Hao Zeng

EDUCATION

Ph.D., Physics (2001), thesis "Magnetism of Self-Ordered and Composite Nanostructures"
University of Nebraska-Lincoln, Lincoln, NE, advisor: David J. Sellmyer
M.S., Physics (1998),
University of Nebraska-Lincoln, Lincoln, NE
B.S., Physics (1993), thesis "Non-Linear Optical Properties of Fullerene"
Nanjing University, Nanjing, China

EXPERIENCE

Associate Professor (Sept. 2009-present)
Department of Physics, University at Buffalo, the State University of New York
Assistant Professor (Sept. 2004-Aug. 2009)
Department of Physics, University at Buffalo, the State University of New York

- Synthesis of nanoscale magnetic, semiconductor and hybrid materials
- Nanoscale Magnetism
- Spin dependent charge transport in nanostructures

Postdoctoral Research Associate (Sept. 2001-Aug. 2004)
Group of Nanoscale Materials and Devices, IBM T.J. Watson Research Center, supervisor: Shouheng Sun

- Developed nanoparticle based bio-labels for ultra-sensitive DNA sensor
- Fabricated half-metallic nanoparticle junction array devices, investigated spin dependent charge transport properties
- Developed two-phase exchange-spring permanent magnets using nanoparticle self-assembly, achieved 50% energy product enhancement as compared to corresponding single-phase material

Research Assistant (Aug. 1996 –Aug. 2001)
Center for Materials Research and Analysis, University of Nebraska-Lincoln

- Developed non-epitaxial, textured FePt/CoPt thin films and nanocomposite films, with potential applications in extremely high density magnetic recording
- Produced magnetic nanowire arrays in self-ordered templates, studied structural and magnetic properties including magnetization reversal and magnetic interactions

Research Assistant (Aug. 1993 – May 1996)
Department of Physics, Nanjing University, Nanjing, China

- Synthesized and investigated optical properties of fullerene molecules (C_{60} and C_{70})

AWARDS

- 2009 UB's Exceptional Scholar-Young Investigator Award
- 2006 National Science Foundation CAREER Award
- 2003 IBM Research Division Award
- 2003 BCC Leadership in Nanomaterials Award (group award)
- 1998-2001 IBM Cooperative Graduate Student Fellowship
- 1997-1998 Wheeler University Fellowship

PROFESSIONAL SOCIETIES

- Member of the American Physical Society
- Member of the Materials Research Society

PUBLICATIONS

JOURNAL PAPERS

1. H. Huang, S. Delikanli, H. Zeng and A. Pralle, "Remote control of ion-channels and neurons through magnetic field heating of nanoparticles", *Nature Nanotechnology*, 5, 602 (2010).
2. P. Dev, H. Zeng, and P. H. Zhang, "Defect-induced magnetism in nitride and oxide nanowires: Surface effects and quantum confinement", *Phys. Rev. B*, 82, 165319 (2010).
3. H. Xing, M. He, C. Feng, H. Guo, H. Zeng and Z. Xu, "Emergent order in the spin-frustrated system $Dy_xTb_{2-x}Ti_2O_7$ studied by ac susceptibility measurements", *Phys. Rev. B*, 81, 134426 (2010).
4. Yunpeng Zhang, Hui Xing, Narayan Poudyal, Vikas Nandwana, Chuan-bing Rong, Shi-shen Yan, Hao Zeng, and J. P. Liu, "Inversed tunneling magnetoresistance in hybrid FePt/Fe3O4 core/shell nanoparticles systems", *J. Appl. Phys.* 108, 103905 (2010).
5. H. Xing, W. Kong, S. Delikanli, S. Sun, Z. Xu, H. Zeng, "Giant Positive Magnetoresistance in Co/CoO Nanoparticle Arrays", *J. Appl. Phys.* 105, 063920 (2009).
6. C. Wang, C. Xu, H. Zeng, S.H. Sun, "Recent Progress in Syntheses and Applications of Dumbbell-like Nanoparticles," *Adv. Mater.*, 21, 3045-3052 (2009), invited progress report.
7. S. He, H. Zhang, S. Delikanli, Y. Qin, M.T. Swihart, and H. Zeng, "Bifunctional Magneto-Optical FePt−CdS Hybrid Nanoparticles", *J. Phys. Chem. C*, 113, 87-90 (2009).
8. H. Zhang, S. Delikanli, Y. Qin, S. He, M. Swihart, and H. Zeng "Monodisperse CdS Nanorods Catalyzed by Au Nanoparticles", *Nano Res.*, 1, 314-320 (2008).
9. E. Fraser, C.H. Kim, S. Hegde, H. Zeng, H, Luo, P.K. Wei, "Magnetization Reversal in Epitaxial MnAs thin films", *J. Appl. Phys.*, 104, 033921(1-3) (2008).
10. W.C. Law, K.T. Yong, I. Roy, G Xu, H. Ding, E.J. Bergey, H. Zeng and P.N. Prasad, "Optically and magnetically doped organically modified silica nanoparticles as efficient magnetically guided biomarkers for two-photon imaging of live cancer cells", *J. Phys. Chem. C*, 112, 7972-7977 (2008).
11. S. Delikanli, S. He, Y. Qin, P. Zhang, A. Petrou, H. Zeng, H. Zhang and M. T. Swihart, "Room Temperature Ferromagnetism in Mn-doped CdS Nanorods", *Appl. Phys. Lett*. 93, 132501(1-3) (2008).
12. C. Westman, S. Jang, C. Kim, S. He, G. Harmon, N. Miller, B. Graves, N. Poudyal, R. Sabirianov, H. Zeng, M. DeMarco, and J. P. Liu, "Surface finite size effect in nanoparticles," *J. Phys. D: Appl. Phys.*, 41, 225003-225007 (2008).
13. H. Zeng and S. Sun, "Multifunctional nanostructures via chemical synthesis," Feature Article in *Adv. Func. Mater.*, 18, 391-400, (2008). Highlighted in *Materials Views*, April, A5, 2008 (Wiley InterScience).
14. S. Jang, W. Kong and H. Zeng, "Magnetotransport in Fe_3O_4 nanoparticle arrays dominated by surface spin disorder," *Phys. Rev. B*, 76, 212403-1-4, (2007).
15. C. Kim, T. Loedding, S. Jang, H. Zeng, Z. Li, Y. Sui, and D. J. Sellmyer "FePt nanodot arrays with perpendicular easy axis, large coercivity, and extremely high density," *Appl. Phys. Lett.* 91, 172508-1-3, (2007).

