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EDUCATION

Ph.D., Physics, December 1998, The Johns Hopkins University, Baltimore, Maryland

EXPERIENCE

Professor:	2008-present	U. C. Davis, Physics Department
Associate Professor:	2005-08	U. C. Davis, Physics Department
Assistant Professor:	2001-05	U. C. Davis, Physics Department
Postdoctoral Fellow:	1999-01	U. C. San Diego, Physics Department
Postdoctoral Fellow:	1999	The Johns Hopkins University Dept. of Physics & Astronomy & MRSEC

HONORS AND AWARDS

Fellow, Institute of Electrical and Electronics Engineers (IEEE), 2016
Fellow, American Physical Society, 2012
Fellow, Institute of Physics (UK), 2011
Chancellor's Fellow, UC Davis, 2007-12
Alfred P. Sloan Research Fellow, 2005-07
Junior Faculty Research Fellow, UC Davis, 2003
Chien-Shiung Wu & Luke Chia-Liu Yuan Scholarship, 1991

RESEARCH INTERESTS

Synthesis and experimental investigation of nanostructured materials, particularly in nanomagnetism and spintronics. Topics include: spin textures and skyrmions, magneto-ionics, magnetic anisotropy, magnetoresistance, interlayer coupling, exchange bias, half-metallics, magnetization reversal and hysteresis, and hydrogen storage. Expertise in advanced sputter deposition, e-beam evaporation, MBE, electrodeposition, pulsed-laser deposition, photo- and e-beam lithography, self-assembly nanolithography, x-ray diffraction, SQUID and vibrating sample magnetometry, alternating gradient magnetometry, scanning and transmission electron microscopy, atomic and magnetic force microscopy, photoemission electron microscopy, and neutron scattering.

PROFESSIONAL ACTIVITY

Member, APS, NSSA, IEEE, AAAS
Over 130 refereed journal publications, over 30 conference proceedings and other publications
3 issued US patents, 5 pending patent applications
ISI: over 6,000 citations, *h*=43; *Google Scholar*: over 8,000 citations, *h*=46
Over 160 invited talks and 250 other conference presentations
Featured in *Who's Who in America*, 2007- 2016 Editions; *Who's Who in the West*, 2014-2016 Edition; *Who's Who in the World*, 2015-2016 Edition

Secretary, IUPAP Commission on Magnetism (C9, 2018-20)
US representative to IUPAP Commission on Magnetism (C9, 2015-17)
General Chair, 2016 Conference on Magnetism & Magnetic Materials (MMM), New Orleans, LA
Co-Chair, Program Committee, 2011 International Magnetics Conference, Taipei, Taiwan
Co-Chair, Program Committee, 2007 Conference on Magnetism & Magnetic Materials, Tampa, FL
Chair, Advisory Committee, MMM Conference, 2016-17

Member, Advisory Committee, MMM Conference, 2007-10, 2013-16
Member, Program Committee, 2015 Intermag Conference, Beijing, China
Member, Program Committee, 2014 MMM Conference, Honolulu, HI
Member, Program Committee, 2013 MMM Conference, Denver, CO
Member, Program Committee, 2013 MMM – Intermag Joint Conference, Chicago, IL
Member, Program Committee, 2010 MMM Conference, Atlanta, GA
Member, Program Committee, 2010 MMM – Intermag Joint Conference, Washington, DC
Local Chair & member, Program Committee, 2009 International Magnetics Conference, Sacramento, CA
Member, Program Committee, 2007 MMM – Intermag Joint Conference, Baltimore, MD
Member, Program Committee, 2005 MMM Conference, San Jose, CA
Elected Member, Administrative Committee, IEEE Magnetics Society, 2012-15
Elected Member, Executive Committee, AVS Magnetic Interfaces & Nanostructures Division, 2007-09
Co-Organizer, 2014 APS March Meeting GMAG Focus Session on Magnetic Nanostructures
Co-Organizer, 2003 APS March Meeting DMP Focus Session on Asymmetric Nanoparticles
Co-Organizer, 2003 1st Int'l Workshop on Magnetism, Hysteresis, and the FORC Method, Davis, CA
Co-Organizer, 2011 Spintronics Workshop, University of Delaware, Lewes, Delaware
Co-Organizer, 2012 1st UCD-NJU Workshop on Condensed Matter Physics, Davis, CA
Co-Organizer, 2013 2nd UCD-NJU Workshop on Condensed Matter Physics, Nanjing, China
Panelist and Reviewer for NSF, DoE, ARPA-E
Associate Editor, APL Materials, 2018-presnt
Editorial Board Member, NPG Scientific Reports, 2015-17
Reviewer for Science, Nature series, PRL, PRB, APL, JACS, Small, Adv. Mater, Nano Lett…

