry and small angle neutron scattering, Comision Nacional de Energia Atomica, Bariloche, Argentina 2017 **Lecturer**, Introduction to Neutron Scattering, May 2015 Materials Characterization Course, UTK, MS&E **Organizer and lecturer**, 5th LANSCE neutron scattering school, 2009 **Lecturer**, Canadian Neutron Scattering School, Chalk River Canada, 2006. **Lecturer**, 1st LANSCE neutron scattering school, 2004

Workshops	**Organizer,** Emerging opportunities in condensed matter research inspired quantum confinement, workshop ORNL/UTK 2017. **Organizer,** Very cold neutrons for the Second Target Station workshop, ORNL 2016. **Invited Speaker**, SANS Opportunities for Hard Condensed Matter, 4/14 ORNL. **Participant**, Quantum Condensed Matter and neutron scattering, 12/13 Berkeley, CA **Chair**, Neutron optics and polarization techniques for the NIST-NCNR expansion upgrade workshop **Organizer**, Neutron scattering and nanomagnetism, 2004 **Invited Speaker**, Reflectometry at the SNS, ANL, 2000 **Invited Speaker**, Reflectometry at the LPSS, LBNL, 1995 **Invited Speaker**, High power spallation source, ANL, 1993
Proposal Reviewer	Department of Energy, National Science Foundation
Memberships	American Physical Society Materials Research Society Neutron Scattering Society of America

FUNDED PROJECTS

Project/Proposal Title: **High resolution validation of next generation turbulent flow models using neutron beams and laser fluorescence in cryogenic Helium** (M. Fitzsimmons PI)
Source of Support: **ORNL-LDRD**
Total Award Amount: **$190,000** Total Award Period Covered: **2017-18**
Location of Project: **Oak Ridge National Laboratory**

Project/Proposal Title: **Emerging opportunities in condensed matter research inspired by quantum confinement** (M. Fitzsimmons PI)
Source of Support: **ORNL-LDRD**
Total Award Amount: **$25,000** Total Award Period Covered: **2017**
Location of Project: **Oak Ridge National Laboratory**

Project/Proposal Title: **Next generation science enabled by a very cold neutron source for the STS** (M. Fitzsimmons PI)
Source of Support: **ORNL-LDRD**
Total Award Amount: **$25,000** Total Award Period Covered: **2016**
Location of Project: **Oak Ridge National Laboratory**

Project/Proposal Title: **Quantum Condensed Matter and Heterostructures** (M. Fitzsimmons PI)

Source of Support: **ORNL-LDRD**
Total Award Amount: **$25,000** Total Award Period Covered: **2017**
Location of Project: **Oak Ridge National Laboratory**

Project/Proposal Title: **Observing hidden structure underpinning emergent functionality in mesoscale materials** (M. Fitzsimmons PI)
Source of Support: **ORNL-LDRD**
Total Award Amount: **$576,000** Total Award Period Covered: **2016-2017**
Location of Project: **Oak Ridge National Laboratory**

Project/Proposal Title: **Magnetoelectric multiferroic nanocomposites—going beyond complex oxide perovskites** (M. Fitzsimmons PI)
Source of Support: **ORNL-LDRD (strategic hire)**
Total Award Amount: **$400,000** Total Award Period Covered: **2015-2016**
Location of Project: **Oak Ridge National Laboratory**

Project/Proposal Title: **Multiferroic Response Engineering in Mesoscale Oxide Structures** (Q. Jia PI, M. Fitzsimmons, Co-investigator)
Source of Support: **LANL-LDRD**
Total Award Amount: **$6,000,000** Total Award Period Covered: **2014-2016**
Location of Project: **Los Alamos National Laboratory**

Project/Proposal Title: **Spin echo scattering angle measurement technique and Asterix upgrade** (R. Pynn IU and M. Fitzsimmons LANL)
Source of Support: **DOE**
Total Award Amount: **$880,000** Total Award Period Covered: **2008-2012**
Location of Project: **Indiana University and Los Alamos National Laboratory**

