

Igor. V. Roshchin

List of Publications, Patents, and Presentations

44 publications (36 in refereed journals) and over 67 invited talks, over 70 conference presentations; 2 patents.

PUBLICATIONS

(Underlined are students and associates of my group at Texas A&M University)

REFEREED:

1. P. N. Lapa, M.-H. Lee, I. V. Roshchin, K. D. Belashchenko, and I. K. Schuller, “Detection of uncompensated magnetization at the interface of an epitaxial antiferromagnetic insulator”, Phys. Rev. B **102**, 174406 (2020); doi: 10.1103/PhysRevB.102.174406.
2. N. M. Bruno, D. Salas, S. Wang, I. V. Roshchin, R. Santamarta, R. Arroyave, T. Duong, Y.I. Chumlyakov, I. Karaman, “On the microstructural origins of martensitic transformation arrest in a NiCoMnIn magnetic shape memory alloy”, Acta Materialia, **142**, 95-106 (2018) doi: 10.1016/j.actamat.2017.08.037.
3. P. N. Lapa, I. V. Roshchin, J. Ding, J. E. Pearson, V. Novosad, J. S. Jiang, and A. Hoffmann, “Magnetoresistive detection of strongly pinned uncompensated magnetization in antiferromagnetic FeMn” Phys. Rev. B **95**, 020409(R) (2017); doi: 10.1103/PhysRevB.95.020409.
4. D. Kaya, P. N. Lapa, P. Jayathilaka, H. Kirby, C. W. Miller, and I. V. Roshchin, “Controlling Exchange Bias in FeMn with Cu”, Journal of Applied Physics, **113**, 17D717 (2013); doi: 10.1063/1.4798310.
5. S. Lopez-Moreno, A. H. Romero, J. Mejia-Lopez, A. Munoz, and I. V. Roshchin “First-principles study of electronic, vibrational, elastic, and magnetic properties of FeF₂ as function of pressure.” Physical Review B. **85**, 134110 (2012); doi: 10.1103/PhysRevB.85.134110.
6. Randy K. Dumas, Chang-Peng Li, Igor V. Roshchin, Ivan K. Schuller, and Kai Liu, “Deconvoluting reversal modes in exchange-biased nanodots” Physical Review B **86**, 144410 (2012); doi: 10.1103/PhysRevB.86.144410
7. J. Mejia-Lopez, D. Altbir, P. Landeros, J. Escrig, A. H. Romero, I. V. Roshchin, C.-P. Li, M. R. Fitzsimmons, X. Batlle, and I. K. Schuller, “Development of vortex state in circular magnetic nanodots: theory and experiment.”, Physical Review B, **81**, 184417 (2010); doi:10.1103/PhysRevB.81.184417
8. R. Morales, M. Velez, O. Petravic, I. V. Roshchin, Z.-P. Li, X. Batlle, J. M. Alameda, and I. K. Schuller, “Three-dimensional spin structure in exchange-biased antiferromagnetic/ferromagnetic thin films” Applied Physics Letters, **95**, 092503 (2009); doi:10.1063/1.3216055
9. I. V. Roshchin, C. P. Li, H. Suhl, X. Batlle, S. Roy, S. Sinha, M. Fitzsimmons, J. Mejia-Lopez, D. Altbir, A. H. Romero, and I. K. Schuller, “Measurement of the vortex core in sub-100 nm Fe dots using polarized neutron scattering” EPL, **86**, 67008, (2009).
10. A. Khitun, M. Bao, J-Y. Lee, K. L. Wang, D. W. Lee, S. Wang, and I. V. Roshchin, “Inductively Coupled Circuits with Spin Wave Bus for Information Processing”, Journal of Nanoelectronics and Optoelectronics **3**, 24-34 (2008), arXiv:0705.3864; doi: 10.1166/jno.2008.003
11. M. R. Fitzsimmons, D. Lederman, M. Cheon, H. Shi, J. Olamit, I. V. Roshchin, and I. K. Schuller, “Antiferromagnetic domain size and exchange bias” Physical Review B, **77**, 224406 (2008).
12. F. Casanova, C. E. Chiang, C.-P. Li, I. V. Roshchin, A. M. Ruminski, M. J. Sailor, and I. K. Schuller “Gas adsorption and capillary condensation in nanoporous alumina films” Nanotechnology, **19**, 315709 (2008).
13. F. Casanova, C. E. Chiang, C.-P. Li, I. V. Roshchin, A. M. Ruminski, M. J. Sailor, and I. K. Schuller “Observation of capillary condensation in alumina nanopores by optical interferometry” Europhysics Letters, **81**, 26003 (2008).

