Mark Steven Rzchowski

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EDUCATION

Stanford University	Ph.D.	1988	Applied Physics
Washington University, St. Louis	A.B.	1982	Physics and Mathematics

EXPERIENCE

Associate Chair, Physics	2008-2010, 2011-present
Full Professor	2004-present
Associate Professor of Physics, UW-Madison.	1998-2004
Assistant Professor of Physics, UW-Madison.	1992-1997
Postdoctoral Fellow, Harvard University Physics	1988-1991

SYNERGISTIC ACTIVITIES

Workshops and meetings facilitated:

Magnetisms and Magnetic Materials Program Committee, (2014, 2017)

Co-organizer, Symposium WW Multiferroic, Ferroelectric, and Functional Materials, Interfaces, and Heterostructures, Spring 2011 MRS meeting (San Francisco, CA, 2011).

Conference co-organizer, 15th Intnt'l. Workshop on Oxide Electronics (Estes Park CO, 2008).

Session Organizer, Symp. on Magnetic Oxide Materials, 1999 Fall MRS meeting (Boston, MA)

Conference Organizer, MRSEC Workshop on Magnetic Heterostructures, Fall 1998 (Madison, WI)

Books edited:

Principal editor, *"Magnetoresistive oxides and related materials",* (Mat. Res. Soc, 2001)

Co-editor, "*Multiferroic, Ferroelectric, and Functional Materials, Interfaces and Heterostructures*" Mat Res Soc , 2011)

Referee, Applied Physics Letters, Physical Review Letters, Phys. Rev. B, Nature, Science, proposal refereeing for National Science Foundation, Department of Energy

Outreach: NSF outreach focused on secondary school teachers in Mayaguez, Puerto Rico.

Course development: Calculus-based general physics course for biological science students. Involved curriculum revision, materials development, teaching laboratory revisions, new 95-page laboratory manual, focused on physics skills and concepts for biologists. Involved in Provost-funded transition of introductory physics courses to active learning format. Active learning modifications of Phy551 Solid State Physics.

RESEARCH SUMMARY

My research focuses on strong correlations and nanoscale physics at interfaces in complex oxide materials. The effects range from new electronic phases existing only at the interface, to novel coupling of strong correlations across the interface. Systems studies also broadly range, from magnetic, to ferroelectric, to superconducting. These are complex systems, at the forefront of research in growth, measurement, and theoretical analysis. My group's experimental measurements of transport, magnetic, and meso-structural properties has resulted in collaborative publications with film growers, electron microscopists, and condensed matter theorists, recently appearing in or accepted to Nature, Nature Materials, Nature Communications, and Nature Nanotechnology.

RECENT INVITED PRESENTATIONS

1. APS 2020 March Meeting (Denver), *Complex Oxide Heterointerfaces New Materials Terminations Orientations*
2. MRS 2020 Spring Meeting (Phoenix), *Magnetoelectric Coupling by Piezoelectric Tensor Design*
3. CIMTEC 2020- 15th Intl (Montacatini Terme), *Magnetoelectric Coupling by giant piezoelectric tensor design*

REFEREED JOURNAL PUBLICATIONS

Over 95 refereed publications. Over 3900 citations. h-index 28
3 publications in Science, 10 in Nature journals, 5 in Phys. Rev. Lett, 4 in PNAS.