Project/Proposal Title: **Control of structure-property relationships in complex oxide films by engineered-strain** (M. Fitzsimmons LANL, PI)
Source of Support: **DOE**
Total Award Amount: **$750,000** Total Award Period Covered: **2008-2011**
Location of Project: **Los Alamos National Laboratory**

Project/Proposal Title: **Novel Physical Behavior of Nanostructured Materials Derived from Interface Atoms** (M. Nastasi PI, M. Fitzsimmons, Co-investigator)
Source of Support: **LANL-LDRD**
Total Award Amount: **$6,000,000** Total Award Period Covered: **2006-2008**
Location of Project: **Los Alamos National Laboratory**

Project/Proposal Title: **Non-equilibrium Electron Spin Transport and Dynamics in Solids** (D. Smith PI, M. Fitzsimmons, Co-investigator)
Source of Support: **LANL-LDRD**
Total Award Amount: **$6,000,000** Total Award Period Covered: **2006-2008**

INVITED TALKS

53. **Three means to control interface magnetism,** M.R. Fitzsimmons, Dept. of Materials Science, Seoul National University, Seoul, Korea 2018.
52. **Three means to control interface magnetism,** M.R. Fitzsimmons, (Keynote talk) International Conference on Electronic Materials and Nanotechnology for a Green Environment (ENGE 2018), Jeju, Korea 2018.
51. **Three means to control interface magnetism,** M.R. Fitzsimmons, Dept. of Physics and Astronomy New Mexico State University, Las Cruces NM 2018.
50. **Three means to control interface magnetism,** M.R. Fitzsimmons, *Surface X-ray and Neutron Scattering Conference*, Pohang, Korea 2018.
49. **Interface magnetism in complex oxide heterostructures and manufactured magnetoelectric coupling,** M.R. Fitzsimmons (Fitzsimmons received invitation and Guo presented), *American Physical Society* March Meeting, Los Angeles CA 2018.
48. **Applications of polarized neutron scattering to guide development of novel functional heterostructures,** M.R. Fitzsimmons, JCNS Workshop Trends and Perspectives in Neutron Instrumentation: Probing Structure and Dynamics at Interfaces and Surfaces, 10 - 13 October 2017, Tutzing, Germany
47. **Probing planar interfaces with neutron scattering—a 16 hour lecture series,** M.R. Fitzsimmons, *Comision Nacional de Energia Atomica*, Buenos Aires, Argentina 2017.
46. **Electric field control of the magnetic order parameter of magnetic pillars embedded in a ferroelectric matrix,** M.R. Fitzsimmons, *Comision Nacional de Energia Atomica*, Buenos Aires, Argentina 2017.
45. **Influence of stress on interface magnetism,** M.R. Fitzsimmons, *Comision Nacional de Energia Atomica*, Buenos Aires, Argentina 2017.
44. **Routes to synthetic magnetolectric coupling across interfaces,** M.R. Fitzsimmons, *Comision Nacional de Energia Atomica*, Buenos Aires, Argentina 2017.
43. **Routes to synthetic magnetolectric coupling across interfaces,** M.R. Fitzsimmons, *Comision Nacional de Energia Atomica*, Bariloche, Argentina 2017.
42. **Probing planar interfaces with neutron scattering—a 16 hour lecture series,** M.R. Fitzsimmons, *Comision Nacional de Energia Atomica*, Bariloche, Argentina 2017.
41. **Routes to synthetic magnetolectric coupling across interfaces,** M.R. Fitzsimmons, *Competing Interactions and Colossal Responses in Transition Metal Oxides*, Telluride, CO 2017.
40. **Routes to synthetic magnetolectric coupling across interfaces,** M.R. Fitzsimmons, *Department of Physics Michigan State University*, Lansing, MI 2017.
39. **Strain and charge: Routes to synthetic magnetolectric coupling,** M.R. Fitzsimmons, *Workshop on neutron scattering to study magnetic, multiferroic and superconducting materials*, Bariloche, Argentina, February, 2016.
38. **Strain and charge: Routes to perfect synthetic magnetolectric coupling,** M.R. Fitzsimmons, *University of Tennessee Physics Department*, November, 2015.
37. **Enabling use-inspired applications of mesoscale materials,** M.R. Fitzsimmons, *Duke University*, September 2015.
36. **Neutron and resonant x-ray scattering studies of magnetism of complex oxide interfaces—an emergent property or materials science?**, M.R. Fitzsimmons, *Materials Science Department seminar, University of Tennessee*, October 2014.