14. R. K. Dumas, C.-P. Li, *I. V. Roshchin*, I. K. Schuller, and K. Liu, “Temperature Induced Single Domain - Vortex State Transition in sub-100nm Fe Nanodots” *Applied Physics Letters*, **91**, 202501 (2007).
15. Z.-P. Li, C. W. Miller, *I. V. Roshchin*, and I. K. Schuller, “Origin of spontaneous magnetization reversal in exchange biased heterostructures”, *Physical Review B*, **76** 014423 (2007)
16. R. K. Dumas, C.-P. Li, *I. V. Roshchin*, I. K. Schuller, and K. Liu, “Magnetic Fingerprints of sub-100 nm Fe Nanodots”, *Physical Review B* **75**, 134405 (2007).
17. M. R. Fitzsimmons, B. J. Kirby, S. Roy, Z.-P. Li, *I. V. Roshchin*, S. K. Sinha, and I. K. Schuller, “Pinned magnetization in the antiferromagnet and ferromagnet of an exchange bias system”, *Physical Review B* **75**, 214412 (2007).
18. J. Mejia Lopez, D. Altbir, A. H. Romero, X. Batlle, *I. V. Roshchin*, C.-P. Li, and I. K. Schuller, “Vortex state and effect of anisotropy in sub-100 nm magnetic nanodots”, *Journal of Applied Physics* **100**, 104319 (2006).
19. C.-P. Li, *I. V. Roshchin*, X. Batlle, and I. K. Schuller, “Fabrication of macroscopic arrays of magnetic nanodots” *Journal of Applied Physics*, **100**, 074318 (2006).
20. *I. V. Roshchin*, O. Petravic, R. Morales, Z.-P. Li, X. Batlle, and I. K. Schuller, “Lateral length scales in exchange bias” *Europhysics Letters*, **71**, 297-303, (2005).
21. S. Roy, M. R. Fitzsimmons, S. Park, M. Dorn, O. Petravic, *I. V. Roshchin*, Z.-P. Li, X. Batlle, R. Morales, A. Misra, X. Zhang, K. Chesnel, J. B. Kortright, S. K. Sinha and I. K. Schuller, “Depth profile of uncompensated spins in the antiferromagnetic layer of an exchange bias system” *Physical Review Letters* **95**, 047201 (2005).
22. J. Olamit, E. Arenholz, Z.-P. Li, Oleg Petravic, *I. V. Roshchin*, I. K. Schuller, and K. Liu, “Domains and Magnetization Rotation in Exchange Biased Ni/FeF₂”, *Physical Review B*, **71**, 012408 (2005).
23. O. Petravic, Z.-P. Li, *I. V. Roshchin*, M. Viret, R. Morales, X. Batlle, and I. K. Schuller, “Bi-domain state in the exchange bias system FeF₂/Ni”, *Applied Physics Letters*, **87**, 222509 (2005).
24. J. J. Akerman, *I. V. Roshchin*, J. M. Slaughter, R. W. Dave and I. K. Schuller “Origin of Temperature Dependence in Tunneling Magnetoresistance” *Europhysics Letters* **63**(1), 104-110 (2003).
25. K. Liu, J. Nogues, C. Leighton, *I. V. Roshchin*, H. Masuda, K. Nishio, and I. K. Schuller “Fabrication and Thermal Stability of Arrays of Fe Nanodots”, *Applied Physics Letters* **81**, 4434-4436 (2002).
26. *I. V. Roshchin*, A. C. Abeyta, L. H. Greene, T. A. Tanzer, J. F. Dorsten, P. W. Bohn, S.-W. Han, P. F. Miceli, J. F. Klem, “Observation of the Superconducting Proximity Effect in Nb/InAs and NbN_x/InAs by Raman Scattering”, *Physical Review B* **66**, 134530 (2002).
This article also was selected for publication in the *Virtual Journal of Applications of Superconductivity* – November 1, 2002 Volume 3, Issue 9
27. *I. V. Roshchin*, J. Yu, A. D. Kent, G. W. Stupian, and M. S. Leung, “Magnetic Properties of Fe Microstructures with Focused Ion Beam-Fabricated Nano-Constrictions”, *IEEE Transactions on Magnetism* **37**, 2101-2103 (2001).
28. S.-W. Han, J. Farmer, H. Kaiser, P. F. Miceli, *I. V. Roshchin*, L. H. Greene, “Orientation of vortices in a superconducting thin film: Quantitative comparison of spin-polarized neutron reflectivity and magnetization”, *Physical Review B* **62**, 9784-9790 (2000).
29. T. A. Tanzer, P. W. Bohn, *I. V. Roshchin*, and L. H. Greene, “Ion-Etch Produced Damage on InAs(100) Studied through Collective-Mode Electronic Raman Scattering” *Journal of Vacuum Science and Technology B* **18**(1), 144-149 (2000).
30. T. A. Tanzer, P. W. Bohn, *I. V. Roshchin*, L. H. Greene, and J. F. Klem, “Near surface electronic structure on InAs (100) modified with self-assembled monolayers of alkanethiols”, *Applied Physics Letters*, **75**, 2794-2796 (1999).
31. A. V. Pronin, M. Dressel, A. Pimenov, A. Loidl, *I. V. Roshchin*, L. H. Greene “Direct Observation of the Superconducting Energy Gap Developing in the Conductivity Spectra of Niobium”, *Physical Review B* **57**, 14416-14421 (1998).
32. L. H. Greene, *I. V. Roshchin*, A. C. Abeyta, G. Kuchler, J. F. Dorsten, T. A. Tanzer, W. L. Feldmann, and P. W. Bohn, “Raman Scattering as a Probe of the Superconducting Proximity Effect”, Plenary

Proceedings of the XXI International Conference on Low-Temperature Physics (LT21), Prague, Czech Republic, August 8-14, 1996. Czechoslovak Journal of Physics **46**, S6, 3115-3122 (1996).