96. "Exchange bias in a noncollinear spin system", Neil Campbell et al, in preparation.
95. "Symmetry Driven Magnetoelectric Coupling in (011) Oriented Piezoelectric Membrane Heterostructures" S. Lindemann et al, in preparation
94. "Controlling spin current polarization through non-collinear antiferromagnetism", T. Nan, C. X. Quintela, J. Irwin, G. Gurung, D. F. Shao, J. Gibbons, N. Campbell, K. Song, S. -Y. Choi, L. Guo, R. D. Johnson, P. Manuel, R. V. Chopdekar, I. Hallsteinsen, T. Tybell, P. J. Ryan, J. -W. Kim, Y. Choi, P. G. Radaelli, D. C. Ralph, E.Y. Tsymbal, M. S. Rzchowski & C. B. Eom
Nat. Comm. **11**, 4671 (2020). https://doi.org/10.1038/s41467-020-17999-4
93. "Superconductivity in undoped $BaFe_2As_2$ by tetrahedral geometry design", Jong-Hoon Kang, Jong-Woo Kim, Philip J. Ryan, Lin Xie, Lu Guo, Chris Sundahl, Jonathon Schad, Neil Campbell, Yesusa G. Collantes, Eric E. Hellstrom, Mark S. Rzchowski, and Chang-Beom Eom,
Proc. Nat. Acad. Sci. 117, 21170 (2020) https://doi.org/10.1073/pnas.2001123117
92. "Epitaxial Antiperovskite/Perovskite Heterostructures for Materials Design" Camilo X. Quintela, Kyung Song, Ding-Fu Shao, Lin Xie, T. Nan, Tula R. Paudel, Neil Campbell, X.Q. Pan, Mark S. Rzchowski, Evgeny Y. Tsymbal, Si-Young Choi and Chang-Beom Eom,
Science Advances **6**, eaba4017 (2020). https://doi.org/10.1126/sciadv.aba4017
91. "Strain-driven disproportionation at a correlated oxide metal-insulator transition", T. H. Kim, T. R. Paudel, R. J. Green, K. Song, H.-S. Lee, S.-Y. Choi, J. Irwin, B. Noesges, L. J. Brillson, M. S. Rzchowski, G. A. Sawatzky, E. Y. Tsymbal, and C. B. Eom
Rev. B **101**, 121105(R) (2020). https://doi.org/10.1103/PhysRevB.101.121105
90. "Spontaneous Hall Effect enhanced by local Ir moments in epitaxial $Pr_2Ir_2O_7$ thin films", Lu Guo, Neil Campbell, Yongseong Choi, Jong-Woo Kim, Philip J. Ryan, Huaixun Huyan, Linze Li, Tianxiang Nan, Jong-Hong Kang, Chris Sundahl, Xiaoqing Pan, M.S. Rzchowski, C.B. Eom,
Phys Rev B**101,** 064509 (2020) https://doi.org/10.1103/PhysRevB.101.104405
89. "Charge density wave modulation in superconducting $BaPbO_3/BaBiO_3$ superlattices", DT Harris, NG Campbell, C. Di, J.M. Park, L. Luo, H. Zhou, G.Y. Kim, K. Song, S.Y. Choi, J. Wang, M.S. Rzchowski, C.B. Eom, Phys Rev B**101,** 104405 (2020) https://doi.org/10.1103/PhysRevB.101.064509
88. "Heterogeneous integration of single-crystalline complex-oxide membranes", Hyun S. Kum, Hyungwoo Lee, Sungkyu Kim, Shane Lindemann, Wei Kong, Kuan Qiao, Peng Chen, Julian Irwin, June Hyuk Lee, Saien Xie, Shruti Subramanian, Jaewoo Shim, Sang-Hoon Bae, Chanyeol Choi, Luigi Ranno, Seungju Seo, Sangho Lee, Jackson Bauer, Huashan Li, Kyusang Lee, Joshua A. Robinson, Caroline A. Ross, Darrell G. Schlom, Mark S. Rzchowski, Chang-Beom Eom & Jeehwan Kim,
Nature **578**, 75 (2020). https://doi.org/10.1038/s41586-020-1939-z
87. "Magnetoelectric Coupling by Piezoelectric Tensor Design", J. Irwin, S. Lindemann, W. Maeng, J. J. Wang, V. Vaithyanathan, J.M. Hu, L.Q. Chen, D.G. Schlom, C.B. Eom, M.S. Rzchowski,
Sci Rep **9,** 19158 (2019) https://doi.org/10.1038/s41598-019-55139-1
86. "Strain anisotropy and magnetic domain structures in multiferroic heterostructures: High-throughput finite-element and phase-field studies", Jian-Jun Wang, Tian-Nan Yang, Jacob A. Zorn, Emily Wang, Julian Irwin, Shane Lindemann, Mark S. Rzchowski, Jia-Mian Hu, Chang-Beom Eom, Long-Qing Chen,
Acta Materialia **176**, 73 (2019) https://ssrn.com/abstract=3370249

