Fengyuan Yang

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Education

Johns Hopkins University, Baltimore, MD
Ph.D. in Physics, March, 2001
M. S. in Physics, May, 1998
University of Science and Technology of China, Hefei, P. R. China
B. A. in Physics, June, 1992

Appointments

Ohio State University (July, 2015 – Present)
- Professor, Department of Physics.

Ohio State University (October, 2010 – June, 2015)
- Associate Professor, Department of Physics.

Ohio State University (September, 2003 – September, 2010)
- Assistant Professor, Department of Physics.

Johns Hopkins University (April, 2001 – August, 2003)
- Associate Research Scientist, Materials Research Science and Engineering Center
  Advisor: Professor Chia-Ling Chien

Synergistic Activities

- IRG-3 co-lead and member of Executive Committee of the OSU MRSEC.
- Director, Center for Exploration of Novel Complex Materials, The Ohio State University
- Associate Director of the Institute for Materials Research, The Ohio State University.
- Member of External Advisory Committee, NSF Materials Research Science and Engineering Center at University of Texas at Austin
- Ohio State University Senator
- Organizer of Focus Topics in APS March Meetings

Publications

2020

1. A. J. Lee, A. S. Ahmed, J. Flores, S. D. Guo, B. B. Wang, N. Bagués, D. W. McComb, and F. Y. Yang, "Probing the Source of Interfacial Dzyaloshinskii-Moriya interaction Responsible for Topological Spin Textures in Metal/$Tm_3Fe_5O_{12}$ Systems," submitted.
2. A. J. Lee, A. S. Ahmed, B. A. McCullian, S. D. Guo, M. L. Zhu, S. S. Yu, P. M. Woodward, J. Hwang, P. C. Hammel, and F. Y. Yang, "Interfacial Orbital Engineering of Rashba Spin-Orbit Coupling in Nonmagnetic-Material/Ferrimagnetic-Insulator Bilayers," submitted.
3. B. A. Noesges, T. C. Zhu, J. Repicky, S. S. Yu, F. Y. Yang, J. Gupta, R. K. Kawakami, L. J. Brillson, "Chemical Migration and Dipole Formation at van der Waals Interfaces between Magnetic Transition Metal Chalcogenides and Topological Insulators," submitted.
4. S. Wu, C. M. Hamel, Q. J. Ze, F. Y. Yang, H. J. Qi, R. K. Zhao, "Evolutionary Algorithm Guided Voxel-Encoding Printing of Functional Hard-Magnetic Soft Active Materials," submitted.
5. Y. Q. Ma, T. Erickson, A. R. Smith, K. Y. Meng, F. Y. Yang, D. Hunt, M. A. Barral, and V. Ferrari, "Local Strain-dependent Electronic Structure and Perpendicular Magnetic Anisotropy of a MnGaN 2D Magnetic Monolayer," submitted.
6. Y. Cheng, S. S. Yu, A. S. Ahmed, M. L. Zhu, J. Hwang, and F. Y. Yang, "Electrical Switching of Tri-State Antiferromagnetic Néel Order in α-Fe_2O_3 Epitaxial Films," *Phys. Rev. Lett.* **124**, 027202 (2020).
7. K. Alam, L. S. Zhao, F. Y. Yang, J. A. Borchers, S. M. Disseler, W. D. Ratcliff, R. Ponce-Pérez, G. H. Cocoletzi, N. Takeuchi, K. Y. Meng, A. Foley, and A. R. Smith, "Exchange Bias and Exchange Spring Effects in Fe/CrN Bilayers," *J. Phys. D: Appl. Phys.* **53**, 125001 (2020).

