Junjia Ding

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Education

Ph. D. **Aug 2009 - Aug 2013**
Department of Electrical & Computer Engineering
National University of Singapore, Singapore

M. Eng. **Aug 2007 - Jul 2009**
Microelectronics and Solid State Electronics
Huazhong University of Science and Technology, China

B. Eng. **Sep 2003 - Jul 2007**
Electronic Science and Technology,
Huazhong University of Science and Technology, China

Work Experience

Postdoctoral Appointee **June 2014 - Present**
Magnetic Film Group, Materials Science Division
Argonne National Laboratory, USA

Research Engineer **Aug 2013 - May 2014**
Department of Electrical & Computer Engineering
National University of Singapore, Singapore

Technical Skills

Fabrication: E-Beam Lithography, UV-Lithography, E-Beam Evaporation, Sputter Deposition, Dry and Wet Etching

- Fabricate one-component and bi-component nanostructures using multiple EBL and deposition process.
- Fabricate nanoscale devices using multiple steps UV-Lithography and EBL process.
- Fabricate array of devices with multi-layer alignments in wafer level using stepper.

Characterization: Scanning Electron Microscopy (SEM), Atomic and Magnetic Force Microscopy (AFM & MFM), Magneto-Optic Kerr (MOKE) Spectroscopy, Vibrating Sample Magnetometer (VSM), Vector Network Analyzer (VNA) Microwave Measurement, Micro focused Brillouin light scattering (BLS) Microscopy

- Characterize the geometry of nanostructures using SEM and AFM.
- Probe the magnetic ground state of nanostructures using MFM.
- Measure the static response of nanostructures using MOKE and VSM

- Investigate the dynamic response of nanostructures using VNA-FMR and Micro-BLS microscopy.

Micromagnetic Simulation: Object-Oriented Micromagnetic Framework (OOMMF), LLG Micromagnetics Simulator, Mumax^3 (GPU accelerated)

- Perform static and dynamic simulation for magnetic nanostructures using micro magnetic simulation package

Programming: Matlab, LabVIEW, Matlab

- Control equipments, analyze and visualise data using LabVIEW and Matlab.

Publication List

Selected Publications:

1. J. Ding, S. Jain, J.E. Pearson, S. Lendinez, V. Khovaylo, V. Novosad, 'Dynamic Control of Metastable Remanent States in Mesoscale Magnetic Elements' ***Journal of Applied Physics,*** **117**, 17A707 (2015).
2. J Ding, GN Kakazei, XM Liu, KY Guslienko, AO Adeyeye, 'Intensity Inversion of Vortex Gyrotropic Modes in Thick Ferromagnetic Nanodots' ***Applied Physics Letters***, **104**, 192405 (2014).
3. J Ding, GN Kakazei, X Liu, KY Guslienko, AO Adeyeye, 'Higher Order Vortex Gyrotropic Modes in Circular Ferromagnetic Nanodots' ***Scientific Reports***, **4**, 4796 (2014).
4. J Ding, VE Demidov, MG Cottam, SO Demokritov, AO Adeyeye, 'Dynamic Behavior of $Ni_{80}Fe_{20}$ Nanowires with Controlled Defects' ***Applied Physics Letters***, **104**, 143105 (2014).
5. J. Ding, N. Singh, M. Kostylev and A. O. Adeyeye. 'Static and Dynamic Magnetic Properties of $Ni_{80}Fe_{20}$ Anti-ring Nanostructures' ***Physical Review B***, **88**, 014301 (2013).
6. J. Ding and A. O. Adeyeye. 'Binary Ferromagnetic Nanostructures: Fabrication, Static and Dynamic Properties' ***Advanced Functional Materials***, **23**, 1684 (2013).
7. J. Ding and A. O. Adeyeye. '$Ni_{80}Fe_{20}$/Ni Binary Nanomagnets for Logic Applications' ***Applied Physics Letters***, **100**, 073114 (2012).
8. J. Ding, D. Tripathy and A. O. Adeyeye. 'Dynamic Response of Antidot Nanostructures with Alternating Hole Diameters' ***Europhysics Letters***, **98**, 16004 (2012).
9. J. Ding, M. Kostylev and A. O. Adeyeye. 'Realization of a Mesoscopic Reprogrammable Magnetic Logic Based on a Nanoscale Reconfigurable Magnonic Crystal' ***Applied Physics Letters***, **100**, 073114 (2012).
10. J. Ding, M. Kostylev and A. O. Adeyeye. 'Broadband Ferromagnetic Resonance Spectroscopy of Permalloy Triangular Nanorings' ***Applied Physics Letters***, **100**, 062401 (2012).
11. J. Ding, M. Kostylev and A. O. Adeyeye. 'Magnetic Hysteresis of Dynamic Response of One-Dimensional Magnonic Crystals Consisting of Homogenous and Alternating Width Nanowires Observed with Broadband Ferromagnetic Resonance' ***Physical Review B***, **84**, 054425 (2011).
12. J. Ding, M. Kostylev and A. O. Adeyeye. 'Magnonic Crystal as a Medium with Tunable Disorder on a Periodical Lattice' ***Physical Review Letters***, **107**, 047205 (2011).
13. J. Ding, D. Tripathy and A. O. Adeyeye. 'Effect of Antidot Diameter on the Dynamic Response of Nanoscale Antidot Arrays' ***Journal of Applied Physics***, **109**, 07D304 (2011).
14. J. Ding, S. Jain and A. O. Adeyeye, 'Static and Dynamic Properties of One-Dimensional Linear Chain of Nanomagnets' ***Journal of Applied Physics***, **109**, 07D301 (2011).