85. "Anisotropic spin-orbit torque generation in epitaxial $SrIrO_3$ by symmetry design", T. Nan, T. J. Anderson, J. Gibbons, K. Hwang, N. Campbell, H. Zhou, Y. Q. Dong, G. Y. Kim, D. F. Shao, T. R. Paudel, N. Reynolds, X. J. Wang, N. X. Sun, E. Y. Tsymbal, S. Y. Choi, M. S. Rzchowski, Yong Baek Kim, D. C. Ralph, and C. B. Eom, Proc. Nat. Acad. Sci. **116,** 16186 (2019). https://doi.org/10.1073/pnas.1812822116
84. "Isostructural metal-insulator transition in VO_2", D. Lee, B. Chung, Y. Shi, G.-Y. Kim, N. Campbell, F. Xue, K. Song, S.-Y. Choi, J. P. Podkaminer, T.H. Kim, P.J. Ryan, J.-W. Kim, T.R. Paudel, J.-H. Kang, J.W. Spinuzzi, D.A. Tenne, E.Y. Tsymbal, M. S. Rzchowski, L.Q. Chen, J. Lee, C. B. Eom, Science **362**, 1037 (2018). https://www.doi.org/10.1126/science.aam9189
83. "Control of Epitaxial $BaFe_2As_2$ Atomic Configurations with Substrate Surface Terminations" Jong-Hoon Kang, Lin Xie, Yi Wang, Hyungwoo Lee, Neil Campbell, Jianyi Jiang, Philip J. Ryan, David J. Keavney, Jung-Woo Lee, Tae Heon Kim, Xiaoqing Pan, Long-Qing Chen, Eric E. Hellstrom, Mark S. Rzchowski, Zi-Kui Liu, C.B. Eom, Nano Letters **18,** 6347 (2018) https://doi.org/10.1021/acs.nanolett.8b02704
82. "Unconventional ferromagnetism in epitaxial (111) $LaNiO_3$", Tomoya Asaba, Ziji Xiang, T. H. Kim, M. S. Rzchowski, C. B. Eom, and Lu Li, Phys. Rev. B **98**, 121105(R) (2018) https://doi.org/10.1103/PhysRevB.98.121105
81. "Observation of magnetic vortex pairs at room temperature in a planar α-Fe2O3/Co heterostructure" F. P. Chmiel, N. Waterfield Price, R. D. Johnson, A. D. Lamirand, J. Schad, G. van der Laan, D. T. Harris, J. Irwin, M. S. Rzchowski, C.-B. Eom & P. G. Radaelli, Nature Materials **17**, 581–585 (2018) https://doi.org/10.1038/s41563-018-0101-x
80. "Superconductivity-localization interplay and fluctuation magnetoresistance in epitaxial BaPb1-xBixO3 thin films", D. T. Harris, N. Campbell, R. Uecker, M. Brützam, D. G. Schlom, A. Levchenko, M. S. Rzchowski, and C.-B. Eom, Phys. Rev. Materials 2, 041801(R) (2018). https://doi-org/10.1103/PhysRevMaterials.2.041801