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8. Z. B. Xia, H. Chandrasekar, W. Moore, C. Y. Wang, A. J. Lee, J. McGlone, N. K. Kalarickal, A. Arehart, S. Ringel, F. Y. Yang, and S. Rajan, "Metal/$BaTiO_3$/β-Ga_2O_3 dielectric heterojunction diode with 5.7 MV/cm breakdown field," *Appl. Phys. Lett.* **115**, 252104 (2019).
9. Y. Cheng, S. S. Yu, A. S. Ahmed, M. L. Zhu, Y. Rao, M. Ghazisaeidi, J. Hwang, and F. Y. Yang, "Anisotropic magnetoresistance and nontrivial spin Hall magnetoresistance in Pt/α-Fe_2O_3 bilayers," *Phys. Rev. B Rapid Comm.* **100**, 220408(R) (2019).
10. Q. J. Ze, X. Kuang, S. Wu, J. Wong, S. M. Montgomery, R. D. Zhang, J. M. Kovitz, F. Y. Yang, H. J. Qi, and R. K. Zhao, "Magnetic Shape Memory Polymers with Integrated Multifunctional Shape Manipulation," *Adv. Mater.* 1906657 (2019).
11. Y. Cheng, S. S. Yu, M. L. Zhu, J. Hwang, and F. Y. Yang, "Evidence of the Topological Hall Effect in Pt/Antiferromagnetic Insulator Bilayers," *Phys. Rev. Lett.* **123**, 237206 (2019).
12. S. Wu, Q. J. Ze, R. D. Zhang, N. Hu, Y. Cheng, F. Y. Yang, and R. K. Zhao, "Symmetry-Breaking Actuation Mechanism for Soft Robotics and Active Metamaterials," *ACS Appl. Mater. Interfaces* **11**, 41649 (2019).
13. J. S. Jamison, Z. H. Yang, B. L. Giles, J. T. Brangham, G. Z. Wu, P. C. Hammel, F. Y. Yang, and R. C. Myer, "Long lifetime of thermally-excited magnons in bulk yttrium iron garnet," *Phys. Rev. B* **100**, 134402 (2019).
14. A. S. Ahmed, A. J. Lee, N. Bagués, B. A. McCullian, A. M. A. Thabt, A. Perrine, P.-K. Wu, J. R. Rowland, M. Randeria, P. C. Hammel, D. W. McComb, and F. Y. Yang, "Spin-Hall topological Hall effect in highly tunable Pt/ferrimagnetic-insulator bilayers," *Nano Lett.* **19**, 5683 (2019).
15. H. L. Wang, K.-Y. Meng, P. X. Zhang, J. T. Hou, J. Finley, J. H. Han, F. Y. Yang, and L. Q. Liu, "Large Spin-orbit Torque Observed in Epitaxial $SrIrO_3$ Thin Films," *Appl. Phys. Lett.* **114**, 232406 (2019).
16. A. J. Lee, A. S. Ahmed, S. D. Guo, B. D. Esser, D. W. McComb, F. Y. Yang, "Epitaxial $Co_{50}Fe_{50}$(110)/Pt(111) Films on $MgAl_2O_4$(001) and its Enhancement of Perpendicular Magnetic Anisotropy," *J. Appl. Phys.* **125**, 183903 (2019).
17. K.-Y. Meng, A. S. Ahmed, M. Baćani, A.-O. Mandru, X. Zhao, N. Bagués, B. D. Esser, J. Flores, D. W. McComb, H. J. Hug, and F. Y. Yang, "Observation of Nanoscale Skyrmions in $SrIrO_3$/$SrRuO_3$ Bilayers," *Nano Lett.* **19**, 3169 (2019).
18. Y. Cheng, R. Zarzuela, J. T. Brangham, A. J. Lee, S. White, P. C. Hammel, Y. Tserkovnyak, F. Y. Yang, "Non-sinusoidal angular dependence of FMR-driven spin current across an antiferromagnet in $Y_3Fe_5O_{12}$/NiO/Pt trilayers," *Phys. Rev. B Rapid Comm*. **99**, 060405(R) (2019).

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19. Y. Cheng, A. J. Lee, J. T. Brangham, S. P. White, W. T. Ruane, P. C. Hammel, F. Y. Yang, "Thickness and angular dependent ferromagnetic resonance of ultra-low damping $Co_{25}Fe_{75}$ epitaxial films," *Appl. Phys. Lett.* **113**, 262403 (2018).
20. F. Y. Yang and P. C. Hammel, "Topical review: FMR-Driven Spin Pumping in $Y_3Fe_5O_{12}$-Based Structures," *J. Phys. D: Appl. Phys*. **51**, 253001 (2018).
21. W. T. Ruane, S. P. White, J. T. Brangham, K. Y. Meng, D. V. Pelekhov, F. Y. Yang, P. C. Hammel, "Controlling and patterning the effective magnetization in $Y_3Fe_5O_{12}$ thin films using ion irradiation," *AIP Adv*. **8**, 056007 (2018).
22. A. Prakash, B. Flebus, J. Brangham, F. Y. Yang, Y. Tserkovnyak, and J. P. Heremans, "Evidence for the role of the magnon energy relaxation length in the spin Seebeck effect," *Phys. Rev. B* **97**, 020408(R) (2018).