SELECTED GROUP RECOGNITIONS

Randy Dumas	Leo Falicov Award, 2006 AVS for Best Graduate Student Research and Presentation; Margaret Burbidge Award, 2005 APS-CA meeting; Swedish Science Council Vetenskapsrådet Postdoctoral Fellowship (2010-12). Swedish Science Council Young Researcher Award (2012-15)
Joseph Davies	National Research Council Postdoctoral Fellowship (2007-09); Charles Kittle Award, 2005 APS-CA meeting.
Justin Olamit	National Research Council Postdoctoral Fellowship (2010-11); Margaret Brubidge Award, 2005 APS-CA meeting; NEAT-IGERT Fellowship (2004);
Peter Greene	2012 NSF EAPSI Fellow 2009 IEEE Magnetics Society Summer School Participant Steven Chu Award for Best Undergraduate Research, 2007 APS-CA meeting.
Dustin Gilbert	IOP Publishing Nanotechnology Young Researcher Award 2016 National Research Council Postdoctoral Fellowship (2014-16) 2010 NSF Graduate Research Fellowship Honorable Mention Margaret Burbidge Award, 2013 APS-Far West Section meeting
Edward Burks	2013 IEEE Magnetics Society Summer School Participant Livermore Graduate Scholar, 2015
Julius de Rojas	Margaret Burbidge Award, 2016 APS-Far West Section meeting
Peyton Murray	2016 IEEE Magnetics Society Summer School Participant
Jared Wong	Steven Chu Award for Best Undergraduate Research, 2006 APS-CA meeting.
Nasim Eibagi	2008 APS-IBM Research Internship for Undergraduate Women; 2009 Undergraduate thesis with Highest Honor, U.C. Davis.
Chad Flores	2011 Cal Aggie Alumni Association Outstanding Senior Award