35. **Studies of interface magnetism in thin films—the next Blue Ocean opportunity for SANS**, M.R. Fitzsimmons, *Physics department seminar, West Virginia University*, August 2014.
34. **Studies of interface magnetism in thin films—the next Blue Ocean opportunity for SANS**, M.R. Fitzsimmons, *New Directions and Opportunities for Small-Angle Neutron Scattering in Condensed Matter Science, Oak Ridge National Laboratory*, July 2014.
33. **Neutron scattering studies of magnetism of complex oxide interfaces—an emergent property or materials science?** M.R. Fitzsimmons, *Neutron Scattering Directorate seminar Oak Ridge National Laboratory*, June 2014.
32. **Influence of applied bending stress to magnetic non-uniformity, saturation magnetization and ordering temperature in $(La_{0.4}Pr_{0.6})_{0.67}Ca_{0.33}MnO_3$ films**, M.R. Fitzsimmons, *Materials Week, Ohio State University*, May 2014.
31. **Influence of applied bending stress to magnetic non-uniformity, saturation magnetization and ordering temperature in $(La_{0.4}Pr_{0.6})_{0.67}Ca_{0.33}MnO_3$ films**, M.R. Fitzsimmons, *UC Davis Physics Department*, May 2014.
30. **Magnetic non-uniformity in $(La_{0.4}Pr_{0.6})_{0.67}Ca_{0.33}MnO_3$ films and measurement of the strain-magnetization coupling coefficient**, M.R. Fitzsimmons, *UC San Diego Physics Department*, 2012.
29. **Magnetic non-uniformity in $(La_{0.4}Pr_{0.6})_{0.67}Ca_{0.33}MnO_3$ films and measurement of the strain-magnetization coupling coefficient**, M.R. Fitzsimmons, Magnetic North III, Banff Canada, June 2012.
28. **Small angle neutron scattering using polarized neutron beams form a user's perspective**, M.R. Fitzsimmons, *tutorial at the American Conference on Neutron Scattering, Washington D.C.*, June 2012.
27. **Upper limit to magnetism in $LaAlO_3/SrTiO_3$ heterostructures,** M.R. Fitzsimmons, *American Physical Society Meeting, Boston MA*, February 2012.
26. **How can polarized neutron reflectometry help us understand phantom magnetism?**, M.R. Fitzsimmons, *International conference on films and surface magnetism, Berlin Germany*, July 2009.
25. **How can polarized neutron reflectometry help us understand phantom magnetism?**, M.R. Fitzsimmons, *Helmholtz-Zentrum Berlin, Germany*, May 2009.
24. **Understanding the novel properties of nanostructured magnetized materials and the role of polarized neutron reflectometry**, M.R. Fitzsimmons, *Plenary Nanoscience Lecture at the SNS/HFIR Users meeting*, October 2007.
23. **Magnetization depth profile of a Laves phase exchange coupled superlattice**, M.R. Fitzsimmons, *Ruhr Universität, Bochum*, June 2007.
22. **Origins of novel properties of nanostructured magnetized materials**, M.R. Fitzsimmons, *Technical Universität Berlin*, May 2007.
21. **Origin of positive and negative exchange bias in Co/FeF_2**, M.R. Fitzsimmons, *American Crystallographic Association, Honolulu Hawaii*, July 2006.
20. **The vector magnetization depth profile of a Laves phase exchange-coupled superlattice obtained using a combined approach of micromagnetic simulation and neutron reflectometry,** M.R. Fitzsimmons, *American Conference on Neutron Scattering, St. Charles IL*, June 2006.