33. L. H. Greene, J. F. Dorsten, *I. V. Roshchin*, A. C. Abeyta, T. A. Tanzer, W. L. Feldmann, and P. W. Bohn, "Optical Detection of the Superconducting Proximity Effect: Raman Scattering on Nb/InAs", Proceedings of the XXI International Conference on Low-Temperature Physics (LT-21), Prague, Czech Republic, August 8-14, 1996. Czechoslovak Journal of Physics **46**, S2, 741-742 (1996)
34. *I. V. Roshchin*, V. Stepankin, and A. Kuznetsov, "Reentrant Superconductivity Transport Behavior of Single Grain Boundary Josephson Junction in BaPb_{1-x}Bi_xO₃ Bicrystals", Journal of Low Temperature Physics, **100**, 229-240, (1995).
35. *I. V. Roshchin*, V. N. Stepankin, A. V. Kuznetsov, "Re-entrant Critical Current Behavior as a Common Feature of Single Grain Boundary Josephson Junctions in Bicrystals of Copperless Oxide Superconductors." IEEE Transactions on Applied Superconductivity **5**, 1328-1330 (1995).
36. *I. V. Roshchin*, V. N. Stepankin, Yu. P. Yakovets, M. A. Baranov, A. V. Kuznetsov, D. I. Zhigunov, S. V. Sheeryaev, "Anomalous behavior of the critical current of grain-boundary Josephson junctions in a bulk (Ba,K)BiO₃", JETP Letters, **59**, 168-172 (1994) (Pis'ma V Zh. Eksp. Teor. Fiz., **59**, 159-162 (1994)).

NON-REFEREED (CONFERENCE PROCEEDINGS, ETC):

37. *I. V. Roshchin*, **K. E. Badgley**, M. Zhernenkov, M. R. Fitzsimmons, M. Varela, S. J. Pennycook, Z.-P. Li, **H. Ponce**, **A. H. Romero**, C. W. Miller, I. K. Schuller "Uncompensated Moments in Antiferromagnets: Origin, Properties and Role in Exchange Bias" Proc. of International Conference on Electromagnetics in Advanced Applications, 2010 – ICEAA'10, 20-24 Sept. 2010, 631-632; doi: 10.1109/ICEAA.2010.5651210 (invited).
38. *I. V. Roshchin*, C. P. Li, H. Suhl, X. Battle, S. Roy, S. Sinha, S. Park, R. Pynn, M. Fitzsimmons, J. Mejia-Lopez, D. Altbir, A. H. Romero, R. Dumas, K. Liu, and I. K. Schuller, "Magnetic vortices in Sub-100 nm magnets", Proc. of International Conference on Electromagnetics in Advanced Applications, 2009 - ICEAA '09, 14-18 Sept. 2009, 1028 - 1029 doi: 10.1109/ICEAA.2009.5297777 (invited).
39. M.R. Fitzsimmons, M. R.; S. Roy, S.; B. J. Kirby, S. Park, *I. V. Roshchin*, Z.-P. Li, J. B. Kortright, I. K. Schuller, "Combined magnetic X-ray and polarized neutron reflectivity study of the origins of exchange bias in the Co/FeF₂ system", Proc. of International Symposium on Physics in Low Dimensions - Structure Meets Magnetism, Ruhr Univ. Bochum, Apr. 5-7, 2006, Superlattices and Microstructures, **41**, 109-115 doi: 10.1016/j.spmi.2007.02.004 (invited).
40. S. K. Sinha, S. Roy, S.; M. R. Fitzsimmons, S. Park, M. Dorn, O. Petravic, *I. V. Roshchin*, Z.-P. Li, R. Morales, A. Misra, X. Zhang, K. Chesnel, J. B. Kortright, I. K. Schuller, "Combined neutron and synchrotron studies of magnetic films" Proc. Of "50th Annual DAE-BRNS Solid State Physics Symposium" Bhabha Atom Res Ctr, Mumbai, India, Dec. 5-9, 2005, Pramana – Journal of Physics **67** 47-55 doi: 10.1007/s12043-006-0035-8, Jul 2006. (invited).
41. Featured in MRS Bulletin 28 (7), 530 (2003).
42. K. Liu, L. Zhao, P. Klavins, F. E. Osterloh, J. Nogues, C. Leighton, H. Masuda, K. Nishio, *I. V. Roshchin*, and I. K. Schuller, "Synthesis and Thermal stability of nanomagnets", Proceedings of the 10th Annual International Conference on Composites/Nano Engineering (ICCE-10), 429-430 (2003).
43. L. H. Greene, A. C. Abeyta, *I. V. Roshchin*, I. K. Robinson, J. Dorsten, T. A. Tanzer, and P. W. Bohn, "Optical Detection of the Superconducting Proximity Effect" in "Spectroscopic Studies of Superconductors", Ivan Bozovic and Dirk van der Marel, editors (SPIE Proceedings # 2696, SPIE, Bellingham, 1996) p. 215.
44. V. Stepankin, *I. Roshchin*, A. Kuznetsov, "Reentrant low-temperature behavior of critical current of grain boundaries as universal feature of oxide superconductors", Proc. of the 7th Int. Workshop on Critical Currents in Superconductors, World Scientific, 347-350 (1994).