PUBLICATIONS

Referred Journal Publications

1. John Q. Xiao, K. Liu, C. L. Chien, L. F. Schelp, and J. E. Schmidt, "Effects of Ar-ion implantation and annealing on structural and magnetic properties of Co/Pd multilayers", *Journal of Applied Physics* **76**, 6081-6083 (1994).
2. K. Liu, K. Nagodawithana, P. C. Searson, and C. L. Chien, "Perpendicular giant magnetoresistance of multilayered Co/Cu nanowires", *Physical Review B* **51**, (Rapid Communications) 7381-7384 (1995).
3. K. Liu, X. W. Wu, K. H. Ahn, T. Sulchek, C. L. Chien, and John Q. Xiao, "Charge ordering and magnetoresistance in Nd1-xCaxMnO3 due to reduced double exchange", *Physical Review B* **54**, 3007-3010 (1996).
4. K. H. Ahn, X. W. Wu, K. Liu, and C. L. Chien, "Magnetic properties and colossal magnetoresistance of La(Ca)MnO3 materials doped with Fe", *Physical Review B* **54**, 15299-15302 (1996).
5. K. H. Ahn, X. W. Wu, K. Liu, and C. L. Chien, "Effects of Fe doping in the colossal magnetoresistive La1-xCaxMnO3", *Journal of Applied Physics* **81**, 5505 (1997).
6. K. Liu, X. W. Wu, K. H. Ahn, C. L. Chien, and John Q. Xiao, "Origin of colossal magnetoresistance in Nd1-xCaxMnO3", *Journal of Chinese Electron Microscopy Society* **16** (4), 425 (1997).
7. Kai Liu, C. L. Chien, P. C. Searson, Kui Yu-Zhang, "Giant positive magnetoresistance in arrays of semi-metallic bismuth nanowires", *IEEE Transactions on Magnetics*, **34**, 1093 (1998).
8. Kai Liu and C. L. Chien, "Magnetic and magneto-transport properties of novel nanostructured networks", *IEEE Transactions on Magnetics*, **34**, 1021 (1998).
9. Kai Liu, C. L. Chien, P. C. Searson, Kui Yu-Zhang, "Structural and magneto-transport properties of electrodeposited bismuth nanowires", *Applied Physics Letters*, **73**, 1436-1438 (1998).
10. S. M. Zhou, Kai Liu, and C. L. Chien, "Exchange coupling and macroscopic domain structure in a wedged permalloy/FeMn bilayer", *Physical Review B* **58**, (Rapid Communications) 14717-14720 (1998).
11. Kai Liu, C. L. Chien, and P. C. Searson, "Finite size effect in Bi nanowires", *Physical Review B* **58**, (Rapid Communications) 14681- 14684 (1998).
12. T. Ambrose, Kai Liu, and C. L. Chien, "Doubly exchange-biased NiCoO/NiFe/ Cu/NiFe/NiCoO spin valves", *Journal of Applied Physics* **85**, 6124 (1999).
13. J. W. Cai, Kai Liu, and C. L. Chien, "Exchange coupling in the paramagnetic state", *Physical Review B*, **60**, 72-75 (1999).
14. Kimin Hong, F. Y. Yang, Kai Liu, D. H. Reich, C. L. Chien, P. C. Searson, F. F. Balakirev, and G. S. Boebinger, "Giant positive magnetoresistance of Bi nanowire arrays in high magnetic fields", *Journal of Applied Physics* **85**, 6184-6186 (1999).
15. Cai-Ming Liu, Zhi Yu, Ren-Gen Xiong, Kai Liu, and Xiao-Zeng You, "Crystal structure and novel magnetic of three-dimensional manganese (11)-μ-1, 3-Azido system", *Inorganic Chemistry Communications* **2**, 31-34 (1999).
16. field induced cooperative effect for the metastable quintet state in a spin crossover complex", *Applied Physics Letters*, **74**, 4029-4031 (1999).
17. F. Y. Yang, Kai Liu, C. L. Chien, P. C. Searson, "Large magnetoresistance and finite-size effects in electrodeposited single-crystal Bi thin films", *Physical Review Letters* **82**, 3328 (1999).

18. H. S. Wang, Qi Li, Kai Liu, C. L. Chien, "Low-field magnetoresistance anisotropy in ultrathin $Pr_{0.67}Sr_{0.33}MnO_3$ films grown on different substrates", *Applied Physics Letters* **74**, 2212 (1999).

19. F. Y. Yang, Kai Liu, Kimin Hong, D. H. Reich, P. C. Searson, C. L. Chien, "Large magnetoresistance of electrodeposited single-crystal bismuth thin films", *Science* **284**, 1335-1337 (1999).

20. V. Nikitenko, V. Gornakov, A. Shapiro, R. Shull, Kai Liu, S. M. Zhou and C. L. Chien, "Asymmetry in elementary events of magnetization reversal in a ferro-magnetic/antiferromagnetic bilayer", *Physical Review Letters* **84**, 765 (2000).

21. F. Y. Yang, Kai Liu, Kimin Hong, D. H. Reich, P. C. Searson, and C. L. Chien, "Shubnikov-de Haas oscillations in electrodeposited single-crystal bismuth thin films", *Physical Review B*, **61**, 6631-6636 (2000).

22. Kai Liu, S. M. Zhou, C. L. Chien, V. Nikitenko, V. Gornakov, A. Shapiro, R. Shull, "Anisotropy-dependent macroscopic domain structure in wedged-Permalloy/Uniform-FeMn bilayers", *Journal of Applied Physics*, **87**, 5052-5054 (2000).

23. C. L. Chien, F. Y. Yang, Kai Liu, D. H. Reich, and P. C. Searson, "Very large magnetoresistance in electrodeposited single-crystal Bi thin films", invited, *Journal of Applied Physics*, **87**, 4659-4664 (2000).

24. S. M. Zhou, Kai Liu, C. L. Chien, "Dependence of exchange coupling in permalloy/$Cr_{82}Al_{18}$ bilayers on the constituent layer thickness", *Journal of Applied Physics*, **87**, 6659-6661 (2000).