19. **Vector magnetization depth profiles obtained with polarized neutron reflectometry,** M.R. Fitzsimmons, *The 9th Canadian Summer School on Neutron Scattering, Chalk River Canada,* June 2006.
18. **Novel magnetic behavior and exchange coupling across planar interfaces**, M.R. Fitzsimmons, *The 9th Canadian Summer School on Neutron Scattering, Chalk River Canada*, June 2006.
17. **Depth profile of uncompensated spins in exchange biased Co/FeF_2**, M.R. Fitzsimmons, *University of Western Australia, Perth Australia,* Nov. 2005.
16. **Depth profile of uncompensated spins in exchange biased Co/FeF_2**, M.R. Fitzsimmons, *International Conference on Neutron scattering, Sydney Australia,* Nov. 2005.
15. **Influence of high magnetic fields on the magnetic depth profile of an exchange spring multilayer**, M.R. Fitzsimmons, *International Materials Research Congress, Cancun Mexico,* August 2005.
14. **Test of the LPSS concept and so much more**, M.R. Fitzsimmons, *Next generation neutron source workshop, San Diego, CA USA,* June 2005.
13. **Polarized neutron scattering in very big fields**, M.R. Fitzsimmons, *Probing matter at high magnetic fields with X-rays and neutrons, Tallahassee, FL USA,* May 2005.
12. **Magnetic antiferromagnets and exchange bias**, M.R. Fitzsimmons, *University of California at Santa Barbara Materials Science Colloquium,* November 2004.
11. **Understanding induced magnetization in antiferromagnets and exchange bias with neutron scattering**, M.R. Fitzsimmons, *International Materials Research Congress, Cancun Mexico,* August 2004.
10. **Induced magnetization in antiferromagnets and exchange bias,** M.R. Fitzsimmons, ***Polarized Neutrons in Condensed Matter Investigations, Washington D***.C., June 2004.
9. **Influence of Structural Disorder and Temperature on Magnetization Reversal in Exchange Coupled Bilayers**, M.R. Fitzsimmons, *Polarized Neutrons and Synchrotron X-rays for Magnetism, Venice, Italy,* Aug. 2003.
8. **Quantitative Profiling of Interfacial Magnetism with Neutron Scattering**, M.R. Fitzsimmons, *Meeting of the University of California at Santa Barbara-LANL Campus-Laboratory Collaboration (CLC), Santa Barbara, CA,* June 2003.
7. **Polarized neutron reflectometry of magnetic multilayers, Neutron and Synchrotron X-ray Scattering in Condensed-matter Research**, M.R. Fitzsimmons, *Paul Scherrer Institut, Villigen, Switzerland, Aug*. 2002.
6. **Magnetization reversal in exchange-biased films**, M.R. Fitzsimmons, *The 7th International Conference on Surface X-ray & Neutron Scattering, Lake Tahoe, CA.,* Sep. 2002.
5. **Asymmetric Magnetization Reversal in Exchange Bias Systems**, M.R. Fitzsimmons, *2001 March Meeting of the American Physical Society, Seattle WA.,* March 2001.
4. **Small angle neutron scattering from magnetic materials**, M.R. Fitzsimmons, *3rd LANSCE User Group Meeting*, Jan. 2000.
3. **45° Exchange Coupling Across the Fe-FeF_2 Interface**, M.R. Fitzsimmons, *44th Annual Conference on Magnetism & Magnetic Materials, San Jose, CA,* November 15–18, 1999.
2. **Characterization of the Atomic and Magnetic Structures of Nanocrystalline Materials using Neutron Powder Diffraction**, M.R. Fitzsimmons, *TMS-AIME conference, Las Vegas, NV* 1995.

