

# Xuemei (May) Cheng, Ph.D.

(updated 09/15/2021)

Professor of Physics and Dean of Graduate Studies  
Bryn Mawr College  
101 N Merion Ave.  
Bryn Mawr, PA 19010-2899

Phone: (610) 526-5357  
E-mail: [xcheng@brynmawr.edu](mailto:xcheng@brynmawr.edu)  
<https://scholar.google.com/citations?user=25WjUwIAAAAJ>

## Education

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<b>Ph.D.</b> in Physics, Johns Hopkins University Dissertation Supervisor: Prof. Chia-Ling Chien "Magnetization reversal and magnetotransport properties of Co/Pt multilayers with perpendicular magnetic anisotropy"	2006
<b>M. A.</b> in Physics, Johns Hopkins University	2004
<b>M. S.</b> in Microelectronics and Solid State Electronics, Nanjing University, China	2000
<b>B. S.</b> in Physics, Nanjing University, China (graduated with highest honor)	1997

## Appointments

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Bryn Mawr College	Dean of Graduate Studies	2021-present
Bryn Mawr College	Professor of Physics	2021-present
Bryn Mawr College	Physics Department Chair	2016-2018, 2020-2021
Bryn Mawr College	Associate Professor of Physics	2015-2021
University of Pennsylvania	Visiting Assistant Professor	2012-2013
Bryn Mawr College	Assistant Professor of Physics	2009-2015
Argonne National Laboratory	Postdoctoral Fellow	2006-2009

## Research Interests

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Magnetic nanomaterials fabrication, characterization and applications for Spintronics and biological systems  
Topologically nontrivial structures (skyrmions and vortices) in magnetic nanomaterials.  
Interface magnetism, 2D materials, and multiferroic materials  
Dimensionality-controlled nanostructures  
Synchrotron x-ray techniques for characterizing and imaging nanomaterials

## Grants and Honors

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NSF MRI, ENG-CBET- 2018852 (2020-2023), \$ 523,333 (co-PI)  
"MRI: Acquisition of a Confocal Raman Microscope System for Nano-Bio-Chemical-Thermal Research"  
NSF DMR-1708790 (2017-2020), \$230,752  
"Collaborative Research: The effects of Dzyaloshinskii Moriya interactions on magnetization dynamics in layered thin films"  
Sub-awardee of NSF STC, 1548571 (2016-2021), \$868,162 (Bryn Mawr sub-award)  
"Science and Technology Center for Engineering Mechano-Biology"

Partner for NSF PIRE, 1545884 (2015)

“PIRE: Research and Education in Active Coatings Technologies (REACT) for the Human Habitat”

NSF MRI, DMR- 1428500 (2014-2017), \$412,106 (co-PI)

“MRI: Acquisition of Atomic Layer Deposition Device for Nanoscale Materials Development Research”

NSF DMR-1207085 (2012-2016), \$92,374

“Collaborative Research: Hollow Nanoparticle Synthesis – Templating Electrochemically Evolved Hydrogen Nanobubbles”

NSF MRI, DMR-1126656 (2011-2013), \$239,550

“MRI: Acquisition of a UHV multi-source sputtering system for multidisciplinary material research”

NSF CAREER, DMR-1053854 (2011-2017), \$500,000

“CAREER: Magnetic bubble dynamics in nanodisks with perpendicular magnetic anisotropy”

APS Professional Skills Development Workshop Travel Grant (2009)

NSF-funded Women in Science Workshop Travel Grant (2005)

APS Opportunities in Biology Conference Travel Grant (2004)

Rowland Prize for Innovation and Excellence in Teaching (2001)

Motorola Fellowship for Excellence in Research (1999)

Guanghua Scholarship for Excellence in Research (1999, 1998)

Chien-Shiung Wu & Luke Chia-Liu Yuan Scholarship(1995)

## Overview of Professional Activities

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67 publications in refereed journals, such as *Science*, *Nature Physics*, *Reports on Progress in Physics*, *Physical Review Letters*, *Nano letters*, *Advanced Materials*, *Physical Review B*, *Applied Physics Letters*. h-index 22 and citations 3647 (based on Google Scholar by 9/15/2021).

1 patent application.

26 invited talks and a total of 83 presentations at conferences or other institutions.

Research mentoring: 40 undergraduate students, 5 graduate students, and 1 postdoctoral fellow

Dean of Graduate Studies (2021-present)

Chair of the Physics Department (2016-2018, 2020-2021)

Director of Graduate Studies in Physics, Bryn Mawr College (2010-12, 2013-14, 2018-2019)

Committee on the Undergraduate Curriculum, (2018-current)

Graduate Council, Bryn Mawr College, (2011-2014, 2018-2019)

Elected Board Member, the Advanced Laboratory Physics Association (ALPhA) (2018-2020)

Elected Member, Users' Executive Committee (UEC), the Center for Nanoscale Materials, Argonne National Laboratory (2017-2020)

Elected Member, Steering Committee, the Advanced Photon Source Users Organization, Argonne National Laboratory (2014-2017)

Co-organizer, 2018 AALAC Workshop "Digital fabrication and making at Liberal Arts Colleges", Wellesley College

Session Chair, APS March Meeting (2018, 2017, 2014), MMM (2016)

Panelist and Reviewer for NSF and AAAS since 2011

Reviewer for DOE and NSF proposals since 2011

Reviewer for journals: *Physical Review Letters*, *Physical Review Applied*, *Applied Physics Letters*, *Scientific Reports*, *Journal of Applied Physics*, *Journal of Magnetism and Magnetic Materials*, *Applied Surface Science*, *Journal of Electroanalytical Chemistry*, *Journal of Physics and Chemistry of Solids*

Reviewer for general user proposals for the Center for Nanoscale Materials of Argonne National Laboratory (2016-present)

Organizer for an educational outreach exhibit for the Philadelphia “Science in the Park” with Bryn Mawr graduate and undergraduate students involved (Clark Park, April 2019)

Organizer for an educational outreach exhibit booth in the Philadelphia “Science Carnival” with Bryn Mawr undergraduate students involved (Penn’s Landing, April 2017)

Invited speaker for “Physics Wonder Girls Camp” organized for Philadelphia middle school girls (2016)

Workshop Leader for “Extend Your Horizon” and “Catalyst” for Philadelphia middle school girls (2010-13)

Member, American Physical Society (APS), American Association of Physics Teachers (AAPT)

## Teaching Experience

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### Bryn Mawr College

Phys 101-2: Introductory Physics for non-majors I (Fall 2016)

Phys 102-1 Introductory Physics II for postbaccalaureate premedical students (Spring 2014, Spring 2012)

Phys 102-2: Introductory Physics for non-majors (Spring 2011)

Introductory Physics Laboratory (Spring 2012, Fall 2011, Fall 2014, Spring 2015, Spring 2018, Fall 2020)

Phys 105: Design and Making for All (Fall 2018)

Phys 121Lab: Modern Physics Laboratory (Fall 2016, Fall 2017, Fall 2018, Fall 2019)

Phys 122: Introductory Classical Mechanics (Spring 2010, Spring 2019)

Phys 201: Electromagnetism (Fall 2013, Fall 2011, Fall 2010, Fall 2009)

Phys 201Lab: Analog and Digital Electronics (Fall 2011)

Phys 214Lab: Modern Physics Laboratory (Spring 2012, Spring 2011, Spring 2010, Spring 2015)

Phys 306: Mathematical Methods for Physical Sciences (Fall 2010, Fall 2014, Fall 2019, Fall 2020)

Phys 308: Advanced Classical Mechanics (Fall 2009)

Phys 322/522: Solid State Physics (Fall 2013, Spring 2018)

Phys 331: Advanced Experimental Physics (Spring 2015, Spring 2017, Spring 2019, Spring 2021)

Phys 398/399: Physics Senior Seminar (Spring 2014, Fall 2017, Fall 2019, Fall 2020, Fall 2021)

Phys 403: Supervised Research (Fall 2009-Spring 2020)