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24. A. J. Lee, J. T. Brangham, Y. Cheng, S. P. White, W. T. Ruane, B. D. Esser, D. W. McComb, P. C. Hammel, and F. Y. Yang, "Metallic Ferromagnetic Films with Magnetic Damping Under 1.4×10^{-3}," *Nat. Commun.* **8**, 234 (2017).
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27. A. Foley, J. Corbett, K. Alam, A. L. Richard, D. C. Ingram, A. R. Smith, L. S. Zhao, J. C. Gallagher, F. Y. Yang, "Contribution From Ising Domains Overlapping Out-of-Plane to Perpendicular Magnetic Anisotropy in Mn_4N Thin Films on MgO(001)," *J. Magn. Magn. Mater.* **439**, 236 (2017).
28. C. L. Jermain, S. V. Aradhya, N. D. Reynolds, R. A. Buhrman, J. T. Brangham, M. R. Page, P. C. Hammel, F. Y. Yang, and D. C. Ralph, "Increased low-temperature damping in yttrium iron garnet thin-films grown on gadolinium gallium garnet," *Phys. Rev. B* **95**, 174411 (2017).
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30. J. M. Bartell, C. L. Jermain, S. V. Aradhya, J. T. Brangham, F. Y. Yang, D. C. Ralph, G. D. Fuchs. "Imaging Magnetization Structure and Dynamics in Ultrathin $Y_3Fe_5O_{12}$/Pt Bilayers with High Sensitivity Using the Time-Resolved Longitudinal Spin Seebeck Effect," *Phys. Rev. Applied*, **7**, 044004 (2017).
31. H. L. Wang, C. H. Du, P. C. Hammel and F. Y. Yang, "Comparative determination of $Y_3Fe_5O_{12}$/Pt interfacial spin mixing conductance by spin-Hall magnetoresistance and spin pumping," *Appl. Phys. Lett.* **110**, 062402 (2017).
32. J. Kimling, G.-M. Choi, J. T. Brangham, T. Matalla-Wagner, T. Huebner, T. Kuschel, F. Y. Yang, and D. G. Cahill, "Picosecond spin Seebeck effect," *Phys. Rev. Lett.* **118**, 057201 (2017). ["Bulk isn't everything", Research Highlight by *Nature Nanotechnology*, 12, 186 (2017)]
33. J. C. Gallagher, K. Y. Meng, J. T. Brangham, H. L. Wang, B. D. Esser, D. W. McComb, and F. Y. Yang, "Robust Zero-Field Skyrmion Formation in FeGe Epitaxial Thin Films," *Phys. Rev. Lett.* **118**, 027201 (2017).

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36. A. Alfonsov, E. Ohmichi, P. Leksin, A. Omar, H. L. Wang, S. Wurmehl, F. Y. Yang, H. Ohta, "Cantilever detected ferromagnetic resonance in thin $Fe_{50}Ni_{50}$, $Co_2FeAl_{0.5}Si_{0.5}$ and Sr_2FeMoO_6 films using a double modulation technique," *J. Mag. Reson.* **270**, 183 (2016).
37. J. T. Brangham, K.-Y. Meng, A. S. Yang, J. C. Gallagher, B. D. Esser, S. P. White, S. S. Yu, D. W. McComb, P. C. Hammel, and F. Y. Yang, "Thickness dependence of spin Hall angle of Au grown on $Y_3Fe_5O_{12}$ epitaxial films," *Phys. Rev. B* **94**, 054418 (2016).
38. J. C. Gallagher, A. S. Yang, J. T. Brangham, B. D. Esser, S. P. White, M. R. Page, K.-Y. Meng, S. S. Yu, R. Adur, W. Ruane, S. R. Dunsiger, D. W. McComb, F. Y. Yang, and P. C. Hammel, "Exceptionally high magnetization of stoichiometric $Y_3Fe_5O_{12}$ epitaxial films grown on $Gd_3Ga_5O_{12}$," *Appl. Phys. Lett.* **109**, 072401 (2016).