1. **The Magnetization Density Profile of a Grain Boundary in Nickel**, M.R. Fitzsimmons, *The Magnetism and Magnetic Materials conference, Albuquerque, NM*, June 1994.

PUBLICATIONS

For latest citation list:
http://scholar.google.com/citations?user=5xDFeHsAAAAJ&hl=en&oi=ao

(* denotes impact factor >7)

145. Thomas O. Farmer, Er-Jia Guo, Tianhao Wang, Ryan D. Desautels, Aiping Chen, Quanxi Jia, Julie Borchers, Dustin A. Gilbert, Ben Holladay, Sunil K. Sinha, **Michael R. Fitzsimmons,** **Nano-scale magnetization inhomogeneity within single phase nanopillars**, submitted to *Phys. Rev. Materials*.
144. Er-Jia Guo, Ryan Desautels, David Keavney, Manuel A. Roldan, Brian J. Kirby, Dongkyu Lee, Zhaoliang Liao, Timothy Charlton, Andreas Herklotz, T. Zac Ward, **Michael R. Fitzsimmons** and Ho Nynung Lee, **Nanoscale ferroelastic twins formed in strained $LaCO_3$ films**, accepted to *Science Advances*.
143. Zhaoliang Liao, Elizabeth Skoropata, J. W. Freeland,Er-Jia Guo, Ryan Desautels, Xiang Gao, Changhee Sohn, Tao Zou, Timothy Chalton, T. Zac Ward, **Michael R. Fitzsimmons,** and Ho Nyung Lee, **Large orbital polarization in nickelate-cuprate heterostructures by dimensional control of oxygen coordination,** accepted *Nat. Communications*.
142. Er-Jia Guo, Ryan Desautels, Dongkyu Lee, Zhaoliang Liao, Xiang Gao, Timothy Charlton, Haile Ambaye, Jamie Molaison, Reinhard Boehler, David Keavney, Andreas Herklotz, T. Zac Ward, Ho Nyung Lee and **Michael R. Fitzsimmons**, **Symmetry-mismatch induced nanoscale mangetic nonuniformity in strained $LaCoO_3$ films,** submitted to *Phys. Rev. Lett*.
141. Er-Jia Guo, Ryan D. Desautels, David Keavney, Andreas Herklotz, T. Zac Ward, **Michael R. Fitzsimmons** and Ho Nynung Lee, Lee, **Switchable orbital polarization and magnetization in strained $LaCoO_3$ films,** *Phys. Rev. Mater* **3**, 014407 (2019). http://dx.doi.org/10.1103/PhysRevMaterials.3.014407
140. Er-Jia Guo, Manuel A. Roldan, Xiahan Sang, Satoshi Okamoto, Timothy Charlton, Haile Ambaye, Ho Nyung Lee, and **Michael Fitzsimmons**, **Influence of chemical composition and crystallographic orientation on the interfacial magnetism in $BiFeO_3/La_{1-x}Sr_xMnO_3$ superlattices,** *Phys. Rev. Mater.*, **2**, 114404 (2018). http://dx.doi.org/10.1103/PhysRevMaterials.2.114404
139. J. Walter, T. Charlton, H. Ambaye, **M.R. Fitzsimmons**, P.P. Orth, R.M. Fernandes and C. Leighton, **Giant Electrostatic Modification of Magnetism via Electrolyte-Gate-Induced Cluster Percolation in $La_{1-x}Sr_xCoO_{3-\delta}$**, *Phys. Rev. Mater.*, **2**, 111406 (2018). http://dx.doi.org/10.1103/PhysRevMaterials.2.111406

*138. Er-Jia Guo, Manuel Roldan, Timothy Charlton, Zhaoliang Liao, Qiang Zheng, Haile Ambaye, Andreas Herklotz, Zheng Gai, T. Zac Ward, Ho Nyung Lee, and **Michael R. Fitzsimmons**, **Removal of Magnetic Dead Layer by Geometric Design**, *Adv. Funct. Mater.*, **28**, 1800922 (2018). http://dx.doi.org/10.1002/adfm.201800922