Phys 507: Graduate Statistical Mechanics (Fall 2017)

Phys 701: Supervised Graduate Work (Fall 2012-Fall 2020)

### Johns Hopkins University

Nanostructured Magnetic Materials (Winter 2006)

## Patent Application

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"Magneto-Patterned-Cell-Laden Hydrogel Materials and Methods of Making and Using Same"

Hannah M. Zlotnick, Adrew T. Clark, Robert L. Mauck, Xuemei Cheng, (Application #: US 63/009,419)

## Peer-Reviewed Journal Publications

(67 published, \* for correspondence author, # for Bryn Mawr students )

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67. YangWang, **XiaoWang**<sup>#</sup>, **Andy T. Clark**<sup>#</sup>, Hang Chen, **Xuemei M. Cheng**, John W. Freeland, and John Q. Xiao

"Probing exchange bias at the surface of a doped ferrimagnetic insulator"

Physics Review Materials, 5, 074409, (2021). DOI: 10.1103/PhysRevMaterials.5.074409

66. Kiet A. Tran, Emile Kraus, **Andy T. Clark**<sup>#</sup>, Alex Bennett, Katarzyna Pogoda, **Xuemei Cheng**, Andrejs Cēbers, Paul A. Janmey, and Peter A. Galie

"Dynamic Tuning of Viscoelastic Hydrogels with Carbonyl Iron Microparticles Reveals the Rapid Response of Cells to Three-Dimensional Substrate Mechanics"

ACS Appl. Mater. Interfaces 13, 18, 20947–20959, (2021). DOI: 10.1021/acsami.0c21868

65. Hannah M. Zlotnick, **Andy T. Clark**<sup>#</sup>, Sarah E. Gullbrand, James L. Carey, **Xuemei M. Cheng**, Robert L. Mauck

- "Magneto - Driven Gradients of Diamagnetic Objects for Engineering Complex Tissues"  
Advanced Materials, 32, 48, 2005030, (2020). DOI:10.1002/adma.202005030
64. Binqun Luan, Tien Huynh, **Xuemei Cheng**, Ganhui Lan, and Hao-Ran Wang  
"Targeting Proteases for Treating COVID-19"  
J. Proteome Res. (2020), 19, 11, 4316–4326. DOI:10.1021/acs.jproteome.0c00430
63. Dong Zhou, Ji Hao, **Andy Clark**<sup>#</sup>, Kyung Hoon Kim, Long Zhu, Jun Liu, **Xuemei Cheng**, and Bo Li  
"Sono-assisted surface energy driven assembly of 2D materials on flexible polymer substrates: A green assembly method using water"  
ACS Appl. Mater. Interfaces, 11, 33458-33464 (2019). DOI: 10.1021/acsami.9b10469
62. Elise Corbin, Alexia Vite, Eliot G Peyster, Myan Bhoopalam, Jeffrey Brandimarto, Xiao Wang, Alexander I Bennett, **Andy T Clark**<sup>#</sup>, **Xuemei Cheng**, Kevin T. Turner, Kiran Musunuru, and Kenneth Margulies  
"Tunable and Reversible Substrate Stiffness Reveals Dynamic Mechanosensitivity of Cardiomyocytes"  
ACS Appl. Mater. Interfaces, 11, 20603-20614 (2019). DOI: 10.1021/acsami.9b02446
61. Xuanyuan Jiang, Guanhua Hao, **Xiao Wang**<sup>#</sup>, Aaron Mosey, Xin Zhang, **Le Yu**<sup>#</sup>, Andrew J Yost, Xin Zhang, Anthony D DiChiara, Alpha T N'Diaye, **Xuemei Cheng**, Jian Zhang, Ruihua Cheng, Xiaoshan Xu and Peter A Dowben  
"Tunable spin-state bistability in a spin crossover molecular complex"  
J. Phys. Condens. Matter 31, 315401 (2019).<https://doi.org/10.1088/1361-648X/ab1a7d>
60. Wanjun Jiang, Sheng Zhang, **Xiao Wang**<sup>#</sup>, Charudatta Phatak, Qiang Wang, Wei Zhang, Matthias Benjamin Jungfleisch, John E. Pearson, Yizhou Liu, Jiadong Zang, **Xuemei Cheng**, Amanda Petford-Long, Axel Hoffmann, and Suzanne G. E. te Velthuis  
"Quantifying chiral exchange interaction for Néel-type skyrmions via Lorentz transmission electron microscopy"  
Phys. Rev. B 99, 104402 (2019). DOI: 10.1103/PhysRevB.99.104402
59. Kishan Sinha, Haohan Wang, **Xiao Wang**<sup>#</sup>, Liying Zhou, Yuewei Yin, Wenbin Wang, **Xuemei Cheng**, David J. Keavney, Huibo Cao, Yaohua Liu, Xifan Wu, and Xiaoshan Xu  
"Tuning the Néel Temperature of Hexagonal Ferrites by Structural Distortion"  
Phys. Rev. Lett. 121, 237203 (2018). DOI: 10.1103/PhysRevLett.121.237203
58. Wanjun Jiang, Xichao Zhang, Guoqiang Yu, Wei Zhang, **Xiao Wang**<sup>#</sup>, Matthias Jungfleisch, **Xuemei Cheng**, John Pearson, Olle Heinonen, Kang L. Wang, Yan Zhou, Axel Hoffmann, and Suzanne te Velthuis  
"Direct Observation of the Skyrmion Hall Effect"  
Nature Physics, 13, 162 (2017). DOI: 10.1038/NPHYS3883
57. Shi Cao, Kishan Sinha, Xin Zhang, Xiaozhe Zhang, **Xiao Wang**<sup>#</sup>, Yuewei Yin, Alpha T. N'Diaye, Jian Wang, David J. Keavney, Tula R. Paudel, Yaohua Liu, **Xuemei Cheng**, Evgeny Y. Tsymbal, Peter A. Dowben, and Xiaoshan Xu  
"Electronic structure and direct observation of ferrimagnetism in multiferroic hexagonal YbFeO<sub>3</sub>"  
Phys. Rev. B 95, 224428 (2017). DOI: <https://doi.org/10.1103/PhysRevB.95.224428>.
56. Ty Newhouse-Illige, Yaohua Liu, Meng Xu, Danielle Reifsnyder Hickey, Anirban Kundu, Hamid Almasi, Chong Bi, **Xiao Wang**<sup>#</sup>, John Freeland, David Keavney, Chenjun Sun, Yiheng Xu, Marcus Rosales, **Xuemei Cheng**, Shufeng Zhang, K. Andre Mkhoyan, and Weigang Wang  
" Voltage controlled interlayer coupling in perpendicularly magnetized magnetic tunnel junctions "  
Nature Communications, 8, 15232 (2017). DOI: 10.1038/ncomms15232.
55. Kishan Sinha, Yubo Zhang, Xuanyuan Jiang, Hongwei Wang, **Xiao Wang**<sup>#</sup>, Xiaozhe Zhang, Philip J. Ryan, Jong-Woo Kim, John Bowlan, Dmitry A Yarotski, Yuelin Li, Anthony D. DiChiara, **Xuemei Cheng**, Xifan Wu, Xiaoshan Xu