25. Kai Liu, S. M. Baker, M. Tuominen, T. P. Russell, I. K. Schuller "Tailoring exchange bias with magnetic nanostructures", *Physical Review B* **63**, (Rapid Communications), 060403 (2001).

26. M. R. Fitzsimmons, C. Leighton, A. Hoffmann, P. C. Yashar, J. Nogués, Kai Liu, C. F. Majkrzak, J. A. Dura, H. Fritzsche, I. K. Schuller, "Influence of interfacial disorder and temperature on magnetization reversal in exchange-coupled bilayers", *Physical Review B* **64**, 104415 (2001).

27. M. R. Fitzsimmons, C. Leighton, J. Nogués, A. Hoffmann, Kai Liu, I. K. Schuller, C. F. Majkrzak, J. A. Dura, J. R. Groves, R. W. Springer, P. N. Arendt, V. Leiner, and H. Lauter, "Influence of antiferromagnetic crystallinity on perpendicular exchange coupling and exchange bias", *Physical Review B* **65**, 134436 (2002).

28. M. S. Lund, W. A. A. Macedo, Kai Liu, J. Nogués, I. K. Schuller and C. Leighton, "Effect of antiferromagnet anisotropy on the critical thickness in exchange biased bilayers", *Physical Review B* **66**, 054422 (2002).

29. M.I. Montero, Kai Liu, O.M. Stoll, A. Hoffmann, I. K. Schuller, J. J. Åkerman, J.I. Martin, J.L. Vicent, S.M. Baker, T.P. Russell, C. Leighton and J. Nogués, "Nanostructures and the Proximity Effect", *Journal of Physics D: Applied Physics* **35**, 2398-2402 (2002).

30. H. G. Katzgraber, F. Pázmándi, C. R. Pike, Kai Liu, R. T. Scalettar, K. L. Verosub, and G. T. Zimányi, "Reversal-field memory in the hysteresis of spin-glasses", *Physical Review Letters*, **89**, 257202 (2002).

31. Kai Liu, J. Nogués, C. Leighton, H. Masuda, K. Nishio, I. V. Roshchin and I. K. Schuller, "Fabrication and thermal stability of arrays of Fe nanodots", *Applied Physics Letters*, **81**, 4434-4436 (2002).

32. J. I. Martín, J. Nogués, Kai Liu, J. L. Vicent, and I. K. Schuller, "Ordered magnetic nanostructures: fabrication and properties", topical review, *Journal of Magnetism and Magnetic Materials*, **256**, 449-501 (2003).

33. Kai Liu, L. M. Zhao, P. Klavins, F. E. Osterloh and H. Hiramatsu, "Extrinsic magnetoresistance in magnetite nanoparticles", *Journal of Applied Physics*, **93**, 7951-7953 (2003).

34. H. G. Katzgraber, F. Pázmándi, C. R. Pike, Kai Liu, R. T. Scalettar, K. L. Verosub, and G. T. Zimányi, "Reversal-field memory in magnetic hysteresis", *Journal of Applied Physics*, **93**, 6617-6619 (2003).

35. L. M. Zhao, P. Klavins, and Kai Liu, "Synthesis and properties of hole-doped $Li_{1-x}BC$", *Journal of Applied Physics*, **93**, 8653-8655 (2003).

36. S. Cho, S. M. Kauzlarich, J. Olamit, Kai Liu, F. Grandjean, L. Rebbouh, and G. J. Long, "Characterization and magnetic properties of core/shell structured Fe/Au nanoparticles", *Journal of Applied Physics*, **95**, 6804-6806 (2004).

37. W. A. A. Macedo, B. Sahoo, V. E. Kuncser, J. Eisenmenger, I. Felner, J. Nogués, Kai Liu, W. Keune, and I. K. Schuller, "Changes in ferromagnet spin structure induced by exchange bias in Fe/MnF_2 films", *Physical Review B*, **70**, 224414 (2004).

38. J. E. Davies, O. Hellwig, E. E. Fullerton, G. Denbeaux, J. B. Kortright and Kai Liu, "Magnetization reversal of Co/Pt multilayers: microscopic origin of high field magnetic irreversibility", *Physical Review B*, **70**, 224434 (2004).

