CURRICULUM VITAE

S.N. Piramanayagam
Associate Professor
School of Physical and Mathematical Sciences, NTU Singapore

Academic Qualifications

1994	PhD (Physics), Indian Institute of Technology, Bombay, India
1988	MSc (Physics), University of Kerala, Trivandrum, India
1985	BSc (Physics), Madurai Kamaraj University, India

Professional Qualifications / Memberships

2021 – Present,	Chapter Chair, IEEE Magnetics Society Singapore Chapter *(IEEE MSSC)*	Singapore
2020 – Present, 2015 – 2016	Chapter Vice-chair, IEEE Magnetics Society Singapore Chapter *(IEEE MSSC)*	Singapore
2018 – Present	Treasurer, MRS-Singapore	Singapore
2017 & 2019	Committee Member, IEEE MSSC	Singapore
2013 – 2016	Chair, IEEE Magnetics Society Technical Committee	USA
2013 – 2015	Committee Member, MRS-Singapore	Singapore
2013 – 2014, 2010 – 2011, 2006 – 2007	Chapter Chair, IEEE Magnetics Society Singapore Chapter *(IEEE MSSC)*	Singapore
2009 – Present	Member, MRS-Singapore	Singapore
2008 – Present	Senior Member of IEEE	USA
2008 – 2009, 2003 – 2005	Secretary, IEEE MSSC	Singapore
1998 – 2008	Member of IEEE	USA

Summary of Working Experience

Jan 2015 - Present	Associate Professor, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore
Apr 2008 – Jan 2015	Senior Scientist, Data Storage Institute (DSI), Agency for Science, Technology and Research (A*STAR), Singapore
Apr 2003 – Mar 2009	Adjunct Associate Professor, National University of Singapore
Apr 2003 – Mar 2008	Research Scientist, Data Storage Institute, A*STAR, Singapore
Sep 2002 – Sep 2003	Assistant Program Manager, Data Storage Institute, Singapore
Jun 1999 – Apr 2002	Senior Research Engineer, Data Storage Institute, Singapore
Oct 1995 – Jun 1999	Post-doctoral Research, Shinshu University, Nagano, Japan
Sep 1994 – Oct 1995	Post-doctoral Research, IIT Bombay, India

Academic Honours and Awards

Year	Research Award / Recognition
2022	Teaching Excellence Award from the School of Physical and Mathematical Science, NTU Singapore
2008	Leader, Outstanding Research Team award, DSI Singapore One team was chosen for this award, out of a research pool of ~200 people by Data Storage Institute, A*STAR, Singapore
2006	Leader, Outstanding Research Team award, DSI Singapore One team was chosen for this award, out of a research pool of ~200 people by Data Storage Institute, A*STAR, Singapore
2005	Leader, Merit award for Research Team, DSI Singapore One team was chosen for this award, out of a research pool of ~200 people by Data Storage Institute, A*STAR, Singapore
2003	Member, Outstanding Research Team award, DSI Singapore I was a member of the team chosen for this award, out of a research pool of ~200 people by Data Storage Institute, A*STAR, Singapore
2000	Leader, Outstanding Research Team award, DSI Singapore One team was chosen for this award, out of a research pool of 200 people by Data Storage Institute, A*STAR, Singapore
1994	Senior Research Fellow (Council of Scientific and Industrial Research, India)

RESEARCH SUMMARY

Key Areas of Research

- Spin-based Neuromorphic Computing (2018 ~)

I formed a team of principal investigators with a background in physics, materials science, electrical and computer engineering, and investigators from industry to investigate spin-based neuromorphic computing. A competitive research program (CRP) grant of $6M, with myself as the Lead PI, was received recently. By 2024, we aim to make fundamental breakthroughs and demonstration of neuromorphic computing circuits based on magnetic domain wall devices. Neuromorphic computing will be the focus for the next five years.

- Magnetic Domain Wall Devices (2015 ~)

Our team has been working on a niche area of “controlled motion of magnetic domain walls in a domain wall device,” as a means to achieve high storage density. We have investigated several ways of pinning domain walls in different types of magnetic materials. The results of these works played a crucial role in moving towards the next phase, i.e., “Spin-based Neuromorphic Computing” and in securing the CRP grant.

- Magnetic Nanostructures (2007 ~)

My team was working on magnetic nanostructures for magnetic recording and memory applications. The research is process intensive, and we have worked with industry researchers. At NTU, we have developed at least three different types of lithography techniques and started using them for different purposes, including neuromorphic computing.

- Magnetic Recording (1999 ~)

Magnetic recording was my main focus for the period from 1999-2015. I have established my leadership in the areas of longitudinal recording, perpendicular magnetic recording, and patterned media technology. I have worked with many different industrial partners and have won several research awards for my work in this area. I have also published a book.