- " Effects of biaxial strain on the improper multiferroicity in h-LuFeO<sub>3</sub> films studied using the restrained thermal expansion method "
- Phys. Rev. B, 95, 094110 (2017). <https://doi.org/10.1103/PhysRevB.95.094110>.
54. **L. Yu<sup>#</sup>, Z. Y. Yan<sup>#</sup>, H. C. Yang<sup>#</sup>, X. Z. Chai<sup>#</sup>, B. Q. Li<sup>#</sup>**, S. Moeendarbari, Y. W. Hao, D. Zhang, G. Feng, P. Han, D. A. Gilbert, Kai Liu, K. S. Buchanan, **X. M. Cheng<sup>\*</sup>**
- " Magnetization Reversal of Nickel Three-Dimensional Anti-sphere Arrays "
- IEEE Magnetic Letters, **8**, 1-4 (2017), DOI: 10.1109/LMAG.2016.2616325
53. **Le Yu<sup>#</sup>, Zhongying Yan<sup>#</sup>**, Zhonghou Cai, Dongtang Zhang, Ping Han, **Xuemei Cheng<sup>\*</sup>**, and Yugang Sun<sup>\*</sup>
- " Quantitatively in Situ Imaging Silver Nanowire Hollowing Kinetics "
- Nano Letters, **16**(10), 6555 (2016), DOI: 10.1021/acs.nanolett.6b03218
52. Li Ma, Heng-An Zhou, Lei Wang, Xiao-Long Fan, Wei-Jia Fan, De-Sheng Xue, Ke Xia, Zhe Wang, Ru-Qian Wu, Guang-Yu Guo, Li Sun, **Xiao Wang<sup>#</sup>, Xue-Mei Cheng** and Shi-Ming Zhou
- " Spin Orbit Coupling Controlled Spin Pumping and Spin Hall Magnetoresistance Effects "
- Advanced Electronic Materials, **2**, 1-7 (2016), DOI: 10.1002/aelm.201600112
51. Xuanyuan Jiang, Haidong Lu, Yuwei Yin, Xiaozhe Zhang, **Xiao Wang<sup>#</sup>, Le Yu<sup>#</sup>**, Z. Ahmadi, P. Costa, Anthony D. DiChiara, **Xuemei Cheng**, A. Gruverman, A. Enders, Xiaoshan Xu
- " Room Temperature Ferroelectricity in Continuous Croconic Acid Thin Films "
- Appl. Phys. Lett. **109**, 102902 (2016); <http://dx.doi.org/10.1063/1.4962278>.
50. Daniel J. Magagnoc, Gang Feng, **Le Yu<sup>#</sup>, Xuemei Cheng**, Daniel S. Gianola
- " Isochemical Control over Structural State and Mechanical Properties in Pd-based Metallic Glass by Sputter Deposition at Elevated Temperatures "
- APL Mater. **4**, 086104 (2016); doi: 10.1063/1.4960388
49. Gyuseok Kim, **Xuzhao Chai<sup>#</sup>, Le Yu<sup>#</sup>, Xuemei Cheng**, Daniel S. Gianola
- " Interplay between grain boundary segregation and electrical resistivity in dilute nanocrystalline Cu alloys "
- Scripta Materialia, **123**, 113, (2016). doi:10.1016/j.scriptamat.2016.06.008
48. Shi Cao, Xiaozhe Zhang, Tula R Paudel, Kishan Sinha, **Xiao Wang<sup>#</sup>**, Xuanyuan Jiang, Wenbin Wang, Stuart Brutsche, Jian Wang, Phillip J Ryan, Jong-Woo Kim, **Xuemei Cheng**, Evgeny Y Tsybmal, Peter A Dowben, Xiaoshan Xu
- " On the structural origin of the single-ion magnetic anisotropy in LuFeO<sub>3</sub> "
- Journal of Physics: Condensed Matter **28**, 156001 (2016), <http://dx.doi.org/10.1088/0953-8984/28/15/156001>
47. Di Zhang, Lei Zhang, Daeyeon Lee, **Xuemei Cheng**, Gang Feng
- " Reinforcing nanocolloidal crystals by tuning interparticle bonding via atomic layer deposition "
- Acta Materialia, **95**, 216-223 (2015), doi: 10.1016/j.actamat.2015.05.039
46. D. Zhang, L. Zhang, **X. M. Cheng**, D. Lee, and G. Feng
- " Suppressing unstable deformation of nanocolloidal crystals with atomic layer deposition "
- Mater. Sci. Eng. A, **639**, 514 (2015), doi:10.1016/j.msea.2015.04.061
45. Martin Asmat-Uceda, **Xuemei Cheng, Xiao Wang<sup>#</sup>**, David Clarke, Oleg Tchernyshyov, and Kristen S. Buchanan
- " A comparison of numerical simulations and analytical theory of the dynamics of interacting magnetic vortices "
- Journal of Applied Physics, **117**, 123916 (2015). <http://dx.doi.org/10.1063/1.4916610>
44. **Xiao Wang<sup>#</sup>**, D. J. Keavney, M. Asmat, K. Buchanan, A. Melikyan, and **X. M. Cheng<sup>\*</sup>**
- " Time-resolved photoemission electron microscopy imaging of mode coupling between three interacting magnetic vortices "

Appl. Phys. Lett. **105**, 102408 (2014).

43. Hongwei Wang, Igor V. Solovyev, Wenbin Wang, **Xiao Wang**<sup>#</sup>, Philip J. Ryan, David J. Keavney, Jong-Woo Kim, Thomas Z. Ward, Leyi Zhu, Jian Shen, **X. M. Cheng**, Lixin He, Xiaoshan Xu, and Xifan Wu  
"Structural and electronic origin of the magnetic structures in hexagonal LuFeO<sub>3</sub>"  
Phys. Rev. B, **90**, 014436 (2014).

42. E. J. Moon, P. V Balachandran, B. J. Kirby, D. J. Keavney, R. J. Sichel-Tissot, C. M. Schlep<sup>u</sup>tz, E. Karapetrova, **X. M. Cheng**, J. M. Rondinelli, and S. J. May  
"Effect of interfacial octahedral behavior in ultrathin manganite films"  
Nano Letters, **14**, 2509, (2014).

41. Lisa Y. Chen, **Soraya Terrab**<sup>#</sup>, Kathryn F. Murphy, John P. Sullivan, **Xuemei Cheng**, and Daniel S. Gianola  
"Temperatuer controlled tensile testing of individual nanowires"  
Review of Scientific Instruments, **85**, 013901 (2014).

40. Wenbin Wang, Jun Zhao, Wenbo Wang, Zheng Gai, Nina Balke, Miaofang Chi, Ho Nyung Lee, Wei Tian, Leyi Zhu, **Xuemei Cheng**, David J. Keavney, Jieyu Yi, Thomas Z. Ward, Paul C. Snijders, Hans M. Christen, Weida Wu, Jian Shen, and Xiaoshan Xu  
"Room-Temperature Multiferroic Hexagonal LuFeO<sub>3</sub> Films"  
Phys. Rev. Lett. **110**, 237601 (2013).

39. Y. M. Lu, Y. Choi, C. M. Ortega, **X. M. Cheng**, J. W. Cai, S. Y. Huang, L. Sun, and C. L. Chien  
"Pt Magnetic Polarization on Y<sub>3</sub>Fe<sub>5</sub>O<sub>12</sub> and Magnetotransport Characteristics"  
Phys. Rev. Lett., **110**, 147207 (2013).

38. Marta Z. Cieplak, Z. Adamus, M. Konczykowski, L. Y. Zhu, **X. M. Cheng**, and C. L. Chien  
"Tuning vortex confinement by magnetic domains in a superconductor/ferromagnet bilayer"  
Phys. Rev. B, **87**, 014519 (2013).

37. Wenbin Wang, Hongwei Wang, Xiaoying Xu, Leyi Zhu, Lixin He, **Elizabeth Wills**<sup>#</sup>, **Xuemei Cheng**, David J. Keavney, Jian Shen, Xifan Wu, and Xiaoshan Xu  
"Crystal field splitting and optical bandgap of hexagonal LuFeO<sub>3</sub> films"  
Applied Physics Letters, **101**, 241907 (2012).

36. **X. M. Cheng** and D. J. Keavney  
"Studies of nanomagnetism using synchrotron-based x-ray photoemission electron microscopy"  
Reports on Progress in Physics, **75**, 026501 (2012) (**Invited Review Paper**).

35. Wenbin Wang, Zheng Gai, Miaofang Chi, Jason D. Fowlkes, Jieyu Yi, Leyi Zhu, **Xuemei Cheng**, David J. Keavney, Paul C. Snijders, Thomas Z. Ward, Jian Shen, and Xiaoshan Xu  
"Growth diagram and magnetic properties of hexagonal LuFe<sub>2</sub>O<sub>4</sub> thin films"  
Phys. Rev. B, **85**, 155411 (2012).