16. K. Yong, Y. Sahoo, H. Zeng, M. T. Swihart, J. R. Minter and P. N. Prasad, “Formation of ZnTe Nanowires by Oriented Attachment,” *Chem. Mater*. (Communication), 19, 4108-4110, (2007).
17. C.-B. Rong , D. Li , V. Nandwana , N. Poudyal , Y. Ding , Z. L. Wang , H. Zeng , J. P. Liu “Size-Dependent Chemical and Magnetic Ordering in L10-FePt Nanoparticles,” *Adv. Mater*. 18, 2984-2988, (2006).
18. W.L. Shi, Y. Sahoo, Hao Zeng, Yong Ding, Mark T. Swihart and P. N. Prasad, “Anisotropic growth of PbSe nanocrystals on Au-Fe3O4 hybrid nanoparticles,” *Adv. Mater.* 14, 1889-1894, (2006), *Inside Front Cover article*.
19. W.L. Shi, H. Zeng, Y. Sahoo, T. Y. Ohulchansky, Y. Ding, Z. L. Wang, M. Swihart, and P. N. Prasad, “A General Approach to Binary and Ternary Hybrid Nanocrystals,” *Nano Lett.*, 6, 875-881, (2006). Highlighted by *Science, Editors choice*.
20. H. Zeng, C.T. Black, R.L. Sandstrom, P.M. Rice, C.B Murray and S. Sun, “Magnetotransport of magnetite nanoparticle arrays,” *Phys. Rev. B*. 73, 020402-1-4(R) (2006).
21. S. G. Grancharov, H. Zeng, S. Sun, S. X. Wang, S. O'Brien, C. B. Murray, J. R. Kirtley, and G. A. Held, “Bio-functionalization of monodisperse magnetic nanoparticles and their use as biomolecular labels in a magnetic tunnel junction based sensor,” *J Phys. Chem. B* 109, 13030-13035, (2005).
22. D. B. Robinson, H. H. J. Persson, H. Zeng, G. Li, N. Pourmand, S. Sun, and S. X. Wang, "DNA-functionalized MFe2O4 (M = Fe, Co, or Mn) nanoparticles and their hybridization to DNA-functionalized surfaces," *Langmuir* 21, 3096-3103, (2005).
23. Z. Q. Jin, N. N. Thadhani, M. McGill, Y. Ding, Z. L. Wang, M. Chen, H. Zeng, V. M. Chakka and J. P. Liu, “Explosive shock processing of Pr2Fe14B/alpha-Fe exchange-coupled nanocomposite bulk magnets”, *J. Mater. Res*., 20, 599-609 (2005).
24. H. Zeng, S. H. Sun, J. Li, Z. L. Wang and J. P. Liu, "Tailoring magnetic properties of core/shell nanoparticles," *Appl. Phys. Lett*. 85, 792-794 (2004).
25. H. Zeng, P. M. Rice, S. X. Wang, and S. Sun, "Shape-controlled synthesis and shape-induced texture of MnFe2O4 nanoparticles," *J Am. Chem. Soc*. 126, 11458-11459 (2004).
26. H. Zeng, J. Li, Z. L. Wang, J. P. Liu, and S. Sun, "Bimagnetic core/shell FePt/Fe_3O_4 nanoparticles," *Nano Lett.* 4, 187-190 (2004).
27. S. Sun, H. Zeng, D. B. Robinson, S. Raoux, P. M. Rice, S. X. Wang, and G. Li "Monodisperse MFe2O4 (M = Fe, Co, Mn) nanoparticles," *J Am. Chem. Soc*. 126, 273-279 (2004).
28. F. X. Redl, C. T. Black, G. C. Papaefthymiou, R. L. Sandstrom, M. Yin, H. Zeng, C. B. Murray, and S. P. O'Brien, "Magnetic, electronic, and structural characterization of nonstoichiometric iron oxides at the nanoscale," *J Am. Chem. Soc*. 126, 14583-14599 (2004).
29. J. Li, H. Zeng, S. Sun, J. P. Liu, and Z. L. Wang, "Analyzing the structure of CoFe-Fe3O4 core-shell nanoparticles by electron imaging and diffraction," *J Phys. Chem. B* 108, 14005-14008 (2004).
30. L. Krusin-Elbaum, D. M. Newns, H. Zeng, V. Derycke, J. Z. Sun and R. Sandstrom, "Room-temperature ferromagnetic nanotubes controlled by electron or hole doping," *Nature* 431, 672-676 (2004).
31. Z. Q. Jin, N. N. Thadhani, M. McGill, J. Li, Y. Ding, Z. L. Wang, H. Zeng, M. Chen,S. F. Cheng, J. P. Liu, "Grain size dependence of magnetic properties in shock synthesized bulk Pr2Fe14B/alpha-Fe nanocomposites," *J Appl. Phys*. 96, 3452-3457 (2004).
32. Z. Q. Jin, K. H. Chen, J. Li, H. Zeng, S. F. Cheng, J. P. Liu, Z. L. Wang and N. N. Thadhani, "Shock compression response of magnetic nanocomposite powders," *Acta. Mater.* 52, 2147-2154 (2004).
33. G. A. Held, H. Zeng, and S. H. Sun, "Magnetics of ultrathin FePt nanoparticle films," *J Appl. Phys*. 95, 1481-1484 (2004).