PATENTS

- “Magnetic layered structures with controllable exchange bias” (Patent application, 2014).
- “Exchange-bias based multi-state magnetic memory and logic devices and magnetically stabilized magnetic storage” (US Patent, 7,764,454, July 27, 2010).
- Frequency mixer having ferromagnetic film” (US patent, 9,300,251, Mar 29, 2016)

INVITED TALKS (SEMINARS, COLLOQUIA AND PUBLIC LECTURES):

(Some lines include multiple talks/lectures)

1. “Protection of Intellectual Property: Patents, Copyrights and Trademarks”, Lecture series “Business for small business owners”, Russian School of Austin, Austin, TX, December 1, 8, 15 2019, January 12, 2020.
2. “Protection of Intellectual Property: Patents, Copyrights and Trademarks”, Lecture series “Business for small business owners”, Russian School of Austin, Austin, TX, January 28, February 4, 11, 18, 2018.
3. “New Magnetic State Observed with Polarized Neutron Reflectometry”, Condensed Matter Seminar, University of Texas at Austin, April 7, 2016.
4. “The Art and Science of Effective Presentations”, Project Management Exchange, College Station, TX, October 7, 2014.
5. “Controlling Magnetism with Non-Magnetic Materials”, Seminar, HGST, a Western Digital Company, San Jose, CA, USA, April 24, 2014.
6. “Exchange Bias – A Tool to Observe Unusual Magnetic Properties”, NIST Center for Neutron Research, April 18, 2014.
7. “The Art and Science of Effective Presentations”, Engineering and Management seminar, College Station, TX, March 13, 2014.
8. “New Magnetic State and Controlling Magnetism with Non-Magnetic Materials”, seminar, Oak Ridge National Lab, TN, November 15, 2013.
9. “Controlling Magnetism with Non-Magnetic Materials”, Seminar, Universidad de Santiago de Chile, Santiago, Chile, June 11, 2013
10. “New Magnetic State and Intrinsic Exchange Bias”, Condensed Matter Seminar, Purdue University, West Lafayette, IN, February 22, 2013.
11. “Controlling Magnetism with Non-Magnetic Materials”, Condensed Matter Seminar, Texas A& M University, January 25, 2013.
12. “New Magnetic State and Intrinsic Exchange Bias”, Condensed Matter and Surface Science Colloquium, Ohio University, Athens, November 9, 2012.
13. “New Magnetic State and Intrinsic Exchange Bias”, Seminar of the WPI Advanced Institute for Materials Research (WPI-AIMR), Tohoku University, Sendai, October 8, 2012.
14. “New Magnetic States on Nanoscale Map”, public lecture, series: Saturday Morning Physics at Texas A&M, February 11, 2012.
15. “Uncompensated Moments in Antiferromagnets and Intrinsic Exchange Bias”, Seminar, Hitachi Global Storage Technologies, San Jose, CA, USA, April 22, 2011.
16. “The Art of Science of Magnetism at the Nanoscale”, Materials Science and Engineering Seminar, Texas A&M University, USA, April 15, 2011.
17. “Uncompensated Moments in Antiferromagnets and Intrinsic Exchange Bias”, Condensed Matter Seminar, Department of Physics and Astronomy, Texas A&M University, USA, February 18, 2011.
18. “Uncompensated Moments in Antiferromagnets and Intrinsic Exchange Bias”, Seminar, Nebraska Center for Materials and Nanoscience, University of Nebraska-Lincoln, USA, January 27, 2011.
19. “The Art and Science of Magnetism at Nanoscale”, public lecture, series: Saturday Morning Physics at Texas A&M, February 27, 2010.

20. "The Art and Science of Magnetism at Nanoscale", seminar, Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional – CINVESTAV, Queretaro, Mexico, January 13, 2009.
21. "Vortices and unusual Magnetic Properties of Nanodots", Condensed Matter Physics Seminar, University of Texas, Austin, October 6, 2009.
22. "Vortices and Unusual Magnetic Properties of Nanodots", Physics Seminar, INRIM, Turin, Italy, September 15, 2009.
23. "Capillary Condensation in Nanopores", Condensed Matter Physics Seminar, Texas A&M, September 26, 2007
24. "The Art and Science of Magnetism at Nanoscale", Summer School "Functional Materials", Puhajarve, Estonia, June 26-28, 2007.
25. "Magnetism at Nanoscale", Physics Seminar, National Institute of Chemical Physics and Biophysics, Tallinn, Estonia June 25, 2007.
26. "The Art and Science of Magnetism at Nanoscale", Physics Colloquium, Southern California University, April 2, 2007.
27. "The Art and Science of Magnetism at Nanoscale", Physics Colloquium, Colorado State University, March 20, 2007.
28. "The Art and Science of Magnetism at Nanoscale", Physics Colloquium, Purdue University, February 20, 2007.
29. "The Art and Science of Magnetism at Nanoscale", Physics Colloquium, Virginia Commonwealth University, February 13, 2007.
30. "Unusual Magnetic Properties of Nanostructures and Proximity Effect", Physics Colloquium, Texas A&M University, January 24, 2007.
31. "The Art and Science of Magnetism at Nanoscale", Physics Colloquium, The Catholic University of America, January 19, 2007.
32. "Vortices and Unusual Magnetic Properties of Nanodots", Condensed Matter Physics Seminar, University of California – San Diego, October 25, 2006.
33. "Magnetism at nanoscale: Science and Art", Interdepartmental Colloquium, Southern Ural State University, Chelyabinsk, Russia, September 20, 2006.
34. "Lateral Scales in Proximity Effect – Exchange Bias", Division of Low Temperature and Cryogenics Seminar, General Physics Institute of Russian Academy of Sciences, Moscow, Russia, September 15, 2006.
35. "Magnetism of Nanostructures. Magnetic Vortices in Nanodots", Colloquium, Departments of Material Sciences and Inorganic Chemistry, Moscow State University, September 14, 2006.
36. "Proximity Effects and Magnetism at Nanoscale", Physics Colloquium, Texas A&M University, April 5, 2006.
37. "The Art and Science of Magnetism at Nanoscale", Physics Colloquium, University of South Florida, March 7, 2006.
38. "Nanostructures and Magnetism", Physics Colloquium, Ohio University, January 26, 2006.
39. "Lateral Length Scales in Proximity Effect: Local Nature of Exchange Bias" Condensed Matter Seminar, University of Illinois at Urbana-Champaign, December 9, 2005.
40. "Nanodots and Magnetism", Physics Colloquium, California State University Northridge, November 16, 2005.
41. "Magnetic Nanostructures", Physics Colloquium, Texas A&M University, January 26, 2005.
42. "Lateral Length Scales in Proximity Effect: Local Nature of Exchange Bias", Seminar, Los Alamos National Laboratory, LANSCE, November 17, 2004.
43. "Proximity effect with inhomogeneous order parameters: Lateral length scale in exchange bias", Condensed Matter Division Seminar, CEA, Saclay, July 6, 2004.
44. "Magnetic Nanostructures", Physics Colloquium, Syracuse University, February 10, 2004.
45. "Magnetic Nanodots: Magnetic Stabilization, Exchange Bias and Vortex State", Condensed Matter Seminar, Syracuse University, February 11, 2004.