39. M. S. Pierce, C. R. Buechler, L. B. Sorensen, J. J. Turner, S. D. Kevan, E. A. Jagla, J. M. Deutsch, T. Mai, O. Narayan, J. E. Davies, Kai Liu, J. Hunter Dunn, K. M. Chesnel, J. B. Kortright, O. Hellwig, and E. E. Fullerton, "Disorder-induced microscopic magnetic memory", *Physical Review Letters*, **94**, 017202 (2005).

40. Y. M. Wang, A. M. Hodge, J. Biener, A. V. Hamza, D. Barnes, Kai Liu, and T. G. Nieh, "Deformation twinning during nanoindentation of nanocrystalline Ta", *Applied Physics Letters*, **86**, 101915 (2005).

41. J. Y. Kim, F. E. Osterloh, H. Hiramatsu, R. K. Dumas, and Kai Liu, "Synthesis and real-time magnetic manipulation of a biaxial superparamagnetic colloid", *Journal of Physical Chemistry B*, **109**, 11151-11157 (2005).

42. S. Cho, J. C. Idrobo, J. Olamit, Kai Liu, N. D. Browning, and S. M. Kauzlarich, "Growth mechanisms and oxidation-resistance of Au-coated Fe nanoparticles", *Chemistry of Materials*, **17**, 3181-3186 (2005).

43. J. E. Davies, O. Hellwig, E. E. Fullerton, J. S. Jiang, S. D. Bader, G. T. Zimanyi, and Kai Liu, "Anisotropy-dependence of irreversible switching in Fe/SmCo and FeNi/FePt spring magnet films", *Applied Physics Letters*, **86**, 262503 (2005).

44. J. Olamit, E. Arenholz, Z. P. Li, O. Petracic, I. V. Roshchin, R. Morales, X. Batlle, I. K. Schuller, and Kai Liu, "Loop bifurcation and magnetization rotation in exchange biased Ni/FeF_2", *Physical Review B*, **72**, 012408 (2005).

45. S. M. Gravano, R. K. Dumas, Kai Liu, and T. E. Patten, "Methods for the surface functionalization of γ-Fe_2O_3 nanoparticles with initiators for atom transfer radical polymerization and formation of core-shell inorganic-polymer structures", *Journal of Polymer Science A*, **43**, 3675 (2005).

46. E. Arenholz and Kai Liu, "Angular dependence of the magnetization reversal in exchange biased Fe/MnF_2", *Applied Physics Letters*, **87**, 132501 (2005).

47. F. E. Osterloh, H. Hiramatsu, R. K. Dumas, and Kai Liu, "Fe_3O_4-$LiMo_3Se_3$ nanoparticle clusters as superparamagnetic nanocompasses", *Langmuir*, **21**, 9709 (2005).

48. J. E. Davies, J. Wu, C. Leighton, and Kai Liu, "Magnetization reversal and nanoscopic magnetic phase separation in $La_{1-x}Sr_xCoO_3$", *Physical Review B*, **72**, 134419 (2005).

49. M. C. Qian, C. Y. Fong, Kai Liu, W. E. Pickett, J. E. Pask, and L. H. Yang, "Half-metallic digital ferromagnetic heterostructure composed of a δ-doped layer of Mn in Si", *Physical Review Letters*, **96**, 027211 (2006).

50. J. Olamit, Z. P. Li, I. K. Schuller, and Kai Liu, "Angular dependence of exchange anisotropy on cooling field in ferromagnet/fluoride thin films", *Physical Review B*, **73**, 024413 (2006).

51. S. Cho, A. M. Shahin, G. J. Long, J. E. Davies, Kai Liu, F. Grandjean, and S. M. Kauzlarich, "A magnetic and Mössbauer spectral study of core/shell structured Fe/Au nanoparticles", *Chemistry of Materials*, **18**, 960-967 (2006).

52. E. Arenholz, Kai Liu, Z. P. Li, I. K. Schuller, "Magnetization reversal of uncompensated Fe moments in exchange biased Ni/FeF_2 bilayers", *Applied Physics Letters*, **88**, 072503 (2006).

53. Z. P. Li, O. Petracic, R. Morales, J. Olamit, X. Batlle, Kai Liu, I. K. Schuller, "Origin of asymmetric reversal in exchange biased bilayers", *Physical Review Letters*, **96**, 217205 (2006).