79. "Direct imaging of the electron liquid at oxide interfaces", Kyung Song, Sangwoo Ryu, Hyungwoo Lee, Tula R. Paudel, Christoph T. Koch, Bumsu Park, Ja Kyung Lee, Si-Young Choi, Young-Min Kim, Jong Chan Kim, Hu Young Jeong, Mark S. Rzchowski, Evgeny Y. Tsymbal, Chang-Beom Eom & Sang Ho Oh, Nature Nanotechnology **13**, 198 (2018) https://doi.org/10.1038/s41565-017-0040-8.
78. "Direct observation of a two-dimensional hole gas at oxide interfaces", H. Lee, N. Campbell, J. Lee, T. J. Asel, T. R. Paudel, H. Zhou, J. W. Lee, B. Noesges, J. Seo. B. Park, L. J. Brillson, S. H. Oh, E. Y. Tsymbal, M. S. Rzchowski, and C. B. Eom, Nature Mat. (2018) https://doi.org/10.1038/s41563-017-0002-4.
77. "Deterministic and robust room–temperature exchange coupling to monodomain multiferroic $BiFeO_3$/Co heterostructures", W. Saenrang, B.A. Davidson, F. Maccherozzi, J.P. Podkaminer, J. Irwin , R.D. Johnson, J.W. Freeland, J. Íñiguez, J.L. Schad, K. Reierson,J.C. Frederick, C.A.F. Vaz , L. Howald, T.H. Kim,S. Ryu, M.v. Veenendaal, P.G. Radaelli, S.S. Dhesi, M.S. Rzchowski & C.B. Eom, Nature Comm. **8**, 1583 (2017) https://doi.org/10.1038/s41467-017-01581-6.
76. "In-situ probing of coupled atomic restructuring and metallicity of oxide heterointerfaces induced by polar adsorbates", S. Ryu, H. Zhou, T. R. Paudel, J. Irwin, J. P. Podkaminer, C. W. Bark, D. Lee, T. H. Kim, D. D. Fong, M. S. Rzchowski, E. Y. Tsymbal, C. B. Eom Appl. Phys. Lett. **111**, 141604 (2017).
75. "Epitaxial thin films of Dirac semimetal antiperovskite Cu_3PdN", C. X. Quintela, N. Campbell, D. F. Shao, J. Irwin, D. T. Harris, L. Xie, T. J. Anderson, N. Reiser, X. Q. Pan, E.Y. Tsymbal, M.S. Rzchowski, and C. B. Eom, APL Materials **5**, 096103 (2017) https://doi.org/10.1063/1.4992006
74. "Polar Metals by Geometric Design", T. H. Kim, D. Puggioni, Y. Yuan, L. Xie, H. Zhou, N. Campbell, P. J. Ryan, Y. Choi, J.-W. Kim, J. R. Patzner, S. Ryu, J. P. Podkaminer, J. Irwin, Y. Ma, C. J. Fennie, M. S. Rzchowski, X. Q. Pan, V. Gopalan, J. M. Rondinelli & C. B. Eom, Nature **533**, 68 (2016) https://doi.org/10.1038/nature17628
73. "Reversible tuning of two-dimensional electron gases in oxide heterostructures by chemical surface modification", H. Lee, N. Campbell, S. Ryu, W. Chang, J. Irwin, S. Lindemann, M. K. Mahanthappa, M. S. Rzchowski and C. B. Eom, Appl. Phys. Lett **109**, 191604 (2016)