46. "Magnetic Nanodots: vortex state, exchange bias, magnetization stabilization, and neutron studies", Condensed Matter Seminar, New York University, October 31, 2003.
47. "Magnetic Nanodots: vortex state, exchange bias, magnetization stabilization, and neutron studies", DMSE seminar, Massachusetts Institute of Technology, October 20, 2003.
48. "Nanotechnology and Magnetism", Special Interdepartmental Colloquium, Southern Ural State University, Chelyabinsk, Russia, October 8, 2002.
49. "Magnetism in nanostructures", Division Seminar, General Physics Institute of Russian Academy of Sciences, Moscow, Russia, October 2, 2002.
50. "Fabrication and magnetism of nanodots and wires with nanoconstrictions", Special Condensed Matter Seminar. University of Illinois at Urbana-Champaign. March 25 2002.
51. "Studies of the Proximity Effect in Superconductor-Semiconductor Structures Using Raman Spectroscopy", Jet Propulsion Lab, NASA, Pasadena, CA, October 14, 1999.
52. "Studies of the Proximity Effect in Superconductor-Semiconductor Structures Using Raman Spectroscopy", Almaden Research Center, IBM, San Jose, CA, October 12, 1999.
53. "Studies of the Proximity Effect in Superconductor-Semiconductor Structures Using Raman Spectroscopy", Lucent, Breinigsville, PA, September 17, 1999.
54. "Studies of the Proximity Effect in Superconductor-Semiconductor Structures Using Raman Spectroscopy", Bell Laboratories, Murray Hills, NJ, September 16, 1999.

INVITED RESEARCH CONFERENCE PRESENTATIONS:

1. BICMM-6, Baikal International Conference "Magnetic Materials. New Technologies" (BICMM-6) August 19-23, 2014
2. "Intrinsic Exchange Bias: Crucial Role Of Surface And Nonmagnetic Layers", EastMag, Russky Island, Vladivostok, Russia, September 15-21, 2013
3. "New magnetic state in thin-film antiferromagnets and intrinsic exchange bias", Easter Island, Chile, June 4-7, 2013 (*Poster+Oral Presentation for NSF award recipient*)
4. "New Magnetic State and Intrinsic Exchange Bias", International Conference of the Asian union of Magnetism Societies - ICAUMS-2012, Nara, Japan, October 2-5, 2012.
5. "Uncompensated Magnetization in Antiferromagnets, and New Classification of Exchange Bias System", APS March Meeting, Boston, MA, February 27, 2012.
6. "Uncompensated Moments in Antiferromagnets and Intrinsic Exchange Bias." Moscow International Symposium on Magnetism (MISM-2011), Moscow, Russia, August 21-25, 2011.
7. "Uncompensated moments in antiferromagnets: origin, properties and role in exchange bias" International Conference on Electromagnetics in Advanced Applications (ICEAA), Sydney, Australia, September 20, 2010.
8. "Magnetic Vortices in sub-100 nm Magnets", International Conference on Electromagnetics in Advanced Applications (ICEAA), Turin, Italy, September 14, 2009.
9. "Magnetic Nanodots: Vortex Core Measured with Polarized Neutrons", Texas A&M – CINVESTAV (Mexico) Workshop on Materials "Materials Across The Border", College Station, TX, July 13-15, 2009.
10. "Vortex State in Sub-100 nm Magnetic Nanodots", APS March Meeting, Baltimore, Maryland, March 13–17, 2006.
11. "Vortices in Nanostructured Magnets", 50th MMM conference, San Jose, CA, October 30, 2005.
12. "Magnetic vortices in nanostructures", US-Spain Workshop on Nanoscale Materials, Segovia, Spain, September 20-23, 2005.
13. "Magnetic Properties of Fe Nanodot Arrays", MRS Spring Meeting, San Francisco, April 23, 2003.