54. R. Morales, Z. P. Li, O. Petracic, X. Batlle, I. K. Schuller, J. Olamit, Kai Liu, "Magnetization depth-dependence in exchange-biased thin films", *Applied Physics Letters*, **89**, 072504 (2006).

55. B. Sahoo, W. A. A. Macedo, W. Keune, V. Kuncser, J. Eisenmenger, J. Nogués, I. K. Schuller, I. Felner, Kai Liu, and R. Röhlsberger, "Mössbauer spectroscopical investigation of the exchange biased Fe/MnF_2 interface", *Hyperfine Interactions*, **169**, 1371 (2006).

56. J. Olamit, Kai Liu, Z. P. Li, and I. K. Schuller, "Irreversibility of magnetization rotation in exchange biased Fe/epitaxial-FeF_2 thin films", *Applied Physics Letters*, **90**, 032510 (2007).

57. D. Dosev, M. Nichkova, R. K. Dumas, S. J. Gee, B. D. Hammock, Kai Liu, and I. M. Kennedy, "Magnetic/luminescent core/shell particles synthesized by spray pyrolysis and their application in immunoassays with internal standard", *Nanotechnology*, **18**, 055102 (2007).

58. A. Lazicki, C.-S. Yoo, W. J. Evans, H. Cynn, W. E. Pickett, J. Olamit, Kai Liu, Y. Ohishi, "Search for superconductivity in LiBC at high pressure", *Physical Review B*, **75**, 054507 (2007).

59. J. Olamit and Kai Liu, "Rotational hysteresis of the exchange anisotropy direction in Co/FeMn thin films", *Journal of Applied Physics*, **101**, 09E508 (2007).

60. M. S. Pierce, C. R. Buechler, L.B. Sorensen, S.D. Kevan, E.A. Jagla, J.M. Deutsch, T. Mai, O. Narayan, J. E. Davies, Kai Liu, G.T. Zimanyi, H. G. Katzberger, O. Hellwig, E. E. Fullerton, P. Fischer, and J. B. Kortright, "Disorder induced magnetic memory: Experiments and theories", *Physical Review B*, **75**, 144406 (2007).

61. R. K. Dumas, C. P. Li, I. V. Roshchin, I. K. Schuller, and Kai Liu, "Magnetic fingerprints of sub-100 nm Fe nanodots", *Physical Review B*, **75**, 134405 (2007).

62. R. K. Dumas, Kai Liu, C. P. Li, I. V. Roshchin, and I. K. Schuller, "Temperature Induced Single Domain - Vortex State Transition in sub-100nm Fe Nanodots", *Applied Physics Letters*, **91**, 202501 (2007).

63. J. E. Davies, O. Hellwig, E. E. Fullerton, and Kai Liu, "Temperature Dependent Magnetization Reversal in (Co/Pt)/Ru Multilayers", *Physical Review B*, **77**, 014421 (2008).

64. M. Winklhofer, R. K. Dumas, and Kai Liu, "Identifying reversible and irreversible magnetization changes in prototype patterned media using first- and second-order reversal curves", *Journal of Applied Physics*, **103**, 07C518 (2008).

65. C. Y. Fong, M. C. Qian, Kai Liu, L. H. Yang, and J. E. Pask, "Design of Spintronic Materials with Simple Structures", *Journal of Nanoscience and Nanotechnology*, **8**, 3652–3660 (2008).

66. Chunsheng Du, J. Yun, R. K. Dumas, X. Yuan, Kai Liu, N. D. Browning and Ning Pan, "Three-dimensionally Intercrossing Mn_3O_4 Nanowires", *Acta Materialia*, **56**, 3516-3522 (2008).

67. W.A.A. Macedo, B. Sahoo, J. Eisenmenger, M.D. Martins, W. Keune, V. Kuncser, R. Röhlsberger, O. Leupold, R. Rüffer, J. Nogués, Kai Liu, K. Schlage, and Ivan K. Schuller, "Direct measurement of depth-dependent Fe spin structure during magnetization reversal in Fe/MnF_2 exchange-coupled bilayers", *Physical Review B*, **78**, 224401 (2008).

68. Jared Wong, Peter Greene, Randy K. Dumas, Kai Liu, "Probing Magnetic Configurations in Co/Cu Multilayered Nanowires", *Applied Physics Letters*, **94**, 032504 (2009).