Research Awards / Recognition

Year	Academic Honour / Award
2019	Team member, Best Poster Award, ICMAT 2019
2018	Main author, Best Poster Award, Intermag 2018
2018	Main author, Best Poster Award, MRS-Singapore 2018
2011	Main author, Best Poster Award, MMM 2011, Arizona, USA
2011	Team member, Best paper of the year award by Data Storage Institute (DSI)
2011	Main author, Best poster award, ICMAT 2011
2011	Main author, Best poster award, ICMAT 2009
2010	Main author, Best poster award, MRS-Singapore 2010
2006	Main author, Best paper of the year award by Data Storage Institute
2005	Leader, Commended paper of the year, Data Storage Institute

Keynote/Plenary/Invited Presentations

Plenary & Keynote Presentations

1. Keynote presentation: "Magnetic Nanostructures for Storage and Memory," International Conference on Physics and Chemistry of Solids, 7th and 8th March 2019, Hindustan University, Chennai, India (travel - fully funded by the organizers)

2. Plenary talk: "Spin-based Neuromorphic Computing," International Conference on Advanced Materials for Energy and Sensors, Karaikudi, India (September 2019) (travel –fully funded by the organizers)

Invited Presentations

3. S.N. Piramanayagam et al., "Domain Wall Devices for Neuromorphic Computing", Invited to present in Intermag, Montreal, Canada (2020)
4. S.N. Piramanayagam et al., "Spin-based Neuromorphic Computing", IMEC-Stanford Workshop, Leuven, Belgium (2019)
5. S.N. Piramanayagam, "Magnetic Random Access Memory", AICTE SPONSORED SHORT TERM COURSE "Emerging Nanoelectronics based Devices, Circuits and Systems", IIT Roorkee, India (2019).
6. S.N. Piramanayagam, "Spintronics for Neuromorphic Computing", AICTE SPONSORED SHORT TERM COURSE "Emerging Nanoelectronics based Devices, Circuits and Systems", IIT Roorkee, India (2019).
7. S.N. Piramanayagam et al., "Spin-based Neuromorphic Computing", The Magnetic Recording Conference (TMRC), Minnesota, USA (2019)
8. S.N. Piramanayagam et al., "Energy harvesting based on stress-induced domain wall motion", National Conference on Advanced Materials for Energy and Sensors, Karaikudi, India (2019)
9. S.N. Piramanayagam et al., "Magnetic Domain Wall Devices for Neuromorphic Computing", 4th International Workshop on Spintronics Memory and Logic and 5th Anniversary Symposium of Fert Beijing Institute, Beihang University, Beijing, China (2019)
10. S.N. Piramanayagam, "Magnetic Nanostructures for memory and Storage", Hindustan University of Technology, Chennai, India (2019)
11. S.N. Piramanayagam et al., "Domain wall devices for neuromorphic computing", India-Singapore Symposium in Physics, Bhubaneshwar, India (2019)
12. S.N. Piramanayagam et al., "Stress-induced domain wall motion in FeCo based magnetic microwires for realization of energy harvesting" Invited talk in Joint MMM-Intermag conference (2019) in Washington DC
13. S.N. Piramanayagam et al., "Energy harvesting based on stress-induced domain wall motion", MRS Trilateral Conference, Bengaluru, India (2018)