39. A. Prakash, J. Brangham, F. Y. Yang, and J. P. Heremans, "Spin Seebeck effect through antiferromagnetic NiO," *Phys. Rev. B* **94**, 014427 (2016).
40. M. J. Hinton, Stanley Steers, Bryan Peters, F. Y. Yang, and T. R. Lemberger, "Evidence for a π junction in $Nb/Ni_{0.96}V_{0.04}/Nb$ trilayers revealed by superfluid density measurements," *Phys. Rev. B* **94**, 014518 (2016).
41. R. Morrow, J. R. Soliz, A. J. Hauser, J. C. Gallagher, M. A. Susner, M. D. Sumption, A. A. Aczel, J. Q. Yan, F. Y. Yang, P. M. Woodward, "The effect of chemical pressure on the structure and properties of A_2CrOsO_6 (A = Sr, Ca) ferrimagnetic double perovskite," *J. Solid State Chem*. **238**, 46 (2016).
42. A. O. Mandru, J. P. Corbett, J. M. Lucy, A. L. Richard, F. Y. Yang, D. C. Ingram, A. R. Smith, "Structure and magnetism in Ga-rich MnGa/GaN thin films and unexpected giant perpendicular anisotropy in the ultra-thin film limit," *Appl. Surf. Sci.* **367**, 312 (2016).
43. J. C. Gallagher, B. D. Esser, R. Morrow, S. R. Dunsiger, R. E. A. Williams, P. M. Woodward, D. W. McComb, F. Y. Yang, "Epitaxial growth of iridate pyrochlore $Nd_2Ir_2O_7$ films," *Sci. Rep.* **6**, 22282 (2016).

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44. Y.-H. Chiu, N. G. Minutillo, R. E. A. Williams, G. J. Smith, D. W. McComb, J. A. Carlin, E. Johnston-Halperin, F. Y. Yang, "Photoluminescence Evolution in GaAs/AlGaAs Core/Shell Nanowires Grown by MOCVD: Effects of Core Growth Temperature and Substrate Orientation," *J. Cryst. Growth* **429**, 1 (2015).
45. S. A. Manuilov, C. H. Du, R. Adur, H. L. Wang, V. P. Bhallamudi, F. Y. Yang, and P. C. Hammel, "Spin pumping from spinwaves in thin film YIG," *Appl. Phys. Lett.* **107**, 042405 (2015).
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48. A. Alfonsov, B. Peters, F. Y. Yang, B. Buchner, and S. Wurmehl, "Nuclear magnetic resonance study of thin $Co_2FeAl_{0.5}$ $Si_{0.5}$ Heusler films with varying thickness," *Phys. Rev. B* **91**, 064421 (2015).
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51. R. Adur, C. H. Du, S. A. Manuilov, H. L. Wang, F. Y. Yang, D. V. Pelekhov, P. C. Hammel, "The Magnetic Particle in a Box: Analytic and Micromagnetic Analysis of Probe-Localized Spin Wave Modes," *J. Appl. Phys.* **117**, 17E108 (2015).

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53. J. M. Lucy, M. R. Ball, O. D. Restrepo, A. J. Hauser, J. R. Soliz, J. W. Freeland, P. M. Woodward, W. Windl, and F. Y. Yang, "Strain-dependent, Extraordinary Magnetocrystalline Anisotropy in Sr_2CrReO_6 Epitaxial Films," *Phys. Rev. B* **90**, 180401(R) (2014).
54. T. R. Lemberger, M. J. Hinton, J. Yong, J. M. Lucy,·A. J. Hauser, F. Y. Yang, "Anomalously Weak Cooper Pair-breaking by Exchange Energy in Ferromagnet/Superconductor Bilayers," *J. Supercond. Nov. Magn.* **27**, 2249 (2014).

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Patents

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