*137. E. Guo, Y. Liu, C. Sohn, R.D. Desautels, A. Herklotz, Z. Liao, J. Nichols, J.W. Freeland, **M.R. Fitzsimmons**, H.N. Lee, **Oxygen Diode Formed in Nickelate Heterostructures by Chemical Potential Mismatch**, Advanced Materials **30**, 1705904 (2018). http://dx.doi.org/10.1002/adma.201705904

136. Q. Wang A.P. Chen, E.J. Guo, M.A. Roldan, Q.X. Jia and **M.R. Fitzsimmons**, **An upper limit on the influence of elastic bending stress on the saturation magnetization of**

$La_{0.8}Sr_{0.2}MnO_3$, *Physical Review B* **97**, 014437(2018). https://dx.org/10.1103/PhysRevB.97.014437

135. T. Wang, C.Y. Jiang, T.O. Farmer, L. Debeer-Schmitt, J.F. Wenzel, L. McDonald, J.L. Robertson, **M.R. Fitzsimmons** and X. Tong, **New polarized small angle neutron scattering capability at the High Flux Isotope Reactor**, *Physica B* **551**, 492 (2017). https://doi.org/10.1016/j.physb.2017.12.041
134. A. Huon, D. Lee, A. Herklotz, M.R. Fitzsimmons, H.N. Lee and S.J. May, **Effect of chemical pressure on the electronic phase transition in $Ca_{1-x}Sr_xMn_7O_{12}$ films,** *Applied Physics Letters Materials* **5,** 096105 (2017). https://doi.org/10.1063/1.4994089

*133. Er-Jia Guo, Timothy Charlton, Haile Ambaye, Ryan Desautels, Ho Nyung Lee and **Michael Fitzsimmons**, **Orientation control of interfacial magnetism at $La_{0.67}Sr_{0.33}MnO_3/SrTiO_3$ interfaces,** *ACS Applied Materials and Interfaces*, **9,** 19307 (2017). http://pubs.acs.org/doi/abs/10.1021/acsami.7b03252

*132. Er-Jia Guo, Jonathan R. Petrie, Manuel A. Roldan, Qian Li, Ryan D. Desautels, Timothy Charlton, Andreas Herklotz, John Nichols, Johan van Lierop, John W. Freeland, Sergei V. Kalinin, Ho Nyung Lee, and **Michael R. Fitzsimmons**, **Spatially resolved large magnetization in ultrathin $BiFeO_3$,** *Advanced Materials*, 1700790 (2017). http://dx.doi.org/10.1002/adma.201700790

*131. Aiping Chen, Qiang Wang, **Michael R. Fitzsimmons**, Erik Enriquez, Marcus Weigand, Zach Harrell, Brian McFarland, Xujie Lü, Paul Dowden, Judith L. MacManus-Driscoll, Dmitry Yarotski, and Quanxi Jia, **Hidden Interface Driven Exchange Coupling in Oxide Heterostructures,** *Advanced Materials* 1700672 (2017). http://dx.doi.org/10.1002/adma.201700672

*130. A. Herklotz, E. Guo, A.T. Wong, T.L. Meyer, S. Dai, T.Z. Ward, H.N. Lee, **M. R. Fitzsimmons**, **Reversible control of interfacial magnetism through ionic liquid assisted polarization switching,** *NanoLetters*, **17**, 1665 (2017). http://dx.doi.org/10.1021/acs.nanolett.6b04949