CONFERENCE PRESENTATIONS

1. “Uncompensated Magnetization in FeMn Measured with Polarized Neutron Reflectometry”, 61st MMM conference, New Orleans, LA, November 4, 2016.
2. “Fingerprinting Morphology of Magnetic Shape Memory Alloys Using First Order Reversal Curves (FORC) and Neutron Scattering”, APS March Meeting, March 17, 2016.
3. “Role of Cu in Exchange Bias in FeMn Revealed with Neutron Reflectometry”, 13th Joint MMM-Intermag Conference, January 14, 2016.
4. “Fingerprinting Morphology of Magnetic Shape Memory Alloys Using First Order Reversal Curves (FORC) and Neutron Scattering”, 13th Joint MMM-Intermag Conference, January 14, 2016.
5. “Observation of New Magnetic State with Polarized Neutron Reflectometry”. 13th Joint MMM-Intermag Conference, San Diego, CA, January 12, 2016
6. “Role of Cu in exchange bias in FeMn revealed with neutron scattering”, APS March Meeting, San Antonio, TX, March 5, 2015
7. BICMM-6, Baikal International Conference "Magnetic Materials. New Technologies" (BICMM-6) August 19-23, 2014 (*invited*).
8. MISM-2014, Moscow, Russia, June 29 – July 3, 2014.
9. Magnetic North IV, Victoria, British Columbia, Canada, May 22-25, 2014.
10. “How Cu affects the intrinsic exchange bias in FeMn”, Intermag-2014, Dresden, Germany, May 4, 2014
11. “Fingerprinting Exchange Bias and Morphology of Magnetic Shape Memory Alloys Using First Order Reversal Curves (FORC)” Intermag-2014, Dresden, Germany, May 8, 2014.
12. “Role of Cu in Intrinsic Exchange Bias In FeMn”, 4th International Conference on Superconductivity and Magnetism- ICSM2014, Antalya, Turkey, April 27-May 2, 2014
13. “Effect of Morphology on Exchange Bias in NiMnSn and NiCoMnIn Magnetic Shape Memory Alloys”, 4th International Conference on Superconductivity and Magnetism- ICSM2014, Antalya, Turkey, April 27-May 2, 2014
14. “Role of Cu in Intrinsic Exchange Bias in FeMn”, APS March Meeting, Denver, CO, March 6, 2014.
15. “Role of Cu in Intrinsic Exchange Bias in FeMn”, 58th MMM conference, Denver, CO, November 5, 2013.
16. “Intrinsic Exchange Bias: Crucial Role Of Surface And Nonmagnetic Layers”, EastMag, Russky Island, Vladivostok, Russia, September 15-21, 2013 (*invited*).
17. “Controlling Exchange Bias in FeMn with Cu”, Eastern Island Nanoscience Conference (EINC-2013), Easter Island, Chile, June 4-7, 2013.
18. “New magnetic state in thin-film antiferromagnets and intrinsic exchange bias”, Easter Island, Chile, June 4-7, 2013 (*Special poster presentation - NSF award recipient*).
19. “Controlling Exchange Bias in FeMn with Cu”, APS March Meeting, Baltimore, MD, March 18, 2013.
20. “Controlling Exchange Bias in FeMn with Cu”, 12th Joint MMM/Intermag Conference, Chicago, January, 2013.
21. “New magnetic state in thin-film antiferromagnets and intrinsic exchange bias”, ICAUMS-2012 Nara, Japan, October 2012 (*invited*).
22. “New magnetic state in thin-film antiferromagnets and intrinsic exchange bias”, Magnetic North-3, Banff, Canada, June 7-10, 2012.
23. “Uncompensated Magnetization in Antiferromagnets, and New Classification of Exchange Bias System”, APS March Meeting, Boston, MA, February 27, 2012 (*invited*).
24. "New Magnetic State In Thin-Film Antiferromagnets and Uncompensated Magnetization", APS March Meeting, Boston, MA, February 28, 2012.
25. “New magnetic state in thin-film antiferromagnets and new classification of exchange bias systems”, Train2 SUDOE workshop on Nanomagnetism and Spintronics, San Sebastian, February 23, 2012.