34. S. Demirtas, A. R. Koymen, and H. Zeng, "Oscillatory temperature dependence of exchange bias for Fe/Gd ferrimagnets," *J Phys.-Condens. Mat.* 16, L213-L220 (2004).
35. K. H. Chen, Z. Q. Jin, J. Li, G. Kennedy, Z. L. Wang, and N. N. Thadhani, H. Zeng, S.-F. Cheng and J. P. Liu, "Bulk nanocomposite magnets produced by dynamic shock compaction," *J Appl. Phys*. 96, 1276-1278 (2004).
36. H. Zeng, S. Sun, R. L. Sandstrom and C. B. Murray, "Chemical ordering of FePt nanoparticle self-assemblies by rapid thermal annealing," *J Magn. Magn. Mater*. 266, 227-232 (2003).
37. T. S. Vedantam, J. P. Liu, H. Zeng and S. Sun, "Thermal stability of self-assembled FePt nanoparticles," *J Appl. Phys*. 93, 7184-7186 (2003).
38. J. Li, Z. L. Wang, H. Zeng , S. Sun and J. P. Liu"Interface structures in FePt/Fe3Pt hard-soft exchange-coupled magnetic nanocomposites," *Appl. Phys. Lett*. 82, 3743-3745 (2003).
39. K. E. Elkins, T. S. Vedantam, J. P. Liu, H. Zeng, S. Sun, Y. Ding, and Z. L. Wang,"Ultrafine FePt nanoparticles prepared by the chemical reduction method," *Nano Lett.* 3, 1647-1649 (2003).
40. H. Zeng, M. L. Yan, N. Powers, and D. J. Sellmyer, "Orientation-controlled nonepitaxial L1(0) CoPt and FePt films," *Appl. Phys. Lett*. 80, 2350-2352 (2002).
41. H. Zeng, S. Sun, T. S. Vedantam, J. P. Liu, Z.-R. Dai and Z.-L. Wang,"Exchange-coupled FePt nanoparticle assembly," *Appl. Phys. Lett*. 80, 2583-2585 (2002).
42. H. Zeng, R. Skomski, L. Menon, Y. Liu, S. Bandyopadhyay, and D. J. Sellmyer, "Structure and magnetic properties of ferromagnetic nanowires in self-assembled arrays," *Phys. Rev. B* 65, 134426-1-8 (2002).
43. H. Zeng, Z. S. Shan, Y. Liu, M. Azarisooreh, K. Honardoost and D. J. Sellmyer, "Studies of the magnetic and reversal properties for thin CoCrTa films," *J Magn. Magn. Mater.* 251, 283-291 (2002).
44. H. Zeng, R. Sabirianov, O. Mryasov, M. L. Yan, K. Cho, and D. J. Sellmyer, "Curie temperature of FePt: B2O3 nanocomposite films," *Phys. Rev. B* 66, 184425-1-6, (2002).
45. H. Zeng, S Michalski, R D Kirby, D J Sellmyer, L Menon and S Bandyopadhyay, "Effects of surface morphology on magnetic properties of Ni nanowire arrays in self-ordered porous alumina," *J Phys.-Condens. Mat.* 14, 715-721 (2002).
46. H. Zeng, Jing Li, Wang, Z.L. Liu, J.P and S. Sun, "Interparticle interactions in annealed FePt nanoparticle assemblies," *IEEE Trans. Magn.* 38, 2598-2600 (2002).
47. H. Zeng, J. Li, J. P. Liu, Z. L. Wang and S. Sun, "Exchange-coupled nanocomposite magnets by nanoparticle self-assembly," *Nature* 420, 395-398 (2002).
48. M. L. Yan, H. Zeng, N. Powers, and D. J. Sellmyer, "L1(0),(001)-oriented FePt: B2O3 composite films for perpendicular recording," *J Appl. Phys.* 91, 8471-8473 (2002).
49. S. H. Sun and H. Zeng, "Size-controlled synthesis of magnetite nanoparticies," *J Am. Chem. Soc.* 124, 8204-8205 (2002).
50. R. Skomski, H. Zeng, and D. J. Sellmyer, "Incoherent magnetization reversal in nanowires," *J Magn. Magn. Mater*. 249, 175-180 (2002).
51. Z.S. Shan, J.P. Liu, V.M. Chakka, H. Zeng, J.S. Jiang, "Energy barrier and magnetic properties of exchange-coupled hard-soft bilayer," *IEEE Trans. Magn.* 38, 2907-2909 (2002).
52. H. Zeng, M. L. Yan, Y. Liu and D. J. Sellmyer, "CoPtCr: C nanocomposite films for high density recording," *J Appl. Phys.* 89, 810-812 (2001).
53. R. Skomski, H. Zeng, D.J. Sellmyer, "Grain-boundary micromagnetism," *IEEE Trans. Magn.* 37, 2549-2551 (2001).
54. L. Menon, S. Bandyopadhyay, Y. Liu, H. Zeng and D.J. Sellmyer,"Magnetic and structural properties of electrochemically self-assembled Fe1-xCox nanowires," *J Nanosci. Nanotechnol.* 1, 149-152 (2001).