34. Ling Fei, Leyi Zhu, **Xuemei Cheng**<sup>\*</sup>, Haiyan Wang, Stacy M. Baber, Joshua Hill, Qianglu Lin, Yun Xu, Shuguang Deng, Hongmei Luo  
"Structure and magnetotransport properties of epitaxial nanocomposite La<sub>0.67</sub>Ca<sub>0.33</sub>MnO<sub>3</sub>:SrTiO<sub>3</sub> thin films grown by a chemical solution approach"  
Applied Physics Letters **100**, 082403 (2012).

33. **X. M. Cheng**, K. S. Buchanan, R. Divan, K.Y. Guslienko and D. J. Keavney  
"Nonlinear vortex dynamics and transient domains in ferromagnetic disks "  
Phys. Rev. B, **79**, 172411 (2009).

32. D. J. Keavney, **X. M. Cheng**<sup>\*</sup>, and K. S. Buchanan  
"Polarity reversal of a magnetic vortex core by a unipolar, nonresonant in-plane pulsed magnetic field"

Applied Physics Letters **94**, 172506 (2009).

31. D. S. Gianola, C. Eberl, **X. M. Cheng**, and K. J. Hemker

"Stress-driven surface topography evolution in nanocrystalline Al thin films"

Advanced Materials, **20**, 303 (2008).

30. Y. L. Iunin, Y. P. Kabanov, V. I. Nikitenko, **X. M. Cheng**, C. L. Chien, A. J. Shapiro, and R. D. Shull  
"Magnetic field dependence of asymmetry in the magnetization reversal of ultrathin Co films and Co/Pt  
multilayers with perpendicular anisotropy "

Journal of magnetism and magnetic materials, **320**, 2044 (2008).

29. Y. L. Iunin, Y. P. Kabanov, V. I. Nikitenko, **X. M. Cheng**, A. J. Shapiro, C. L. Chien, and R. D. Shull, "On  
the nature of asymmetry of nucleation centers in ultrathin Co films and Co/Pt multilayers," Functional Materials  
**15**, 51 (2008).

28. D. S. Gianola, B. G. Mendis, **X. M. Cheng**, and K. J. Hemker

"Grain-size stabilization by impurities and effect on stress-coupled grain growth in nanocrystalline Al thin  
films"

Mater. Sci. Eng. A **483**, 637 (2008).

27. V. Rose, **X. M. Cheng**, D. J. Keavney, J. W. Freeland, K. S. Buchanan, B. Ilic, and V. Metlushko

"The breakdown of the fingerprinting of vortices by hysteresis loops in circular multilayer ring arrays"

Applied Physics Letters (**cover**), **91**, 132501 (2007).

26. Y. L. Iunin, Y. P. Kabanov, V. I. Nikitenko, **X. M. Cheng**, D. Clarke, O. A. Tretiakov, O. Tchernyshyov,  
A. J. Shapiro, R. D. Shull, and C. L. Chien

"Asymmetric Domain Nucleation and Unusual Magnetization Reversal in Ultrathin Co Films with  
Perpendicular Anisotropy"

Physical Review Letters, **98**, 117204 (2007).

25. Z. Adamus, Marta Z. Cieplak, A. Abal'oshev, M. Konczkowski, **X. M. Cheng**, L.Y. Zhu and C. L. Chien

"Flux penetration in a ferromagnetic/superconducting bilayer "

Acta Physica Polonica A, **111**, 95 (2007).

24. **X. M. Cheng\***, V.I. Nikitenko, A.J. Shapiro, R.D. Shull, and C. L. Chien,

"Unusual magnetic reversal in [Co/Pt]<sub>4</sub> multilayers with perpendicular anisotropy"

Journal of Applied Physics, **99**, 08c905 (2006).

23. L. Y. Zhu, **X. M. Cheng**, and C. L. Chien

"Magnetic properties of 1D quasiperiodic Co/Pt multilayers"

Journal of Applied Physics, **99**, 08c902 (2006).

22. Z. Adamus, Marta Z. Cieplak, A. Abal'oshev, M. Berkowski, M. Konczkowski, **X. M. Cheng**, L.Y. Zhu  
and C. L. Chien

" Vortex pinning in ferromagnet/superconductor bilayers—the dependence on the ferromagnetic layer and  
temperature "

Acta Physica Polonica A, **109**, 451 (2006).

21. **X. M. Cheng\***, S. Urazhdin, O. Tchernyshyov, C. L. Chien, V.I. Nikitenko, A.J. Shapiro and R.D. Shull

"Antisymmetric magnetoresistance in magnetic multilayers with perpendicular anisotropy"

Physical Review Letters, **94**, 017203 (2005).

20. Marta Z. Cieplak, **X. M. Cheng**, C. L. Chien, and Hai Sang

"Origin of pinning enhancement in a ferromagnet-superconductor bilayer"

Journal of Applied Physics, **97**, 026105 (2005).

19. Tom S. Eagleton, Jeremy Mallet, **X.M. Cheng**, Judy Wang, Chia-Ling Chien, and Peter C. Searson

"Electrodeposition of Co<sub>x</sub>Pt<sub>1-x</sub> Thin Films"

Journal of The Electrochemical Society, **152**, C27-C31 (2005).

18. Marta Z. Cieplak, Z. Adamus, A. Abal'oshev, I. Abal'osheva, M. Berkowski, **X. M. Cheng**, H. Sang, and C. L. Chien

"The enhancement of vortex pinning in a ferromagnet/superconductor bilayers"  
Phys. Stat. Sol.(c), **2**, 1650 (2005).

17. Marta Z. Cieplak, Z. Adamus, M. Konczykowski, **X. M. Cheng**, A. Byczuk, A. Abal'oshev, H. Sang, and C. L. Chien

" Superconducting pinning by magnetic domains in a ferromagnet-superconductor bilayer "  
Acta Physica Polonica A, **106**, 693 (2004).

16. **X. M. Cheng\*** and C. L. Chien

"Magnetic properties of Epitaxial Mn doped ZnO thin films"  
Journal of Applied Physics, **93**, 7876 (2003).

15. **X. M. Cheng\***, X. K. Zhang, D. Z. Zhang, S. H. Lee, A. Duckham, T. P. Weihs, R. C. Cammarata, John. Q. Xiao and C. L. Chien

"Magnetic core loss of ultrahigh strength FeCo alloys"  
Journal of Applied Physics, **93**, 7121(2003).

14. Mingwei Chen, En Ma, Kevin J Hemker, Hongwei Sheng, Yiming Wang and **X. M. Cheng**

"Deformation Twinning in Nanocrystalline Aluminum"  
Science, **300**,1275 (2003).

13. Liu Xiabing; Zang Lan; Zhu Shunming; **X. M. Cheng**; Han Ping; Luo Zhiyun; Zheng Youdou,

"Effects of C on the growth of  $\text{Si}_{1-x-y}\text{Ge}_x\text{C}_y$  alloys on Si(100) substrates"  
High Technology Letters, **11**, No.12, 84 (2001).

12. **X. M. Cheng**, Youdou Zheng, Ping Han, Xiabing Liu, Lan Zang, et al.

"Studies on Thermal Annealing Behavior of  $\text{Si}_{1-x-y}\text{Ge}_x\text{C}_y$  Heterostructure with Rich Ge and High C Content on Si (100) Substrate"  
High Technology Letters, **10**, 32 (2000).

11. **X. M. Cheng**, Y. D. Zheng, X.B. Liu, L. Zang, S. M. Zhu, and P. Han

"Room-Temperature Photoluminescence of Thermally Oxidized  $\text{Si}_{1-x-y}\text{Ge}_x\text{C}_y$  Thin Films on Si (100) Substrates"  
Chinese Journal of Semiconductors, **21**, 677 (2000).