72. "Metastable honeycomb $SrTiO_3/SrIrO_3$ heterostructures", Anderson, T.J.; Ryu, S.; Zhou, H.; Xie, L.; Podkaminer, J.P.; Ma, Y.; Irwin, J.; Pan, X.Q.; Rzchowski, M.S.; Eom, C.B., Appl. Phys. Lett **15**, 151604 (2016).
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70. "Crystalline symmetry controlled magnetic switching in epitaxial (111) La0.7Sr0.3MnO3 thin films", I. Hallsteinsen, E. Folven, F. K. Olsen, R. V. Chopdekar, M. S. Rzchowski, C. B. Eom, J. K. Grepstad, T. Tybell, APL Mater. **3**, 062501 (2015).
69. "Creation of a two-dimensional electron gas and conductivity switching of nanowires at the $LaAlO_3/SrTiO_3$ interface grown by 90deg off-axis sputtering", J. P. Podkaminer, T. Hernandez, M. Huang, S. Ryu, C. W. Bark, S. H. Baek, J. C. Frederick, T. H. Kim, K. H. Cho, J. Levy, M.S. Rzchowski, C.B. Eom, Appl. Phys. Lett **103**, 071604 (2013).
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67. "Surface stability of epitaxial $La_{0.7}Sr_{0.3}MnO_3$ thin films on (111)-oriented $SrTiO_3$", I. Hallsteinsen, J. E. Boschker, M. Nord, S. Lee, M. Rzchowski, P. E. Vullum, J. K. Grepstad, R. Holmestad, C. B. Eom, and T. Tybell, J. Appl. Phys. **113**, 183512 (2013)
66. "Reactive sputtering of (Co,Fe) nitride thin films on TiN-bufferd Si", H. Xiang, F.-Y. Shi, M.S. Rzchowski, P.M. Voyles, Y.A. Chang, Appl. Phys. A**110**, 487 (2013).
65. "Switchable Induced Polarization in $LaAlO_3/SrTiO_3$ Heterostructures", C W Bark, P Sharma, Y Wang, S H Baek, S Lee, S Ryu, C M Folkman, T R Paudel, A Kumar, S V Kalinin, A Sokolov, E Y Tsymbal, M S Rzchowski, A Gruverman, and C B Eom, Nano Lett. **12**, 1765 (2012).
64. "Giant piezoelectricity in PMN-PT thin films: Beyond PZT", S. H. Baek, M.S. Rzchowski, V.A. Aksyuk, MRS Bulletin (Spec Issue on thin-film piezoelectric MEMS) **37**, 1022 (2012).
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62. "Localization of two-dimensional electron gas in $LaAlO_3/SrTiO_3$ heterostructures", T Hernandez, C W Bark, D A Felker, C B Eom, and M S Rzchowski, Phys. Rev. Rapid Comm. B**85**, 161407 (2012).
61. "Enhancement of Ferroelectric Polarization Stability by Interface Engineering", H. Lu, X. Liu, J. D. Burton, C.-W. Bark, Y. Wang, Y. Zhang, D. J. Kim, A. Stamm, P. Lukashev, D. A. Felker, C. M. Folkman, P. Gao, M. S. Rzchowski, X. Q. Pan, C.-B. Eom, E. Y. Tsymbal, and A. Gruverman, Adv. Mat. **24**, 1209 (2012).
60. "Giant piezoelectricity on Si for hyper-active MEMS", S. H. Baek, J. Park, D. M. Kim, D. A. Felker, V. Aksyuk, S. D. Bu, R. R. Das, J. Lettieri, V. Vaithyanathan, N. B. Gharb, S. S. N. Bharadwaja, Y. B. Chen, H. P. Sun, V. Nagarajan, J. Ouyang, A. Stanishevsky, D.J. Kreft, H.W. Jang, S. K. Streiffer, R. Ramesh, X.Q. Pan, S. Trolier-McKinstry, D.G. Schlom, M.S. Rzchowski, R.H. Blick, C.B. Eom, Science **334**, 958 (2011).
59. "Metallic and Insulating Oxide Interfaces Controlled by Electronic Correlations", H. W. Jang, D. A. Felker, C. W. Bark, Y. Wang, M. K. Niranjan, C. T. Nelson, Y. Zhang, D. Su, C. M. Folkman, S. H. Baek, S. Lee, K. Janicka,