55. M. Zheng, L. Menon, H. Zeng, Y. Liu, S. Bandyopadhyay, R. D. Kirby, and D. J. Sellmyer, "Magnetic properties of Ni nanowires in self-assembled arrays," *Phys. Rev. B* 62, 12282-12286 (2000).
56. H. Zeng, M. Zheng, R. Skomski, D. J. Sellmyer,Y. Liu, L. Menon and S. Bandyopadhyay, "Magnetic properties of self-assembled Co nanowires of varying length and diameter," *J Appl. Phys.* 87, 4718-4720 (2000).
57. R. Skomski, H. Zeng, M. Zheng and D. J. Sellmyer,"Magnetic localization in transition-metal nanowires," *Phys. Rev. B* 62, 3900-3904 (2000).
58. L. Menon, M. Zheng, H. Zeng, S. Bandyopadhyay and D. J. Sellmyer, "Size dependence of the magnetic properties of electrochemically self-assembled Fe quantum dots," *J Electron. Mater.* 29, 510-514 (2000).
59. M.F. Doerner, T. Kai, T. Arnoldussen, H. Zeng, M.F. Toney, D.K. Weller, "Microstructure and thermal stability of advanced longitudinal media," *IEEE Trans. Magn.* 36, 43-47 (2000).
60. Z. S. Shan, H. Zeng, C. X. Zhu, M. Azarisooreh, K. Honardoost, Y. Liu and D. J. Sellmyer, "Effects of layer thickness on orientation distribution and magnetic properties of CoCrTa/Cr films," *J Appl. Phys.* 85, 4310-4312 (1999).
61. S. Bandyopadhyay, L. Menon, N. Kouklin, H. Zeng and D. J. Sellmyer, "Electrochemically self-assembled quantum dot arrays," *J Electron. Mater.* 28, 515-519 (1999).
62. G. Gu, W. Ding, G. Cheng, W. Zang, H. Zeng, and Y. Du, "Very Intensive Red-light Emission From C60 Trapped in 13X Molecular-Sieve," *Appl. Phys. Lett.* 67, 326-328 (1995).
63. G. Gu, W. Ding, G. Cheng, W. Zang, H. Zeng, Y.W. Du, "Enhanced Photoluminescence from C60 Trapped in NAY Molecular-sieve," *Modern Phys. Lett.* B 9, 1327-1332 (1995).
64. G. Gu, W. Zang, H. Zeng, Y.W. Du et al.,"Photoacoustic Spectroscopy Measurement of C60 Thin Film," *Chinese Phys. Lett.* 11, 102-104 (1994).
65. G. Gu, W. Zhang, H. Zeng, Y. Du, Y. Han, W. Zhang, F. Dong and Y. Xia,"Large Nonlinear Absorption in C60 Thin Films," *J. Phys. B: At. Mol. Opt. Phys.* 26, L451-L455 (1993).