26. “New Magnetic State and Origin of Uncompensated Magnetization in FeF₂.” 56th MMM Meeting, Scottsdale, AZ, November 4, 2011.
27. “Uncompensated Moments in Antiferromagnets and Intrinsic Exchange Bias.” Moscow International Symposium on Magnetism (MISM-2011), Moscow, Russia, August 21-25, 2011 (*invited*).
28. “Intrinsic Exchange Bias and Origin of Uncompensated Magnetization in FeF₂.” APS March Meeting, Dallas, TX, March 24, 2011.
29. “Visualisation and Scientific Communication: Why and What can You do?”, Workshop on visualization in science, Cooks Branch Reserve, TX, March 12, 2011
30. “Magnetic Nanodots: Vortex Core Measured and Calculated” TAMU-CONACyT Research Symposium, March 2 2011.
31. “Uncompensated Magnetization and Structure of FeF₂” TAMU-CONACyT Research Symposium, March 2 2011. (poster)
32. “Uncompensated Magnetization in FeF₂ and Intrinsic Exchange Bias.” 55th MMM Meeting, Atlanta, November 17, 2010.
33. “Uncompensated moments in antiferromagnets: origin, properties and role in exchange bias” International Conference on Electromagnetics in Advanced Applications (ICEAA), Sydney, Australia, September 20, 2010 (*invited*).
34. “Frustrations from Technologies – Is It Worth the Effort?” ([slides](#)), Conference “Teaching With Technologies”, College Station, TX, February 10, 2010.
35. “Magnetic Vortices in sub-100 nm Magnets” International Conference on Electromagnetics in Advanced Applications (ICEAA), Turin, Italy, September 14, 2009 (*invited*).
36. “Magnetic Nanodots: Vortex Core Measured with Polarized Neutrons”, Texas A&M – CINEVESTAV (Mexico) Workshop on Materials “Materials Across The Border”, College Station, TX, July 13-15, 2009 (*invited*).
37. “Magnetic Nanodots: Vortex Core Measured with Polarized Neutrons”, MRS Fall Meeting, Boston, December 4, 2008.
38. “Origin of uncompensated moments in antiferromagnets and their role in exchange bias.” 53rd MMM Meeting, Austin, November 12, 2008.
39. “Uncompensated moments in antiferromagnets: Origin and role in exchange bias.” APS March Meeting, New Orleans, Louisiana, March 10-14, 2008.
40. “Size dependence and metastability of the vortex state in magnetic nanodots”, APS March Meeting, Denver, Colorado, March 5-9, 2007.
41. “Size and material dependence of in-plane and out-of-plane magnetic configurations in nanodots”, 10th Joint MMM/Intermag Conference, Baltimore, Maryland, January 11, 2007.
42. “Effect of Anisotropy and Exchange Bias on Reversal of Sub-100 nm Magnetic Dots”, Intermag–2006, San Diego, CA, May 11, 2006.
43. “Vortex State in Sub-100 nm Magnetic Nanodots”, APS March Meeting, Baltimore, Maryland, March 13–17, 2006 (*invited*).
44. “Fabrication and magnetism of sub-100 nm exchange-biased magnetic dot arrays and porous networks”, APS March Meeting, Baltimore, Maryland, March 13-17, 2006.
45. “Vortices in Nanostructured Magnets“, 50th MMM conference, San Jose, CA, October 30, 2005 (*invited*).
46. “Magnetic vortices in nanostructures“, US-Spain Workshop on Nanoscale Materials, September 20–23, 2005 Segovia, Spain (*invited*).
47. “Quantitative studies of the vortex state in sub-100 nm magnetic nanodots”, APS March Meeting, Los Angeles, CA, March 21-25 2005.
48. “Lateral length scales and local character of exchange bias”, APS March Meeting, Los Angeles, CA, March 21-25 2005.
49. “Lateral length scales and local nature of exchange bias”, 49th MMM conference, Jacksonville, FL, November 5-11, 2004.

50. "Magnetic Nanodots: Exchange Bias, Vortex State, and Neutron Studies", APS March Meeting, Montreal, Quebec, Canada, March 22-26, 2004
51. "Imprinting Domain Wall into Antiferromagnet", APS March Meeting, Montreal, Quebec, Canada, March 22-26, 2004
52. "Magnetic Nanodots: magnetization stabilization, vortex state, exchange bias, and neutron studies", 9th Joint MMM-Intermag Conference, Anaheim, CA, January 5-9, 2004.
53. "Stabilization of Magnetism in Ferromagnetic Dot Arrays Towards Terabit per Square Inch Storage", Non-Volatile Memory Technology Symposium, San Diego, CA, November 12, 2003.
54. "Magnetic Properties of Fe Nanodot Arrays", MRS Spring Meeting, San Francisco, CA, April 23, 2003 (*invited*).
55. "Inevitability of Thermal Smearing in Temperature-Dependent Electron Tunneling in MTJs", 47th MMM conference, Tampa, FL, November 2002.
56. "Fabrication and Magnetization Stabilization in Arrays of Fe Nanodots with Exchange Bias", APS March Meeting, Indianapolis, IN, March 2002.
57. "Influence of Barrier Oxidation Time on Temperature-Dependent Spin Polarization Decay in Magnetic Tunnel Junctions", APS March Meeting, Indianapolis, IN, March 2002.
58. "Origin of Temperature Dependence in Tunneling Magnetoresistance", APS March Meeting, Indianapolis, IN, March 2002.
59. "Magnetic and Transport Properties of Fe Microstructures with Focused Ion Beam-Fabricated Nano-Constrictions", APS March Meeting, Seattle, WA, March 2001.
60. "Magnetic and Transport Properties of Fe Microstructures with Focused Ion Beam-Fabricated Nano-Constrictions", 8th Joint MMM-Intermag Meeting, San Antonio, TX, USA, January 2001.
61. "Superconducting Proximity Effect in Superconductor/Semiconductor Lateral Structures", APS March Meeting, Atlanta, GA, USA, March 1999.
62. "Investigation of the proximity effect in superconductor/semiconductor interfaces using Raman spectroscopy", Gordon Research Conference, Plymouth, NH, USA, July 1998.
63. "Observation of the Superconducting Energy Gap in the Conductivity Spectra of Thin Niobium Films", APS March Meeting, Los Angeles, CA, USA, March 1998.
64. "Studies Of The Proximity Effect In Superconductor/Semiconductor Interfaces Using Raman Spectroscopy", APS March Meeting, Los Angeles, CA, USA, March 1998.
65. "Optical Observation of the Superconducting Proximity Effect", APS March Meeting, Kansas, MO, USA, March 1997.
66. "Optical Detection of the Superconducting Proximity Effect", APS March Meeting, St. Louis, MO, USA, March 1996.
67. "Electronic Transport Across Superconductor-Semiconductor Interfaces", MISSCON Workshop, Columbia, MO, USA, July 1995.
68. "Thermally Activated Phase Slippage Effects in Bicrystals of Oxide Superconductors", MRS Fall Meeting, Boston, MA, USA, November 1994.
69. "Re-entrant Critical Current Behavior as a Common Feature of Single Grain Boundary Josephson Junctions in Bicrystals of Copperless Oxide Superconductors", Applied Superconductivity Conference, Boston, MA, USA, October 1994.
70. "Reentrant behavior of critical current of single grain boundary in bicrystals as universal feature of oxide superconductors", MRS Spring Meeting, San Francisco, USA, April 1994.