129. D. Lee, X. Gao, L. Fan, E. Guo, T.O. Farmer, W.T. Heller, T.Z. Ward, G. Eres, **M.R. Fitzsimmons**, M.F. Chisholm and H.N. Lee, **Non-equilibrium synthesis of highly porous single-crystalline oxide nanostructures**, *Advanced Materials Interfaces* 1601034 (2017). http://dx.doi.org/10.1002/admi.201601034
128. Tricia L. Meyer, Andreas Herklotz, Valeria Lauter, John W. Freeland, John Nichols, Er-Jia Guo, Shinbuhm Lee, T. Zac Ward, Nina Balke, Sergei V. Kalinin, **M. R. Fitzsimmons**, and Ho Nyung Lee, **Enhancing interfacial magnetization with a ferroelectric**, *Phys. Rev. B* **94**, 174432 (2016). http://dx.doi.org/10.1103/PhysRevB.94.174432
127. W. Ratcliff, J.W. Lynn, V. Kiryukhin, P. Jain and **M. R. Fitzsimmons**, **Magnetic structures and dynamics of multiferroic systems obtained with neutron scattering,** *Nature Physics Journals: Quantum Materials*, **1**, 16003 (2016) http://dx.doi.org/10.1038/npjquantmats.2016.3

*126. John Nichols, Xiang Gao, Shinbuhm Lee, Tricia L. Meyer, John W. Freeland, Valeria Lauter, Di Yi, Jian Liu, Daniel Haskel, Jonathan R. Petrie, Er-Jia Guo, Andreas Herklotz, Dongkyu Lee, Thomas Z. Ward, Gyula Eres, **Michael R. Fitzsimmons**, and Ho Nyung Lee, **Emergence of magnetism and anomalous Hall effect in iridate-manganite heterostructure,** *Nature Communications*, (2016) http://dx.doi.org/10.1038/ncomms12721

125. S. Singh, J.W. Freeland, **M.R. Fitzsimmons**, H. Jeen and A. Biswas, **Composition dependence of electronic, magnetic transport and morphological properties of mixed valence manganite thin films,** *Scientific Reports* (2016) https://www.nature.com/articles/srep29632
124. M.-A. Leroy, A.M. Bataille, Q. Wang, **M.R. Fitzsimmons**, F. Bertran, P. Le Fèvre, A. Taleb-Ibrahimi, A. Vlad, A. Coati, Y. Garreau, T. Hauet, C. Gatel, F. Ott and S. Andrieu, **Enhanced magnetization at the Cr/MgO(001) interface,** *Appl. Phys. Lett.* **107**, 251602 (2015) http://dx.doi.org/10.1063/1.4938131
123. S. Singh, J. Xiong, A.P. Chen, **M. R. Fitzsimmons**, Q.X. Jia, **Field dependent magnetization of $BiFeO_3$ in ultrathin $La_{0.7}Sr_{0.3}MnO_3/BiFeO_3$ superlattice,** *Phys. Rev. B* **92**, 224405 (2015). http://dx.doi.org/10.1103/PhysRevB.92.224405
122. P. Jain, Q. Wang, M. Roldan, A. Glavic, V. Lauter, C. Urban, Z. Bi, T. Ahmed, J. Zhu, M. Varela, Q. Jia, **M. R. Fitzsimmons**, **Synthetic magnetoelectric coupling in a nanocomposite multiferroic,** *Scientific Reports* **5**, 9089(2015) http://dx.doi.org/10.1038/srep09089

*121. F. A. Perez, P. Borisov, T. A. Johnson, T. D. Stanescu, D. Lederman, **M. R. Fitzsimmons**, A. Aczel, and T. Hong, **Phase diagram of a three-dimensional antiferromagnet with random magnetic anisotropy**, *Physical Review Letters*, **114**, 097201 (2015). http://dx.doi.org/10.1103/PhysRevLett.114.097201

*120. E.J. Moon, R. Colby, Q. Wang, E. Karapetrova, C.M. Schleputz, **M. R. Fitzsimmons**, S.J. May, **Spatial control of functional properties via octahedral modulations in complex oxide superlattices,** *Nature Communications* **5**, 5710 (2014). http://dx.doi.org/10.1038/ncomms6710

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