CITATIONS

As of 10/2010: ~4,000 citations; h-index: 27 (Web of Science); 10 papers cited > 100 times each.

BOOK CHAPTERS

1. Nanoparticle Magnetism
   H. Zeng, in *Recent Progress in Chemical Nanotechnology- From Quantum Dots to Nanowires*, ed. Deeder Aurongzeb, to be published by research signpost.

2. NEW MAGNETIC RECORDING MATERIALS
   Y. Liu, M. Yan, S. Sun and *H. Zeng* in *Handbook of Advanced Magnetic Materials* ed. Y. Liu, D.J. Sellmyer and D. Shindo, Springer Verlag (2006).

3. MAGNETIC NANOCRYSTALS AND ARRAYS
   Y. Liu, M. Zheng, H. Zeng, and D.J. Sellmyer, in *Nanophase and Nanostructured Materials*, eds. Z.L. Wang, Y. Liu, and Z. Zhang, Kluwer Academic/Plenum Publishers and Tsinghua University Press, Vol. 3, p. 215 (2003).

4. NANOSCALE MATERIALS FOR EXTREMELY HIGH- DENSITY RECORDING

D.J. Sellmyer, C.P. Luo, Hao Zeng, in *Magnetic Storage Systems Beyond 2000*, Ed. G.C. Hadjipanayis (Kluwer Academic Publishers, Dordrecht, 2001), p. 163-170.

PATENTS

1. "Process of making magnetic nanocomposites via nanoparticle self-assembly," with Shouheng Sun, US Patent 6972046.

INVITED CONFERENCE TALKS

1. "Carrier Dopant Interactions in DMS Quantum Dots," Summer School of Advanced Functional Materials 2010, International Centre for Materials Physics, Chinese Academy of Sciences, Shenyang, China, July 2010.
2. "Carrier Spin Polarization Probed by Circularly Polarized Magneto-Photoluminescence", International Workshop on Nanomagnetism and Spintronics, Linfen, Shanxi, July 2010.
3. "Manipulating Spin and Magnetism in Nanostructures," 2nd Workshop for US-China Earlier Career Chemical Scientists, Beijing, China, Oct. 2009.
4. "Magnetic Nanoparticles-Size, Surface Effects and Ultrafast Demagnetization", 2nd Workshop of International Center for Quantum Design, University of Science and Technology of China, Hefei, China, July 2009.
5. "Introduction to Magnetism, magnetic Materials and Applications" Quantum Design of Materials Summer School, University of Science and Technology China, July 2009.
6. "Synthesis, Characterization and AC Field Heating of Hybrid Nanostructures", The Seventeenth Annual International Conference on COMPOSITES/NANO ENGINEERING, Hawaii, July 2009.
7. "Ultrafast Optical Diagnostics of Surface/Interface Magnetization and Magnetization Reorientation in Fe Film and Nanoparticle Arrays" The Seventeenth Annual International Conference on COMPOSITES/NANO ENGINEERING, Hawaii, July 2009.
8. "Ferromagnetism in Non-conventional Materials," Workshop on Novel Phenomena at Nanoscale Interfaces, Hsinchu, Taiwan, Dec 2008.
9. "Multicomponent nanoparticles by solution phase synthesis," Progress in Electromagnetics Research Symposium, Cambridge, July 2008.
10. "Magnetism of FePt nanoparticles and nanodot arrays," the Annual American Physical Society March Meeting, New Orleans, LA, Mar 2008.
11. "Multi-component Nanostructures combining magnetic, plasmonic, and semiconducting functionalities," the Material Research Society Fall Meeting, Boston, MA, Nov 2007.
12. "Solution Phase Synthesized Magnetic Nanoparticles and Hybrids," International Conference on Materials for Advanced Technologies, Singapore, July 2007.
13. "FePt Nanomaterials for Future Magnetic Data Storage," Advanced Materials Summer School lecture, Institute of Metals Research, Chinese Academy of Sciences, Shenyang, China, June 2006.
14. "Nanoparticle Building Blocks for Functional Materials and Devices", Advanced Materials Summer School lecture, Institute of Metals Research, Chinese Academy of Sciences, Shenyang, China, June 2006.
15. "Fundamentals and Opportunities of Nanomagnetism," MURI Rare-Earth Magnets Workshop, Boston, MA, Nov 2005.
16. "Nanotechnology-the IBM Perspective," Public lecture, Westchester Medical College, Valhalla, NY, Apr, 2004.
17. "Magnetic nanocomposite materials-nanoparticle approach," 31st American Chemical Society NorthEastern Regional Meeting, Saratoga Springs, NY, June, 2003.