CONFERENCE PRESENTATIONS OF STUDENTS

(since 2009, partial list)

1. Pavel N. Lapa, “Fingerprinting Morphology of Magnetic Shape Memory Alloys Using First Order Reversal Curves (FORC) and Neutron Scattering”, 13th Joint MMM-Intermag Conference, January 14, 2016.
2. Pavel N. Lapa, “Effect of morphology on exchange bias in NiMnSn and NiCoMnIn magnetic shape memory alloys”, APS March Meeting, March 5, 2014, Denver, CO.
3. Leonardo Bello Puerto, “Automation of alumina nanopore fabrication by anodization”, Joint Fall 2013 Meeting of the Texas Sections of the APS, AAPT, and Zone 13 of the SPS, October 11, 2013; Brownsville, Texas (Best Student presentation award and TS APS Student Travel Award)
4. Pavel N. Lapa, “Effect of morphology on exchange bias in NiCoMnSn and NiCoMnIn magnetic shape memory alloys”, Joint Fall 2013 Meeting of the Texas Sections of the APS, AAPT, and Zone 13 of the SPS, October 11, 2013; Brownsville, Texas (TS APS Student Travel Award)
5. Pavel N. Lapa, “Calculation of energy barriers for magnetic vortices in sub-100 nm dots”, APS March Meeting, March 21, 2013, Baltimore, MD. (APS GMAG Student Travel Award)
6. Pavel N. Lapa, “Calculation of energy barriers for magnetic vortices in sub-100 nm dots”, Joint Fall 2012 Meeting of the Texas Sections of the APS, AAPT, and Zone 13 of the SPS, October 26, 2012; Lubbock, Texas (TS APS Student Travel Award)
7. Dogan Kaya, “Effect of Cu Layer on Exchange Bias in FeMn” Student Research Week, College Station, TX, March 20, 2012
8. Andrew King, “Energy barriers for vortex nucleation and annihilation in sub-100 nm magnetic dots” Student Research Week, College Station, TX, March 20, 2012
9. Dogan Kaya, “Effect of Cu Layer on Exchange Bias in FeMn” APS March Meeting, Boston, MA, February 29, 2012 (OGS Graduate Student Presentation Award)
10. Andrew King, “Energy barriers for vortex nucleation and annihilation in sub-100 nm magnetic dots” APS March Meeting, Boston, MA, February 27, 2012 (APS Future of Physics Days Student Travel Award)
11. Dogan Kaya, “Effect of Cu Layer on FeMn Magnetic Properties” Joint Fall 2011 Meeting of the Texas Sections of the APS, AAPT, and Zone 13 of the SPS, Commerce, TX, October 8, 2011 (TS APS Student Travel Award)
12. Andrew King, “Micromagnetic simulations of the transition between vortex and single-domain magnetization states in sub-100 nm nanodots” Joint Fall 2011 Meeting of the Texas Sections of the APS, AAPT, and Zone 13 of the SPS, Commerce, TX, October 8, 2011 (TS APS Student Travel Award)
13. Karie E. Badgley, “Uncompensated Magnetization in FeF₂”, Joint Fall 2010 Meeting of the Texas Sections of the APS, AAPT, Zone 13 of SPS and the National Society of Hispanic Physicists, San Antonio, TX, October 22, 2010
14. Karie E. Badgley, “Origin and Properties of Uncompensated Magnetization in FeF₂”,– APS March Meeting, Portland, OR, March 15, 2010
15. H. Ponce, “Calculation of exchange coupling and magnetoanisotropy in antiferromagnetic materials from first principles”, Second Chile-Mexico Workshop, Cocoyoc, Morelos, Mexico, January 5-8, 2010, (poster) - Awarded Best Poster Presentation.
16. Karie E. Badgley, “Origins and Properties of Uncompensated Magnetization in FeF₂” Texas APS Section Meeting, San Marcos, TX, October 23, 2009.
17. Jacob D. Gonzales, “Automation of the Al anodization used for the fabrication of highly ordered sub-100-nm nanopore arrays”, Texas APS Section Meeting, San Marcos, TX, October 23, 2009.