Other Publications:

1. X. Zhou, J. Ding, M. Kostylev and A. O. Adeyeye, 'Spin Wave Spectra in Perpendicularly Magnetized Permalloy Rings' ***Applied Physics Letters***, **106**, 112403 (2015).
2. X. M. Liu, H. T. Nguyen, J. Ding, M. G. Cottam and A. O. Adeyeye, 'Interlayer Coupling in $Ni_{80}Fe_{20}$/Ru/$Ni_{80}Fe_{20}$ Multilayer Films: Ferromagnetic Resonance Experiments and Theory' ***Physical Review B***, **90**, 064428 (2014).
3. X. M. Liu, J. Ding, N. Singh, G. Shimon and A. O. Adeyeye, 'Magnetization Dynamics of Coupled $Ni_{80}Fe_{20}$ Dots: Effects of Configurational Anisotropy and Dipolar Coupling' ***Applied Physics Letters***, **105**, 052413 (2014).
4. G. Gubbiotti, P. Malago, S. Fin, S. Tacchi, L. Giovannini, D. Bisero, M. Madami, G. Carlotti, J. Ding, A. O. Adeyeye and R. Zivieri, 'Magnetic Normal Modes of Bicomponent Permalloy/ Cobalt Structures in the Parallel and Antiparallel Ground State' ***Physical Review B***, **90**, 024419 (2014).
5. M. Kostylev, J. Ding, E. Ivanov, S. Samarin and A. O. Adeyeye, 'Microwave Magnetic Dynamics in Highly Conducting Magnetic Nanostructures' ***Journal of Applied Physics***, **115**, 173903 (2014).
6. G. N. Kakazei, X. M. Liu, J. Ding and A. O. Adeyeye, '$Ni_{80}Fe_{20}$ Film with Periodically Modulated Thickness as a Reconfigurable One-dimensional Magnonic Crystal' ***Applied Physics Letters***, **104**, 042403 (2014).
7. C. S. Chang, M. Kostylev, E. Ivanov, J. Ding and A. O. Adeyeye, 'The Phase Accumulation and Antenna Near Field of Microscopic Propagating Spin Wave Devices' ***Applied Physics Letters***, **104**, 032408 (2014).
8. S. Saha, S. Barman, J. Ding, A. O. Adeyeye and A. Barman, 'Tunable Magnetic Anisotropy in Two-dimensional Arrays of $Ni_{80}Fe_{20}$ Elements' ***Applied Physics Letters***, **102**, 242409 (2013).
9. X. M. Liu, J. Ding, G. Kakazei, A. O. Adeyeye. 'Magnonic Crystals Composed of $Ni_{80}Fe_{20}$ Film on Top of $Ni_{80}Fe_{20}$ Two-dimensional Dot Array' ***Applied Physics Letters***, **103**, 062401 (2013).
10. M. Madami, S. Tacchi, G. Gubbiotti, G. Carlotti, J. Ding, A. O. Adeyeye, J. W. Klos, M. Krawczyk. 'Spin Wave Dispersion in Permalloy Antidot Array With Alternating Holes Diameter' ***IEEE Transactions on Magnetics***, **19**, 3093 (2013).
11. M. Kostylev, S. Zhong, J. Ding, and A. O. Adeyeye. 'Resonance Properties of Bi-component Arrays of Magnetic Dots Magnetized Perpendicular to Their Planes' ***Journal of Applied Physics***, **114**, 113910 (2013).
12. X. M. Liu, J. Ding, N. Singh, M. Kostylev, A. O. Adeyeye. 'Magnetoresistance Behavior of Bi-component Antidot Nanostructures' ***Europhysics Letters***, **103**, 67002 (2013).
13. S. Saha, S. Barman, J. Ding, A. O. Adeyeye and A. Barman, 'Time-domain Study of Spin-wave Dynamics in Two-dimensional Arrays of Bi-component Magnetic Structures' ***Applied Physics Letters***, **102**, 242409 (2013).
14. D. Cimpoesu, J. Ding, L. Stoleriu, A. O. Adeyeye, A. Stancu and L. Spinu. 'Angular Resonant Absorption Curves in Magnetic Nanowire Arrays' ***Applied Physics Letters***, **102**, 232401 (2013).
15. K. L. Livesey, J. Ding, N. R. Anderson, R. E. Camley, A. O. Adeyeye, M. P. Kostylev, and S. Samarin. 'Resonant Frequencies of a Binary Magnetic Nanowire' ***Physical Review B***, **87**, 064424 (2013).
16. X. M. Liu, J. Ding and A. O. Adeyeye. 'Magnetization Dynamics and Reversal Mechanism of Fe Filled $Ni_{80}Fe_{20}$ Antidot Nanostructures' ***Applied Physics Letters***, **100**, 242411 (2012).