18. "Nanoscience and Nanotechnology-the IBM Perspective," TxBESS (Texas Beginning Educator Support System) Conference, Arlington, TX, May 2003.
19. "Magnetic interactions in FePt-based nanoparticle assembly," Fourth International Conference on Fine Particle Magnetism, Pittsburgh, PA, Aug. 2002.

INVITED COLLOQUIA and SEMINARS

1. "Magnetic Nanoparticles-Applications in Spintronics and Biomagnetics," Seminar, Hefei National Laboratory for Physical Sciences at the Microscale, Hefei, China, June 2010.
2. "Carrier-Spin Polarization in DMS Quantum Dots," Seminar, National Center of Nanoscience and Technology, Beijing, China, June 2010.
3. "Magnetic Nanoparticles-Size, Surface Effects and Ultrafast Spin Dynamics," Colloquium, National Laboratory for Solid State Microstructures and Department of Physics, Nanjing University, Nanjing, China, July 2009.
4. "Magnetic Nanostructures for Spintronics," Seminar, International Center for Quantum Design, University of Science and Technology of China, Hefei, China, July 2009.
5. "Synthesis of Magnetic Nanoparticles and Their Applications," Colloquium, Xiamen University, Xiamen, China, July 2009.
6. "Synthesis, Characterization and Bio-applications of Magnetic Nanoparticles," Colloquium, Xi'an Jiao Tong University, Xi'an, China, July 2009.
7. "Spin Engineering in Nanostructures," Colloquium, Hunter College, City University of New York, New York, Oct 2008.
8. "Spin Engineering in Nanostructures," Colloquium, Zhejiang University, Hangzhou, China, June 2008.
9. "Spin Engineering in Nanostructures," Colloquium, Institute of Physics, Chinese Academy of Sciences, Beijing, China, June 2008.
10. "Magnetism and Spin dependent Charge Transport in Nanostructures," Colloquium, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China, June 2008.
11. "Spin engineering in Nanostructures," Colloquium, Peking University, Beijing, China, June 2008.
12. "Spin engineering in Nanostructures," Colloquium, Shandong University, Jinan, China, June 2008.
13. "Multifunctional Nanostructures via Chemical Routes," Physics and Chemistry colloquium, Hong Kong University of Science and Technology, Hong Kong, July 2007.
14. "Multifunctional Nanostructures via Chemical Routes," Colloquium, Fudan University, Shanghai, China, July 2007.
15. "Magnetism and Magneto-transport in Nanoparticles," Colloquium, Data Storage Institute, Singapore, July 2007.
16. "Multifunctional Nanostructures via Chemical Routes," Physics Colloquium, National University of Singapore, Singapore, June 2007.
17. "Magnetism and Spin Dependent Transport in Nanoparticles," MINT and Physics colloquium, University of Alabama, Tuscaloosa, Alabama, Apr. 2007.
18. "Nanoparticle Building Blocks for Functional Materials and Devices," Physics Colloquium, Zhejiang University, Hangzhou, China, Dec. 2006.
19. "Nanoparticle Building Blocks for Functional Materials and Devices," Physics Colloquium, Northeastern University, Boston, MA, Oct 2006.
20. "Nanoparticle Building Blocks for Functional Materials and Devices", Colloquium, Wenzhou University, Wenzhou, China, July 2006.
21. "Nanoparticle Building Blocks for Functional Materials and Devices," Materials Science colloquium, Brook Haven National Laboratory, Apr. 2004.
22. "Magnetic Nanoparticle Building Blocks for Functional Materials and Devices," Physics colloquium, Virginia Polytechnic Institute and State University, Blacksburg, VA, Mar. 2004.