10. Han Ping, **X. M. Cheng**, Masao Sakuraba, Young-Cheon Jeong, Takashi Maturra and Junichi Murata

"The Effect of Si/Si<sub>1-y</sub>C<sub>y</sub>/Si Barriers on the Characteristics of  $\text{Si}_{1-x}\text{Ge}_x/\text{Si}$  Resonant Tunneling Structures"  
Chinese Phys. Lett., **17 (11)**, 844-846 (2000).

9. Z. Y. Lo, R. L. Jiang, Y.D. Zheng, L. Zang, Z. Z. Chen, S. M. Zhu, **X. M. Cheng**, X. B. Liu.

"Staircase band gap  $\text{Si}_{1-x}\text{Ge}_x/\text{Si}$  photodetectors"  
Applied Physics Letters **77**, 1548 (2000).

8. R. L. Jiang, Z. Y. Lo, W. M. Chen, L. Zang, S. M. Zhu, X. B. Liu, **X. M. Cheng**, Z. Z. Chen, P. Chen, P. Han and Y. D. Zheng.

"Normal-incidence SiGe/Si photodetectors with different buffer layers"  
Journal of Vacuum Science & Technology **B18 (3)**, 1251 (2000).

7. Jiang Roulian, Lo Zhiyun, Chen Weiming, **X. M. Cheng**, Zheng Youdou, etc.

"Silicon-based  $\text{Ge}_{0.85}\text{Si}_{0.15}$  heterostructure photodetectors"  
Semiconductor Optoelectronics, **21(1)**, 27 (2000).

6. R.L.Jiang, Z.Y.Lo, **X. M. Cheng**, Y.D.Zheng, etc.

" $\text{Si}_{1-x}\text{Ge}_x/\text{Si}$  near infrared detectors",



Journal of Optoelectronics-laser, **11(1)**, 17 (2000).

5. X.B. Liu, L. Zang, S.M. Zhu, **X. M. Cheng**, P. Han, Z.Y. Luo, Y.D. Zheng

"Influence of C on GE incorporation in the growth of GE-rich  $\text{Ge}_{1-x-y}\text{Si}_x\text{C}_y$  alloys on Si (100)"

Applied Physics A **70 (4)**, 465 (2000).

4. **X. M. Cheng**, Youdou Zheng et al.

"Room temperature blue luminescence of thermally oxidized  $\text{Si}_{1-x-y}\text{Ge}_x\text{C}_y$  thin films on Si (100) substrates"

Applied Physics Letters, **75** 3333 (1999).

3. N. Jiang, L. Zhang, R.L. Jiang, S.M. Zhu, P.Han, X.B. Liu, **X. M. Cheng**, *et. al.*,

" Influence of growth conditions on the incorporation of substitutional C in  $\text{Si}_{1-x-y}\text{Ge}_x\text{C}_y$  alloy on Si by chemical vapor deposition using  $\text{C}_2\text{H}_4$  ,"

Applied Physics A **68**, 457 (1999).

2. N. Jiang, L. Zhang, R.L. Jiang, S.M. Zhu, P. Han, X.B. Liu, **X. M. Cheng**, *et. al.*,

" Growth of  $\text{Si}_{1-x-y}\text{Ge}_x\text{C}_y$  ternary alloy on Si by chemical vapor deposition,"

Chinese Journal of Semiconductors, **20**, 650 (1999).

1. L. Zhang, N. Jiang, R.L. Jiang, S.M. Zhu, X.B. Liu, **X. M. Cheng**, *et. al.*,

"The study of growth and the properties of C in SiGeC alloy on Si by rapid thermal chemical vapor deposition," IEEE, P. 796 (1998).

**Presentations** (89 total, 26 invited, \* Bryn Mawr undergraduate student, # Bryn Mawr graduate student, ##Bryn Mawr postdoctoral researcher)

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89. Ronald J. Warzoha, Adam A. Wilson, Brian F. Donovan, Andy Clark#, **Xuemei Cheng**, Lu An, Ezra Lee, Xiaosong Liu, and Gang Feng

"Confined transducer geometries to enhance sensitivity to thermal boundary conductance in frequency-domain thermorefectance measurements"

ASME 2021 International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems (InterPACK 2021), October 27 - 29, 2021, Virtual Conference, USA.

88. A.T. Clark#, X. Wang##, A. Stuart, W. Jiang, S.G. te Velthuis, A. Hoffmann, K. Buchanan, and **X. M. Cheng**

"The Effects of Field History on Magnetic Skyrmion Formation in [Pt/Co/Ir]<sub>n</sub> Multilayers."

2021 IEEE International Magnetics Virtual Conference, April 26-30, 2021.

87. Corbyn Mellinger, Guanhua Hao, Xiao Wang##, **Xuemei Cheng**, Rajesh Chopdekar, and Xiaoshan Xu

"Domain Structure and Wall Dynamics in High-PMA NiCo<sub>2</sub>O<sub>4</sub> Thin Films"

2021 American Physical Society March Meeting, Virtual, March 15-19, 2021.

86. Alexandra R. Stuart, Xiao Wang##, Adzo Fiagbenu\*, Kristen S. Buchanan, and **Xuemei Cheng**

"Role of interlayer interactions in the recovery of synthetic ferrimagnetic skyrmions in [Co/Gd/Pt]<sub>n</sub> multilayers after cycling through the spin reorientation transition"

2021 American Physical Society March Meeting, Virtual, March 15-19, 2021.

85. Mallory Yu\*, Xiao Wang##, Andy T Clark#, Rajesh Chopdekar, Pavel Lapa, John Pearson, Suzanne G.E. te Velthuis, Axel Hoffmann, and **Xuemei Cheng**

"Fabrication and characterization of ultra-soft PDMS based magnetorheological elastomers"

2021 American Physical Society March Meeting, Virtual, March 15-19, 2021.

84. A.T. Clark#, J. Li#, T. Dang\*, E.A. Corbin, D.A. Gilbert, K. Buchanan, X. Jin and **X. M. Cheng**

"Magnetization Reversal of Ultra-soft PDMS-based Magnetorheological Elastomers"  
64th Conference on Magnetism and Magnetic Materials, Nov. 2019, Las Vegas, Nevada.

83. X. Wang<sup>#</sup>, A.T. Clark<sup>#</sup>, P.N. Lapa, R.V. Chopdekar, Z. Xiao, C.M. Quispe Flores, A. Fiagbenu, M. Vogel, J. Pearson, K. Buchanan, S.G. te Velthuis, A. Hoffmann and **X.M. Cheng**  
"Persistence of chiral domain walls in synthetic ferrimagnetic skyrmions through spin reorientation transition in [Co/Gd/Pt]<sub>10</sub> multilayers"  
64th Conference on Magnetism and Magnetic Materials, Nov. 2019, Las Vegas, Nevada.

82. Hannah Zlotnick, Andy Clark<sup>#</sup>, **Xuemei Cheng**, and Robert Mauck  
"Engineering spatial gradients of diamagnetic particles and cells in hydrogels using negative magnetophoresis"  
Summer Biomechanics, Bioengineering, and Biotransport Conference (SB<sup>3</sup>C), June 2019, Seven Springs, PA.

81. Andy Clark<sup>#</sup>, Jiajia Li<sup>#</sup>, Lila Hernandez, Vidya Ramaswamy, Elise Corbin, Alexander Bennet, **Xuemei Cheng**  
"Fabrication and characterization of ultra-soft PDMS based magnetorheological elastomers"  
2019 American Physical Society March Meeting, Boston, Massachusetts.

80. Zainab Batool\*, Ralitsa Mihaylova\*, Andy Clark<sup>#</sup>, Josh Javor, **Xuemei Cheng**, David J. Bishop  
"Fabrication of Sensitive MEMS-based Magnetometer for Biomagnetic Applications"  
2019 American Physical Society March Meeting, Boston, Massachusetts.