69. M. Tofizur Rahman, R. K. Dumas, Nasim Eibagi, Nazmun N Shams, Yun-Chung Wu, Kai Liu, and C.-H. Lai, "Controlling magnetization reversal in Co/Pt nanostructures with perpendicular anisotropy", *Applied Physics Letters*, **94**, 042507 (2009).

70. R. Morales, Z-P. Li, J. Olamit, Kai Liu, J. M. Alameda, I. K. Schuller, "Effect of the antiferromagnet bulk spin structure on exchange bias", *Physical Review Letters*, **102**, 097201 (2009).

71. B. J. Kirby, S. M. Watson, J. E. Davies, G. T. Zimanyi, Kai Liu, R. D. Shull, and J. A. Borchers, "Direct Observation of Magnetic Gradient in in Co/Pd Pressure-Graded Media", *Journal of Applied Physics*, **105**, 07C929 (2009).

72. Z. Ma, D. Dosev, M. Nichkova, R. K. Dumas, S. J. Gee, B. D. Hammock, Kai Liu and I. M. Kennedy, "Synthesis and characterization of multifunctional silica core–shell nanocomposites with magnetic and fluorescent functionalities", *Journal of Magnetism and Magnetic Materials*, **321**, 1368–1371 (2009).

73. C. Leighton, D. D. Stauffer, Q. Huang, Y. Ren, B. Toby, S. El-Khatib, M. A. Torija, J. Wu, J. W. Lynn, L. Wang, N. A. Frey, H. Srikanth, J. E. Davies, Kai Liu and J. F. Mitchell, "Coupled structural / magnetocrystalline anisotropy transitions in the doped perovskite cobaltite $Pr_{1-x}Sr_xCoO_3$", *Physical Review B*, **79**, 214420 (2009).

74. J. E. Davies, O. Hellwig, E. E. Fullerton, M. Winklhofer, R. D. Shull, and Kai Liu, "Frustration Driven Stripe Domain Formation in Co/Pt Multilayer Films", *Applied Physics Letters*, **95**, 022505 (2009).

75. M. Shaughnessy, C. Y. Fong, Ryan Snow, Kai Liu, J. E. Pask, and L. H. Yang, "Origin of large moments in Mn_xSi_{1-x} at small x**"** *Applied Physics Letters* **95**, 022515 (2009).

76. R. K. Dumas, Thomas Gredig, Chang-Peng Li, Ivan K. Schuller and Kai Liu, "Angular Dependence of Vortex Annihilation Fields in Asymmetric Co Nanodots", *Physical Review B*, **80**, 014416 (2009).

77. D. Perez de Lara, F. J. Castaño, B. G. Ng, R. K. Dumas, E. M. Gonzalez, Kai Liu, C. A. Ross, I. K. Schuller, and J. L. Vicent, "Rocking ratchet induced by pure magnetic potentials with broken reflection symmetry", *Physical Review B*, **80**, 224510 (2009).

78. B. J. Kirby, J. E. Davies, Kai Liu, S. M. Watson, G. T. Zimanyi, R. D. Shull, P. A. Kienzle, and J. A. Borchers, "Vertically Graded Anisotropy in Co/Pd Multilayers", *Physical Review B (Rapid Communications)*, **81**, 100405 (2010).

79. B. J. McMorran, A. C. Cochran, R. K. Dumas, Kai Liu, P. Morrow, D. T. Pierce, and J. Unguris, "Measuring the effects of low energy ion milling on the magnetization of Co/Pd multilayers using scanning electron microscopy with polarization analysis", *Journal of Applied Physics*, **107**, 09D305 (2010).

80. J. W. Liao, R. K. Dumas, H. C. Hou, Y. C. Huang, W. C. Tsai, L. W. Wang, D. S. Wang, M. S. Lin, Y. C. Wu, R. Z. Chen, J. L. Lee, J. W. Lau, Kai Liu, and C. H. Lai, "Simultaneous enhancement of

anisotropy and grain segregation in CoPtCr-SiO_2 perpendicular recording media by a MnRu intermediate layer", *Physical Review B*, **82**, 014423 (2010).