23. "Magnetic Nanoparticle Building Blocks for Functional Materials and Devices," Physics colloquium, SUNY at Buffalo, Buffalo, NY, Jan. 2004.
24. "Nanoparticle Building Blocks for Functional Materials and Devices," Physics colloquium, New Jersey Institute of Technology, Newark, NJ Oct 2003.
25. "Nanoparticle Building Blocks for Functional Materials and Devices," Physics colloquium, University of Nebraska, Lincoln, NE, Aug. 2003.
26. "Nanoparticle Building Blocks for Functional Materials and Devices," Physics colloquium, University of Texas-Arlington, Arlington, TX, May 2003.

CONTRIBUTED CONFERENCE PRESENTATIONS

1. "Ultrafast Coherent Control of Spin Reorientation and Surface Magnetism in Fe3O4 Nanoparticle Arrays," 55th Magnetism and Magnetic Materials Conference, Atlanta, GA, Nov 2010.
2. "Magneto Polaron Formation in Colloidal CdMnSe Quantum Dots Studied by Circularly Polarized Magneto-Photoluminescence," 55th Magnetism and Magnetic Materials Conference, Atlanta, GA, Nov 2010.
3. "Investigation of SmFeCoxAsO using ^{57}Fe Mossbauer spectroscopy as a function of temperature and applied magnetic field," the American Physical Society March Meeting, Portland, OR, March 2010.
4. "Metal-Insulator Transition in W-doped VO2 Nanowires," the American Physical Society March Meeting, Portland, OR, March 2010.
5. "Laser induced ultrafast magnetization reorientation in two dimensional arrays of Fe nanoparticles," the American Physical Society March Meeting, Portland, OR, March 2010.
6. "Surface Induced Suppression of Magnetization and Surface magnetization Reversal in Magnetic Nanoparticles," the American Physical Society March Meeting, Portland, OR, March 2010.
7. "Dye Sensitized Solar Cells Based on Free-standing TiO2 Nanotube," the American Physical Society March Meeting, Portland, OR, March 2010.
8. "Magnetism and Carrier Spin Polarization in Mn-doped CdSe Quantum Dots," the American Physical Society March Meeting, Portland, OR, March 2010.
9. "RF Field Heating of Magnetic Nanoparticles for Remote Control of Ion Channels," 11th Joint MMM-Intermag Conference, Washington DC, Jan 2010.
10. "Study on Room Temperature Ferromagnetism by doping transition metals in ZnO nanowires," 11th Joint MMM-Intermag conference, Washington DC, Jan 2010.
11. "Magnetism in Semiconductor Oxide Nanowires," The 3rd International Conference on One-dimentional Nanomaterials, Atlanta, GA, Dec 2009.
12. "Giant positive magnetoresistance in Co@CoO nanoparticle array", the American Physical Society March Meeting, New Orleans, LA, March 2009.
13. "Spin polarization of doped II-VI nanocrystals," the American Physical Society March Meeting, New Orleans, LA, March 2009.
14. "Carrier Spin Polarization in CdMnSe Colloidal QDs," 53nd Magnetism and Magnetic Materials Conference, Austin, TX, Nov 2008.
15. "Self-assembled magnetic nanodot array," Progress in Electromagnetics Research Symposium, Cambridge, July 2008.
16. "Size dependent magnetic properties of magnetite (Fe_3O_4) nanoparticles," the American Physical Society March Meeting, New Orleans, LA, March 2008.
17. "Surface induced reduction of magnetization in nanoparticles with competing exchange interactions," annual MRS fall meeting, Boston, MA, 2007.