79. Georgia Nelson\*, Meredith Xu\*, Xiao Wang<sup>#</sup>, Andy Clark<sup>#</sup>, David Keavney, Ralu Divan, Dafei Jin, and **Xuemei Cheng**  
"Magnetic vortex disks for magneto-mechanotransduction"  
2019 American Physical Society March Meeting, Boston, Massachusetts.

78. **X.M. Cheng**  
"Magnetic Nanostructures for Data Storage and Biomedical Applications" (**Invited talk**)  
Physics Seminar, Bard College, May 2018.

77. Baiyi Kong\*, Zhongying Yan\*, Xiao Wang<sup>#</sup>, Andy Clark<sup>#</sup>, Kui-Hon Ou Yang, Minn-Tsong Lin, Yongseong Choi, Axel Hoffmann, Suzanne te Velthuis, **Xuemei Cheng**  
"Room Temperature Magnetic Skyrmions in Multilayers with Interfacial Dzyaloshinskii-Moriya Interaction"  
2018 American Physical Society March Meeting, Los Angeles, California.

76. Cassie Wang\*, Andy Clark<sup>#</sup>, Zhongying Yan\*, Baiyi Kong\*, **Xuemei Cheng**  
"Fabrication and characterization of magnetic-vortex microdiscs for applying force in mechanobiological systems"  
2018 American Physical Society March Meeting, Los Angeles, California.

75. **X.M. Cheng**  
"Room Temperature Magnetic Skyrmions in Multilayers with Interfacial Dzyaloshinskii-Moriya Interaction" (**Invited talk**)  
NCMN Seminar, University of Nebraska Lincoln, Jan. 2018.

74. **X.M. Cheng**  
"Magnetic skyrmions: a topological phase" (**Invited talk**)  
Invited Lecture, Kuang Yaming Honors School, Nanjing University, Dec. 2017.

73. **X.M. Cheng**

"Room-temperature magnetic skyrmions in multilayers" (**Invited talk**)  
Condensed Matter Seminar, Shandong University, Dec. 2017.

72. **X.M. Cheng**

"Fabrication, characterization and simulation of magnetic-vortex microdisks for biological applications"  
(**Invited talk**)  
3rd International Symposium on Mechanobiology, Dec. 2017 Singapore.

71. A. Clark<sup>#</sup>, L. Yu, X. Wang<sup>#</sup>, A. Kong\*, K. Buchana, A. Hoffmann, S. G. E. te Velthuis, and **X.M. Cheng**  
"Micromagnetic simulation study of magnetic skyrmions in multilayers with interfacial Dzyaloshinskii-Moriya interaction"  
62<sup>th</sup> Conference on Magnetism and Magnetic Materials (MMM), Nov. 2017, Pittsburgh, PA.

70. **X.M. Cheng**

"Room-temperature magnetic skyrmions in multilayers with perpendicular magnetic anisotropy" (**Invited talk**)  
Physics Colloquium, Amherst College, Oct. 17, 2017

69. **X.M. Cheng**

"Tuning Magnetic Skyrmions in Multilayers with Perpendicular Magnetic Anisotropy" (**Invited talk**)  
Condensed Matter Seminar, National Taiwan University, June 29, 2017.

68. **X.M. Cheng**

"Tuning Magnetic Skyrmions in Multilayers with Perpendicular Magnetic Anisotropy" (**Invited talk**)  
Condensed Matter Seminar, National Taiwan University, June 29, 2017.

67. **X.M. Cheng**

"Time-resolved XMCD-PEEM imaging: vortex dynamics in magnetic disks" (**Invited talk**)  
Condensed Matter Seminar, National Taiwan University, June 29, 2017.

66. **X.M. Cheng**

"Room-temperature magnetic skyrmions in multilayers"(**Invited talk**)  
CAMP Seminar, Penn State University, April 4, 2017.

65. X. Wang<sup>#</sup>, A. Clark<sup>#</sup>, W. Jiang, S. Zhang, Q. Wang, K. Buchanan, J. E. Pearson, C. Phatak, A. Petford-Long, A. Hoffmann, S. G. E. te Velthuis, and **X.M. Cheng**

"Tuning magnetic skyrmions in multilayers with perpendicular magnetic anisotropy"  
61<sup>th</sup> Conference on Magnetism and Magnetic Materials (MMM), Nov. 2016, New Orleans, Louisiana.

64. W. Jiang, X. Zhang, G. Yu, W. Zhang, X. Wang<sup>#</sup>, M. Jungfleisch, J.E. Pearson, **X. M. Cheng**, O. Heninonen, K. L. Wang, Y. Zhou, A. Hoffmann, and S. te Velthuis

"Experimental observation of the Skyrmion Hall Effect"  
61<sup>th</sup> Conference on Magnetism and Magnetic Materials (MMM), Nov. 2016, New Orleans, Louisiana.

63. **Xuemei Cheng**

"Room-temperature magnetic skyrmions in multilayers" (**Invited talk**)  
2016 Mid-Atlantic Section meeting of American Physical Society, October 2016, University of Delaware.

62. Andy Clark<sup>#</sup>, Le Yu<sup>#</sup>, Cassie Wang\*, Kristen Buchanan, **X. M. Cheng**

"Micromagnetic simulated magnetization reversal of nickel three-dimensional anti-sphere arrays"  
2016 Mid-Atlantic Section meeting of American Physical Society, October 2016, University of Delaware.

61. Le Yu<sup>#</sup>, Zhongying Yan\*, Bingqing Li\*, Xuzhao Chai<sup>#</sup>, Han-chang Yang\*, Sina Moeendarbari, Yaowu Hao, Di Zhang, Gang Feng, Ping Han, Dustin A. Gilbert, Kai Liu, **X. M. Cheng**  
 "Magnetization Reversal of Nickel Three-Dimensional Antidot Arrays "  
 4<sup>th</sup> International Conference of Asian Union of Magnetism Societies, August, 2016, Tainan.
60. Le Yu<sup>#</sup>, Zhongying Yan\*, Yuxin Wang, Zhonghou Cai, Ping Han, **X. M.Cheng** and Yugang Sun  
 " In-situ Transmission X-ray Microscopy Study of Photon-induced Oxidation of Silver Nanowires "  
 2016 Advanced Photon Source Users Meeting, May, 2016, Argonne National Laboratory, IL.
59. Xiao Wang<sup>#</sup>, Zhongying Yan\*, Le Yu<sup>#</sup>, Sina Moeendarbari, Aaron Chiu, Yaowu Hao, Zhouhou Cai, and **X. M.Cheng**  
 "Synchrotron x-ray study of Au nanoparticle synthesis"  
 2016 Advanced Photon Source Users Meeting, May, 2016, Argonne National Laboratory, IL.
58. Xiao Wang<sup>#</sup>, Kishan Sinha, Xiaoshan Xu, Yaohua Liu, David Keavney, and **X. M. Cheng**  
 "X-ray magnetic circular dichroism study of hexagonal YbFeO<sub>3</sub> thin films "  
 2016 American Physical Society March Meeting, Baltimore, Maryland.
57. Zhongying Yan\*, Xiao Wang<sup>#</sup>, Le Yu<sup>#</sup>, Sina Moeendarbari, Yaowu Hao, Zhonghou Cai, and **X. M. Cheng**  
 "Study of gold nanoparticle synthesis by synchrotron x-ray diffraction and fluorescence "  
 2016 American Physical Society March Meeting, Baltimore, Maryland.
56. Le Yu<sup>#</sup>, Yugang Sun, Yuxin Wang, Zhonghou Cai, Ping Han, and **X. M.Cheng**  
 " In-situ transmission x-ray microscopy study of photon-induced oxidation of silver nanowires"  
 2016 American Physical Society March Meeting, Baltimore, Maryland.
55. Xiao Wang<sup>#</sup>, Yaohua Liu, Zhuyun Xiao\*, Xiaoshan Xu, Kishan Sinha, Wenbin Wang, Jian Shen, David Keavney, and X. M. Cheng  
 "Magnetic exchange interaction between Fe<sup>3+</sup> and R<sup>3+</sup> ions in hexagonal RFeO<sub>3</sub> (R = Ho, Yb) thin films "  
 2016 Joint MMM/InterMag, January, 2016, San Diego, California.
54. **X. M. Cheng**  
 "Probing Nanomagnetism using Synchrotron X-ray based Imaging" (**Invited talk**)  
 Physics Colloquium, Saint Joseph University, September 30, 2015.
53. **X. M. Cheng**  
 "Probing Nanomagnetism using Synchrotron X-ray based Imaging" (**Invited talk**)  
 Physics Colloquium, Dickinson College, September 24, 2015.
52. Xiao Wang<sup>#</sup>, Yaohua Liu, Zhuyun Xiao\*, Xiaoshan Xu, Wenbin Wang, Jian Shen, David Keavney, and **X. M. Cheng**  
 "Magnetic exchange interaction between Fe<sup>3+</sup> and Ho<sup>3+</sup> ions in hexagonal HoFeO<sub>3</sub> thin films "  
 2015 Advanced Photon Source Users Meeting, May, 2015, Argonne National Laboratory, IL. (**Student Poster Winner**)
51. Kishan Sinha , Xuanyuan Jiang , Xiao Wang<sup>#</sup> , Anthony DiChiara , **Xuemei Cheng** , Yuelin Li , Xiaoshan Xu  
 "Time-resolved x-ray diffraction study of photoinduced strains in h-LuFeO<sub>3</sub> thin film"  
 2015 American Physical Society March Meeting, San Antonio, Texas.
50. Xiao Wang<sup>#</sup>, Yaohua Liu, Zhuyun Xiao\*, Xiaoshan Xu, Wenbin Wang, Jian Shen, David Keavney, and **X.**