81. Z.Y. Wang, T. Lin, P. Wei, X. F. Liu, R. K. Dumas, Kai Liu, J. Shi, "Tuning carrier type and density in Bi_2Se_3 by Ca-doping", *Applied Physics Letters*, **97**, 042112 (2010).
82. X. M. Kou, X. Fan, R. K. Dumas, Q. Lu, Y. P. Zhang, H. Zhu, X. K. Zhang, Kai Liu, and J. Q. Xiao, "Memory effect in magnetic nanowire arrays", *Advanced Materials*, **23**, 1393 (2011).
83. R. K. Dumas, D. Gilbert, N. Eibagi, Kai Liu, "Chirality control via double vortices in asym-metric Co dots", *Physical Review B (Rapid Communications)*, **83,** 060415 (2011).
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- "Synthesis of high magnetic anisotropy materials and magnetic yoking effect", Keynote Talk, International Union of Materials Research Society - International conference of advanced materials (IUMRS-ICAM) 2017, Kyoto, Japan, August 30, 2017.
- "Magneto-Ionic Control of Interface Magnetism", International Organization of Chinese Physicists and Astronomers (OCPA) International Conference 2017, Beijing, China, July 17-20, 2017.
- "Realization of Ground State Artificial Skyrmion Lattices at Room Temperature", SPIE Spintronics IX, San Diego, CA, August 31, 2016.
- "Tunable Positive Exchange Bias via Redox-Driven Oxygen Migration", Keynote Talk, 14th International Union of Materials Research Societies-International Conference on Advanced Materials (IUMRS-ICAM 2015), Jeju, Korea, October 27, 2015.
- "Magnetometry-based order parameter to probe the $A1$ to $L1_0$ transformation in FeCuPt for heat-assisted magnetic recording media", IEEE International Magnetics Conference, Beijing, China, May 12, 2015.
- "(001) Oriented $L1_0$ FeCuPt for Heat-Assisted Magnetic Recording", American Physical Society March Meeting, San Antonio, Texas, March 2, 2015.
- "(001) Oriented $L1_0$ FeCuPt for Heat-Assisted Magnetic Recording", Chinese Physical Society Fall Meeting, Harbin, China, September 14, 2014.
- "Tuning magnetic anisotropy in (001) oriented $L1_0$ $(Fe_{1-x}Cu_x)_{55}Pt_{45}$ films", Annual Conference on Magnetism and Magnetic Materials, Denver, Colorado, November 5, 2013.
- "Magnetic Vortices: Chirality Control and Interplay with Exchange Bias", 60th Spring Meeting of the Japanese Society of Applied Physics, Atsugi, Kanagawa, Japan, March 29, 2013.
- "Tuning magnetization reversal and anisotropy in nanoporous networks", 60th Spring Meeting of the Japanese Society of Applied Physics, Atsugi, Kanagawa, Japan, March 28, 2013.
- "Probing Graded Perpendicular Anisotropy with Polarized Neutron Reflectometry", American Conference on Neutron Scattering, Washington, DC, June 25, 2012.
- "Magnetization Reversal in Nanostructures with Graded Perpendicular Anisotropy", Materials Research Society Spring Meeting, San Francisco, California, April 10, 2012.
- "First Order Reversal Curve Study of Artificially Structured Nanomagnets", American Ceramic Society Annual Meeting, Glass & Optical Materials Division, Savannah, Georgia, May 19, 2011.
- "Chirality control and vortex manipulation in asymmetric Co dots", American Physical Society March Meeting, Dallas, Texas, March 22, 2011.
- "Vortex State Reversal in Artificially Structured Nanomagnets", International Conference on Materials for Advanced Technologies & Int'l Union of Materials Research Societies – International Conference in Asia (ICMAT 2009 & IUMRS-ICA 2009), Singapore, July 2, 2009.
- "Probing Magnetic Configurations in Buried Cobalt/Copper Multilayered Nanowires", American Physical Society March Meeting, Pittsburgh, Pennsylvania, March 17, 2009.
- "Probing Magnetic Configurations in Buried Cobalt/Copper Multilayered Nanowires", 2008 Materials Research Society Fall Meeting, Boston, Massachusetts, December 4, 2008.
- "Single Domain to Vortex State Transition in Multilayered Cobalt/Copper Nanowires", Spintronics Symposium of the SPIE Optics & Photonics Conference, San Diego, California, August 13, 2008.