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57. "Synthesis of Fe_3O_4 thin films by selective oxidation with controlled oxygen chemical potential", H Xiang, FY Shi, C. Zhang, M S Rzchowski, P M Voyles, and Y A Chang,
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56. "Epitaxial growth and thermal stability of Fe_4N film on TiN buffered Si(001) substrate", H Xiang, F Y Shi, M S Rzchowski, P M Voyles, and Y A Chang,
J. Appl. Phys. **109**, 07E126 (2011).
55. "Phase-incoherent superconducting pairs in the normal state of $Ba(Fe_{1-x}Co_x)_2As_2$", Goutam Sheet, Manan Mehta, D. A. Dikin, S. Lee, C. W. Bark, J. Jiang, J. D. Weiss, E. E. Hellstrom, M. S. Rzchowski, C. B. Eom, and V. Chandrasekhar,
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54. "Creation of a two-dimensional electron gas at an oxide interface on silicon", J.W. Park, D.F. Bogorin, C. Cen, D.A. Felker, Y. Zhang, C.T. Nelson, C.W. Bark, C.M. Folkman, X.Q. Pan, M. S. Rzchowski, J. Levy and C. B. Eom,
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53. "Conductance asymmetry in point-contacts on epitaxial thin films of $Ba(Fe_{0.92}Co_{0.08})_2As_2$", M. Mehta, G Sheet, D. A Dikin, S Lee, C. W Bark, J Jiang, J. D Weiss, E. E Hellstrom, M. S Rzchowski, C. B Eom, V Chandrasekhar,
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52. "Ferroelastic switching for nanoscale non-volatile magnetoelectric devices", S. H Baek, H. W Jang, C. M Folkman, Y. L Li, B Winchester, J. X Zhang, Q He, Y. H Chu, C. T Nelson, M. S Rzchowski, X. Q Pan, R Ramesh, L. Q Chen, C. B Eom,
Nature Materials **9**, 309 (2010).
51. "Epitaxial growth and magnetic properties of Fe_3O_4 films on TiN buffered Si(001), Si(110), and Si(111) substrates", Hua Xiang, Fengyuan Shi, Mark S. Rzchowski, Paul M. Voyles, and Y. Austin Chang,
Appl. Phys. Lett. **97**, 092508 (2010).
50. "Growth of MgB_2 Thin Films In Situ by RF Magnetron Sputtering With a Pocket Heater", anghan Lee, Ke Chen, Seung Hyup Baek, Wenqing Dai, Brian H Moeckly, Qi Li, Xiaoxing Xi, Mark S Rzchowski, C. B. Eom,
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Nano Letters **9**, 3539 (2009).
47. "Growth and physical property of epitaxial $Co_{70}Fe_{30}$ thin film on Si substrate via TiN buffer", C.-X. Ji, Feng Lu, Y. Austin Chang, J. Joshua Yang, M. S. Rzchowski,
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46. "Strain-induced polarization rotation in epitaxial (001) $BiFeO_3$ thin films", H.W. Jang, S.H. Baek, D. Ortiz, C. M. Folkman, R.R. Das, Y.H. Chu, P. Shafer, J.X. Zhang, S. Choudhury, V. Vaithyanathan, Y.B. Chen, D.A.