## **M. Cheng**

"X-ray magnetic circular dichroism study of hexagonal HoFeO<sub>3</sub> thin film"

59<sup>th</sup> Conference on Magnetism and Magnetic Materials (MMM), Nov. 2014, Honolulu, Hawaii.

49. Alena Klindziuk\*, Xiao Wang<sup>#</sup>, Y. Choi, C.M. Ortega, L. Sun, J. W. Cai, **X. M. Cheng**

"X-ray magnetic linear dichroism study of Pt/CoO bilayers"

Conference for Undergraduate Women in Physical Sciences, Nov. 2014, University of Nebraska–Lincoln.

48. Yilun Tang\*, Alena Klindziuk\*, Leqi Liu\*, Xuzhao Chai<sup>#</sup>, Xiao Wang<sup>#</sup>, Zhuyun Xiao\*, Le Yu<sup>#</sup>, and X.M. Cheng

"Fabrication of magnetic disks with perpendicular magnetic anisotropy"

Conference for Undergraduate Women in Physical Sciences, Nov. 2014, University of Nebraska–Lincoln.

47. Zhuyun Xiao\*, Xiao Wang<sup>#</sup>, Xiaoshan Xu, Wenbin Wang, David Keavney, Yaohua Liu and **X. M. Cheng**

"Magnetic properties of epitaxial hexagonal HoFeO<sub>3</sub> thin films"

2014 Annual Meeting of the Mid-Atlantic Section of the American Physical Society, October 2014, University Park, PA.

46. **X. M. Cheng**

"Nanomagnetic Materials: Fabrication, Characterization, and Application" (**Invited talk**)

Summer school of Nanjing University Kuang Yaming Honors School, July 2014, Nanjing, China

45. **X. M. Cheng**

"Time-resolved imaging of vortex dynamics in magnetic disks" (**Invited talk**)

Physics Colloquium, Rowan University, April 25, 2014.

44. **Xiao Wang<sup>#</sup>, Zhuyun Xiao\***, Xiaoshan Xu, Wenbin Wang, David Keavney, Yaohua Liu and **X. M. Cheng**

"Magnetic properties of epitaxial hexagonal HoFeO<sub>3</sub> thin films"

American Physical Society March Meeting, 2014, Denver, CO.

43. **Bingqing Li\***, **Xuzhao Chai<sup>#</sup>**, Sina Moendarbari, Di Zhang, Gang Feng, Ping Han, Dustin A. Gilbert, Kai Liu, Yaowu Hao, and **X. M. Cheng**

"First order reversal curve study of the dipolar interaction in Ni three-dimensional antidot arrays"

American Physical Society March Meeting, 2014, Denver, CO.

42. **Shuoying Yang\***, Weifeng Zhang, Aakash Pushp, Timothy Phung, See-hun Yang, **X. M. Cheng**, and Stuart S.P. Parkin

"Temperature Dependence of the Spin Hall Effect in Perpendicularly Magnetized Magnetic Materials "

American Physical Society March Meeting, 2014, Denver, CO.

41. Xiaoshan Xu, Wenbin Wang, **Xiao Wang<sup>#</sup>**, Leyi Zhu, Jong-Woo Kim, Phillip Ryan, David J. Keavney, Thomas Z. Ward, Jian Shen, and **Xuemei Cheng**

"Low-temperature structure transition in hexagonal LuFeO<sub>3</sub>"

American Physical Society March Meeting, 2014, Denver, CO.

40. Xifan Wu, Hongwei Wang, Igor Solovyev, Jian Shen, Wenbin Wang, **Xiao Wang<sup>#</sup>**, **Xuemei Cheng**, Lixin He, and Xiaoshan Xu

"Origin of room-temperature multiferroism in hexagonal LuFeO<sub>3</sub>"

American Physical Society March Meeting, 2014, Denver, CO.

39. **Xiao Wang<sup>#</sup>**, D. J. Keavney, D. J. Clarke, O. Tchernyshyov, M. Asmat-Uceda, K. S. Buchanan, A. Melikyan, and **X. M. Cheng**

"Time-resolved PEEM imaging of vortex dynamics in an equilateral triangular arrangement of three magnetic disks"

58<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM) 13, Nov. 2013, Denver, CO.

38. E. Moon, B. Kirby, D. Keavney, P. Balachandran, R. Sichel-Tissot, C. Schlepütz, E. Karapetrova, **X. M. Cheng**, J. Rondinelli and S. May.

"The effects of interfacial octahedral coupling on magnetic properties in ultrathin manganite films"

58<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM) 13, Nov. 2013, Denver, CO.

37. M.A. Asmat-Uceda, **X.M. Cheng**, **X.Wang**<sup>#</sup>, D.J. Keavney, D.J. Clarke, O. Tchernyshyov and K.S. Buchanan.

"Micromagnetic simulations of the dynamics of three interacting magnetic vortices in a triangular arrangement"

58<sup>th</sup> Annual Conference on Magnetism and Magnetic Materials (MMM) 13, Nov. 2013, Denver, CO.

36. **X. M. Cheng**, Y. Choi, C. M. Ortega, L. Sun, Y. M. Lu, J. W. Cai, and C. L. Chien

"X-ray Magnetic Circular Dichroism Study of Induced Pt Magnetic Moment in Pt/Y<sub>3</sub>Fe<sub>5</sub>O<sub>12</sub> Bilayers"

Gordon Research Conference on Spin Dynamics in Nanostructures, August 2013, Hong Kong.

35. **Xiao Wang**<sup>#</sup>, D. J. Keavney, D. J. Clarke, O. Tchernyshyov, M. Asmat, K. Buchanan, A. Melikyan, and **X.M. Cheng**

"Time-resolved PEEM imaging of vortex dynamics in an equilateral triangular arrangement of three magnetic disks"

Gordon Research Conference on Spin Dynamics in Nanostructures, August 2013, Hong Kong.

34. **X. M. Cheng**

"Time-resolved PEEM imaging of Magnetic Vortex Dynamics" (**Invited talk**)

Institute of Physics Chinese Academy of Sciences, August 12, 2013, Beijing, China.

33. **Bingqing Li**<sup>\*</sup>, Kathryn F. Murphy, Daniel S. Gianola, and **X. M. Cheng**

"Study of Thermal Conductivity of Si Nanowires with micro-Raman Spectroscopy"

American Physical Society March Meeting, 2013, Baltimore, MD.