18. “Coherent growth of semiconductor nanocrystals on FePt nanoparticles,” annual MRS fall meeting, Boston, MA, 2007.
19. “Magnetic and magneto-transport properties of epitaxial MnAs thin films,” 52nd Magnetism and Magnetic Materials Conference, Tampa, FL, Nov 2007.
20. “A novel temperature dependent hysteresis behaviour of Co nanodot arrays,” 52nd Magnetism and Magnetic Materials Conference, Tampa, FL, Nov 2007.
21. “Magnetic Properties of Self-organized Nanodot Arrays,” 10th joint MMM-Intermag conference, Baltimore, MD, Jan 2007.
22. “Electron Transport Properties of Co Nanodot Arrays,” the American Physical Society March Meeting, Denver, CO, Mar 2007.
23. “Ferromagnetic resonance studies in Cobalt nanodot array,” the American Physical Society March Meeting, Denver, CO, Mar 2007.
24. “Charge Transport in Magnetite Nanoparticles,” the American Physical Society March Meeting, Denver, CO, Mar 2007.
25. “Phonons and Phonon-Mixing in ZnSe Isotopic Crystals, Pressure-cycled Domains, and Nanorods,” International Conference on Semiconductor Physics, Vienna, Austria, July 2006.
26. “Non-lithographic Fabrication of Magnetic Nanodot Arrays,” the American Physical Society March Meeting, Baltimore, MD, Mar 2006.
27. “Magnetism of Discrete, L10 Ordered FePt Nanoparticles,” the American Physical Society March Meeting, Baltimore, MD, Mar 2006.
28. “Hybrid colloidal nanostructures with paired plasmonic, semiconducting and magnetic functionalities,” annual MRS fall meeting, Boston, MA, 2005.
29. “Magnetic Properties of Au/Fe3O4 Hybrid Nanostructures,” 50th Annual Conference on Magnetism and Magnetic Materials, San Jose, CA, Apr 2005.
30. “Magnetoelastic anisotropy and exchange bias in [FeCo/TbFe]3 multilayer films,” 50th Annual Conference on Magnetism and Magnetic Materials, San Jose, CA, Apr 2005.
31. “A general strategy for hybrid nanoparticle synthesis,” AIChE annual meeting, Cincinnati, OH, 2005.
32. Epitaxial growth of heterostructure nanoparticles MRS, 2005.
33. “Iron oxide nanoparticles for DNA detection,” 49th Annual Conference on Magnetism and Magnetic Materials, Jacksonville, FL, Nov, 2004.
34. “Shape induced texture of manganese ferrite nanoparticles in self-assembled superlattices,” 49th Annual Conference on Magnetism and Magnetic Materials, Jacksonville, FL, Nov, 2004.
35. “Iron oxide nanoparticles for DNA detection,” annual MRS fall meeting, Boston, MA, 2004.
36. “Oscillatory Exchange Bias for Fe/Gd Multilayers,” the American Physical Society March Meeting, Montreal, Quebec, Canada, Mar 2004.
37. “Coercivity and Thermal Stability of FePt Nanoparticles,” the American Physical Society March Meeting, Austin, TX, Mar 2003.
38. “Exchanged coupled FePt Nanoparticle assembly,” the American Physical Society March Meeting, Indianapolis, IN, Mar 2002.
39. “Coercivity and Activation Volume of Ni Nanowire Arrays,” the American Physical Society March Meeting, Seattle, WA, Mar 2001.
40. “Magnetic Properties of Self-assembled Multilayered Fe/Pt Nanowire Arrays,” the American Physical Society March Meeting, Minneapolis, MN, Mar 2000.
41. “Novel CoPtCr:C Nanocomposite Films for High Density Recording,” the American Physical Society March Meeting, Minneapolis, MN, Mar 2000.
42. “Magnetic Properties of Nano-scale self-assembled Co Arrays,” the American Physical Society March Meeting, Atlanta, GA, Mar 1999.
43. “Interfacial Magnetism and Intergrain Interaction in Co-alloy Films,” the American Physical Society March Meeting, Los Angeles, CA, Mar 1998.

PROFESSIONAL ACTIVITIES

- Conference co-chair, International workshop on Nanomagnetism and Spintronics, July 22-24, Linfen, China, 2010.
- Session Chair, Summer School of Advanced Functional Materials, International Centre for Materials Physics, Chinese Academy of Sciences, Shenyang, China, July 2010; Session Chair, the 3rd International Conference on One-dimensional Nanomaterials, Atlanta, GA, Dec 2009; session Co-Chair, 48th Annual Conference on Magnetism and Magnetic Materials, 2003.
- Panelist for National Science Foundation, 2008, 2009, 2010
- Proposal reviewer for Department of Energy, National Science Foundation, Astar (Singapore government)
- External dissertation reader, National University of Singapore
- Review average ~15 papers per year for following journals: Nature, Applied Physics Letters, Physical Review B, Journal of Applied Physics, Journal of Physics-Condensed Matter, Physica E, Europhysics Letters, Journal of Magnetism and Magnetic Materials, IEEE Transactions on Magnetics, Journal of the American Chemical Society, ACS Nano, Nano Letters, Advanced Materials, Advanced Functional Materials, Small, Nanotechnology, Crystal Growth, Chemistry of Materials and Review of Scientific Instruments