Felker, M D. Biegalski, M.S. Rzchowski, X. Q. Pan, D.G. Schlom, L.Q. Chen, R. Ramesh, C. B. Eom,
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45. "Influence of symmetry mismatch on heteroepitaxial growth of perovskite thin films", D.L. Proffit, H.W. Jang, S. Lee, C.T. Nelson, X. Q. Pan, M. S. Rzchowski, C. B. Eom.
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44. "Over 70% TMR at room temperature for a CoFe and AlO_x based magnetic tunnel junction", J.J. Yang, C.-X. Ji, Y.A. Chang, X. Ke, M.S. Rzchowski,
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43. "Synthesis and ferroelectric properties of epitaxial $BiFeO_3$ thin films grown by sputtering", R.R. Das, D.M. Kim, S.H. Baek, C.B. Eom, F. Zavaliche, S.Y. Yang, R. Ramesh, Y.B. Chen, X.Q. Pan, X. Ke, M.S. Rzchowski, S.K. Streiffer,
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41. "Epitaxial Magnetic Perovskite Nanostructures", D. Ruzmetov, Y. Seo, L.J. Belenky, D.M. Kim, X. Ke, H. Sun, V. Chandrasekhar, C.B. Eom, M.S. Rzchowski, X. Pan,
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40. Antiferromagnetic exchange-bias in epitaxial ferromagnetic $La_{0.67}Sr_{0.33}MnO_3$ /$SrRuO_3$ bilayers
X. Ke, L.J. Belenky, and C.B. Eom, M.S. Rzchowski,
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39. "Positive exchange bias in ferromagnetic $LaSrMnO_3$/$SrRuO_3$ bilayers",
X. Ke, M.S. Rzchowski, L.J. Belenky, and C.B. Eom,
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37. "Electronic inhomogeneity at magnetic domain walls in strongly-correlated systems"
M.S. Rzchowski and R. Joynt,
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35 "Supercurrent peaks in planar high-T_C Josephson junctions"
M.S. Rzchowski and B.A. Davidson,
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32. "Strain-induced magnetic properties of PrSrMnO thin films"
X.W. Wu, M.S. Rzchowski, H.S. Wang, and Qi Li,
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31. “Temperature and magnetic-field dependent transport anisotropies in LaCaMnO films”
J. O’Donnell, J.N. Eckstein, M.S. Rzchowski,
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30. “Observation of strong to Josephson-coupled crossover in 10˚ $YBa_2Cu_3O_x$ bicrystal junctions”
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1. APS 2021 March Meeting (Virtual), *Epitaxial Antiperovskite/Perovskite Heterostructures for Materials Design*
2. APS 2020 March Meeting (Denver), *Complex Oxide Heterointerfaces New Materials Terminations Orientations*
3. MRS 2020 Spring Meeting (Phoenix), *Magnetoelectric Coupling by Piezoelectric Tensor Design*
4. CIMTEC 2020- 15th Intl (Montacatini Terme), *Magnetoelectric Coupling by giant piezoelectric tensor design*
5. "Spin-charge conversion and Berry curvature in oxide heterostructures", 4th Functional Oxide Thin Films for Advanced Energy and Information Technology Conference, Torres Vedras, Portugal, July 17-20, 2019
6. "Interfacial Phenomena in Multifunctional Heterostructures"
   EMA 2017 – Electronic Materials and Applications 2017 (Jan 2017)
7. "Giant Piezoelectric Materials for Micro Electromechancial Systems"
   CIMTEC 2016 – 7th International Forum on New Materials, (June 2016 Perugia Italy)
8. "Complex Oxide Heterointerfaces"
   Physics Dept. Colloquium, University of Missouri-Columbia (April 7, 2014)
9. "The 2D Electron Gas at Complex Oxide Heterointerfaces"
   20th International Workshop on Oxide Electronics WOE20 (Singapore, Sep 2013).
10. "2D Electron Gas at the Atomically Smooth $LaAlO_3/SrTiO_3$ (111) Interface"
    Physics and Chemistry of Surface and Interfaces PCSI40 (Jan 2013, Waikoloa, Hawaii)
11. "New Multifunctionalities at Complex Oxide Heterointerfaces",
    8th Multifunctional Materials Workshop MFM-8 (Nov 2013, Ubatuba, Brazil)
12. "Electronic and structural correlations at 2DEG oxide interfaces"
    American Physical Society March Meeting (Mar 2012, Boston)
13. "Reliable Polarization Switching in Multiferroic $BiFeO_3$",
    International Symposium on Integrated Functionalities ISIF 2012 (Hong Kong, China)
14. "General Physics for Biological Science Majors"
    American Association of Physics Teachers (Aug 2012, Philadelphia, PA)
15. "Giant Piezoelectricity on Silicon for Integrated Sensors and Actuators"
    Electronic Materials and Applications EMA 2010 (Orlando, FL)
16. "Active Nanostructures with Giant Piezo-response"
    Electrical, Communications and Cyber Systems 2010 (Hawaii).

CONFERENCE PRESENTATIONS

Over 75 presentations at various conferences.

PROFESSIONAL SERVICE:

Manuscript referee for Science, Nature Communications, Phys. Rev. Lett., Phys. Rev. B, , Journ. Low Temp. Physics, Physica C, Appl. Phys. Lett., J. Appl. Phys.

Proposal referee for NSF, ONR, PRF, SSRC, Res. Corp.

Organizer, "Workshop on Magnetic Heterostructures", Madison, WI August 1998.

Co-organizer, 1999 Fall MRS meeting, session JJ: "Magnetic Oxides", Boston MA.