*(Outstanding Undergraduate Presentation Award)*

32. **Xilei Kuang**<sup>\*</sup>, **Zhuyun Xiao**<sup>\*</sup>, Eun Ju Moon, Steven May, David Keavney, Yaohua Liu, and **X.M. Cheng**

"X-ray Magnetic Circular Dichroism Study of La(1-x)SrxMnO<sub>3</sub> Thin Films"

American Physical Society March Meeting, 2013, Baltimore, MD.

31. **Zhuyun Xiao**<sup>\*</sup>, **Xiao Wang**<sup>#</sup>, Yaohua Liu, Suzanne G.E. te Velthuis, Daniel Rosenmann, Ralu Divan, and **X. M. Cheng**

"Magnetization reversal of patterned disks with perpendicular magnetic anisotropy"

American Physical Society March Meeting, 2013, Baltimore, MD.

30. **X. M. Cheng**

"Imaging spin dynamics in magnetic nanostructures" (**Invited talk**)

Physics Colloquium, Villanova University, November 30, 2012.

29. **X. M. Cheng**

"Imaging spin dynamics in magnetic nanostructures" (**Invited talk**)

Physics Colloquium, Nanjing Normal University, June 25, 2012, Nanjing, China.

28. **X. M. Cheng**

"Imaging spin dynamics in magnetic nanostructures" (**Invited talk**)

Physics Colloquium, Fudan University, June 21, 2012, Shanghai, China.

27. **X. M. Cheng**

"Imaging spin dynamics in magnetic nanostructures" (**Invited talk**)

Physics Colloquium, Shanghai Jiaotong University, June 19, 2012, Shanghai, China.

26. **X. M. Cheng**

"Imaging spin dynamics in magnetic nanostructures" (**Invited talk**)

Physics Colloquium, Nanjing University, June 11, 2012, Nanjing, China.

25. **X. M. Cheng**

"Imaging spin dynamics in magnetic nanostructures" (**Invited talk**)

Physics Colloquium, Central China Normal University, May 22, 2012, Wuhan, China.

24. **Jiabin Liu\***, **Han-Chang Yang\***, and **Xuemei Cheng**

"Magnetic Properties of Ordered Nanoporous Nickel Films"

American Physical Society March Meeting, 2012, Boston, MA.

23. **X. M. Cheng**

"Imaging of spin dynamics in magnetic nanostructures" (**Invited talk**)

Condensed Matter Physics seminar, August 11, 2011, Colorado State University.

22. **X. M. Cheng** and D. J. Keavney

"Time-resolved PEEM studies of nonlinear vortex dynamics" (**Invited talk**)

IEEE International Magnetics Conference, April 25-29, 2011, Taipei, Taiwan.

21. **Han-Chang Yang\***, **Stephanie I. Lim**, **Jiabin Liu\***, **Qian Wu\***, and **Xuemei Cheng**

"Templated Electrodeposition of Highly Porous Nanostructured Materials "

American Physical Society March Meeting, 2011, Dallas, TX.

20. **Stephanie I. Lim**, Karine Namur, Florie Martineau, **Jiabin Liu\***, **Qian Wu\***, **Han-Chang Yang\***, Jérémy Mallet, and **Xuemei Cheng**

"Templated electrodeposition of nanoporous silicon for battery applications "

American Physical Society March Meeting, 2011, Dallas, TX.

19. **X. M. Cheng**

"Spin dynamics in magnetic nanostructures" (**Invited talk**)

Mechanical Engineering Department seminar, September 30, 2010, Villanova University.

18. **X. M. Cheng**

" Vortex dynamics in an equilateral triangular arrangement of three magnetic disks" (**Invited talk**)

Argonne National Laboratory, Advanced Photon Source User Seminar, October 15, 2010, Argonne, IL.

17. **X. M. Cheng**, D. J. Keavney, D. J. Clarke, O. Tchernyshyov, **M. Mahoney\***, and A. Melikyan

" Vortex dynamics in an equilateral triangular arrangement of three magnetic disks "

American Physical Society March Meeting, 2010, Portland, OR.

16. **X. M. Cheng**

"Spin dynamics in magnetic nanostructures" (**Invited talk**)

Condensed Matter Seminar, Feb. 18, 2010, University of Connecticut.

15. **X. M. Cheng**, D. J. Keavney, and K. S. Buchanan

"Polarity reversal of magnetic vortex core by in-plane non-resonant pulsed magnetic field "

American Physical Society March Meeting, 2009, Pittsburgh, PA.

14. **X. M. Cheng**

"Capturing spin dancing in magnetic nanostructures" (**Invited talk**)

Condensed Matter Seminar, Feb. 2009, Johns Hopkins University.

13. **X. M. Cheng**, D. J. Keavney, and K. S. Buchanan

"Polarity reversal of a magnetic vortex core by an in-plane pulsed magnetic field "

- International Conference on Magnetism and Magnetic Materials (MMM) 08, Nov. 2008, Austin, TX.
12. **X. M. Cheng**, D. J. Keavney, K. S. Buchanan, and R. Divan,  
 "The influence of excitation fields on vortex core dynamics in micron-sized magnetic disks "  
 International Conference on Magnetism and Magnetic Materials (MMM) 07, Nov. 2007, Tampa, FL.
11. **X. M. Cheng**, V.I. Nikitenko, A.J. Shapiro, R.D. Shull, and C. L. Chien,  
 "Unusual magnetization reversal in [Co/Pt]<sub>4</sub> multilayers with perpendicular anisotropy"  
 8<sup>th</sup> International Conference on Nanostructured Materials, Aug. 2006, Bangalore, India.
10. **X. M. Cheng**, L.Y. Zhu, C.L. Chien, Marta Z. Cieplak, Z. Adamus, A. Abal'oshev, and M. Berkowski,  
 "Magnetic pinning in Nb and YBCO thin films by [Co/Pt]<sub>n</sub> multilayers with perpendicular magnetic anisotropy "  
 American Physical Society March Meeting, 2006, Baltimore, MD.
9. Marta Z. Cieplak, Z. Adamus, A. Abal'oshev, M. Berkowski, M. Konczykowski, **X.M. Cheng**, L.Y. Zhu and C.L. Chien  
 "Flux penetration in a ferromagnetic/superconducting bilayer utilizing perpendicular magnetic anisotropy "  
 American Physical Society March Meeting, 2006, Baltimore, MD.
8. **X. M. Cheng**, V.I. Nikitenko, A.J. Shapiro, R.D. Shull, and C. L. Chien,  
 "Unusual magnetic reversal in [Co/Pt]<sub>4</sub> multilayers with perpendicular anisotropy"  
 International Conference on Magnetism and Magnetic Materials (MMM) 05, Nov. 2005, San Jose, CA.
7. L.Y. Zhu, **X.M. Cheng** and C.L. Chien  
 "Magnetic and electrical transport properties of 1D quasiperiodic Co/Pt multilayers"  
 International Conference on Magnetism and Magnetic Materials (MMM) 05, Nov. 2005, San Jose, CA
6. **X. M. Cheng**, S. Urazhdin, O. Tchernyshyov, C. L. Chien, V.I. Nikitenko, A.J. Shapiro and R.D. Shull  
 "Antisymmetric magnetoresistance in magnetic multilayers with perpendicular anisotropy"  
 International Conference on Magnetism and Magnetic Materials (MMM) 04, Nov. 2004, Jacksonville, FL
5. **X. M. Cheng**, B. Q. Luan and C. L. Chien  
 "Probing magnetization reversal in Co/Pt multilayers with perpendicular anisotropy by magnetoresistance, Hall resistance and magnetic force microscopy "  
 9TH Joint INTERMAG - MMM Conference, Jan. 2004, Anaheim, CA
4. M.Z. Cieplak, **X. M. Cheng**, A. Byczuk, H. Sang, A. Wisniewski, M. Konczykowski and C. L. Chien  
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