Talks

- 'Static and Dynamic Magnetic Properties of $Ni_{80}Fe_{20}$ Anti-Ring Nanostructures' Given at the ***58th Annual Conference on Magnetism & Magnetic Materials (MMM)***, Denver, USA, 2013.
- 'Magnonic Crystals Based on Binary Ferromagnetic Nanostructure' Given at ***12th Joint MMM/Intermag Conference***, Chicago, USA, 2013.
- 'Dynamic Response of 1-D Magnonic Crystals Consisting of Alternating Width Nanowires' Given at the ***56th Annual Conference on Magnetism & Magnetic Materials, Scottsdale (MMM)***, Arizona, USA, 2011.
- 'Angular Dependence Dynamic Properties of Permalloy Nanowires' Given at the ***IEEE International Magnetics Conference (INTERMAG)***, Taipei, 2011.

Awards

- 'Dynamic Control of Metastable Remanent States in Mesoscale Elliptical Elements' **Best Poster Award**, ***59th Annual Magnetism & Magnetic Materials Conference***, Honolulu, Hawaii, USA, 3 – 7 Novemeber 2014.
- **2012 Chinese Government Award for Outstanding Self-financed Students Abroad**, presented by **China Scholarship Council**.
- 'Realization of a Reprogrammable Magnetic Logic Based on a Nanoscale Reconfigurable Magnonic Crystal'. **Best Presentation Award**, ***5th IEEE Magnetics Society Summer School***, Nanotechnology Research Centre, SRM University, India, 22 – 27 July 2012.
- 'Static and Dynamic Properties of One-Dimensional Linear Chain of Nanomagnets' **Best Poster Award**, ***IEEE Magnetics Society Singapore Chapter Poster Competition for Students***, DSI, Singapore, 18 October 2010.