14. S.N. Piramanayagam et al., MRS-S conference, Singapore (2018)
15. S.N. Piramanayagam et al., “Energy harvesting based on stress-induced domain wall motion in soft magnetic microwires”, Japan Magnetic Society Annual Meeting, Tokyo (2018)
16. S.N. Piramanayagam et al., “Domain wall pinning in devices for information storage”, The Magnetic Recording Conference (TMRC), Milpitas (USA) (2018)
17. S.N. Piramanayagam et al., International Conference on Ion Beams Materials Engineering and Characterization, New Delhi, India (2018)
18. S.N. Piramanayagam et al., IcAUMS, Jeju, Korea (June 2018)
19. S.N. Piramanayagam et al., “Stress-Induced Domain Wall Motion and its application in Energy Harvesting”, IPS Meeting, Singapore (7-9 March 2018)
20. S.N. Piramanayagam et al., “Domain Wall Devices”, India-Singapore Symposium in Physics, Singapore (5-7, March 2018)
21. S.N. Piramanayagam et al., “Domain Wall Pinning by forming Synthetic Magnetic Textures”, IEEE Magnetics Symposium, Singapore, (October 2017)
22. S.N. Piramanayagam et al., “Carbon overcoat for heat assisted magnetic recording media using Plasmafocus Device”, The Magnetic Recording Conference, (TMRC) Japan (2017)
23. S.N. Piramanayagam et al., “Domain wall pinning using synthetic magnetic textures” International Conference on Materials for Advanced Technologies (ICMAT), Singapore (2017)
24. S.N. Piramanayagam, “Magnetic Recording Media – Singapore’s role”, IEEE Magnetics Symposium – “60 Years of Magnetic Recording”, Singapore (2016)
25. S.N. Piramanayagam, “Synthetic Antiferromagnetism in Nanostructures”, delivered at Toyohashi University of Technology, Toyohashi, Japan 29th February 2016.
26. S.N. Piramanayagam, “Light in Magnetic Recording”, IPS Meeting, 4th March 2015
27. S.N. Piramanayagam et al., “High anisotropy equiatomic CoPt in HCP phase”, MORIS, Tokyo, Japan (2013).
28. S.N. Piramanayagam et al., “Ion Implantation Challenges for Patterned Magnetic Nanostructures above 5 Tbpsi”, The Magnetic Recording Conference, Tokyo (2013)
29. S.N. Piramanayagam et al., “Writability Improvement in Perpendicular Recording Media using Crystalline Soft Underlayers”, The Magnetic Recording Conference, USA (2012)
30. S.N. Piramanayagam, Invited Lecture, “Magnetic Recording”, IEEE Magnetics Summer School, Chennai, India (2012)
31. S.N. Piramanayagam et al., “Challenges of Patterned Media”, Asia Pacific Magnetic Recording Conference, Singapore (2010).
32. S.N. Piramanayagam et al., “Dual Synthetic Nucleation Layers for Perpendicular Recording Media”, Perpendicular Magnetic Recording Conference, Japan (2010).
33. S.N. Piramanayagam et al., “Nano-Imprint Lithography for Hard Disk Media Applications”, ICMAT (2009).
34. S.N. Piramanayagam et al., “Planarization of patterned media”, The Magnetic Recording Conference, USA (2009).
35. S.N. Piramanayagam et al., “Novel magnetic Nanostructures for patterned recording media”, IEEE Nano, Genova, Italy (2009)
36. S.N. Piramanayagam et al., “Evolution of perpendicular recording media grains on carbon-based synthetic nucleation layers”, The Magnetic Recording Conference, Singapore (2008).
37. R. Sbiaa et al., “Material and layer design to overcome writability issues in patterned recording media”, The Magnetic Recording Conference, Singapore (2008).
38. K. Srinivasan et al., “Antiferromagnetic IrMn intermediate layers for perpendicular recording media”, Magnetism and Magnetic Materials Conference, USA (2008).
39. S.N. Piramanayagam et al., “Novel approaches towards high-density CoCrPt-Oxide perpendicular recording media”, Joint MMM/Intermag Conference, Baltimore, USA (2007).
40. S.N. Piramanayagam et al., “Novel Intermediate Layers for CoCrPt-Oxide Perpendicular Recording Media”, The Magnetic Recording Conference, Pittsburgh, USA (2006).

41. S.N. Piramanayagam et al., “Novel approaches to high-density perpendicular recording media”, International Symposium on Physics of Magnetic Materials, Singapore (2005).
42. S.N. Piramanayagam et al., “Nano-structured Perpendicular Recording Media” International Conference on Materials for Advanced Technologies, Singapore (2005).
43. S.N. Piramanayagam and H.B. Zhao, “Recent Progress in Perpendicular Recording Media”, 4th International Symposium on Magneto-Electronics, France (2004).
44. S.N. Piramanayagam, S.I. Pang and J.P. Wang, “Magnetization and Thermal Stability Studies in Laminated Antiferromagnetically Coupled Media”, The Magnetic Recording Conference, Santa Clara, USA (2002).
45. C.H. Hee, S.N. Piramanayagam, J.P. Wang and T.C. Chong, “Design of Advanced Laminated Antiferromagnetically Coupled Media”, International Conference on Materials for Advanced Technologies, Singapore (2001).

Citation Summary *(according to the citation report in Appendix 1)*

Database	Citation Count		H-index
	without self-citations	with self-citations	
Scopus	2092	2769	24
Web of Science (SCI)	1929	2564	23

List of Publications *(in chronological order, starting with the most recent)*

Bold Denotes the main author(s)
** Denotes directly supervised research staff, i.e. POs, RAs, RFs, postdocs, etc.
* Denotes PhD students (supervised or co-supervised)
Denotes Tier 1A papers
# Denotes Tier 1B papers
Denotes journal in Tier 1 / Q1 status at the time of publication (but currently not)

Journal Papers
[Total: 183, Last 3 years: 27]

1. Shreya, S., Verma, G., Piramanayagam, S.N., Kaushik, B.K., (2021). Energy-Efficient All-Spin BNN Using Voltage-Controlled Spin-Orbit Torque Device for Digit Recognition. IEEE Transactions on Electron Devices, **68**(1) 385-392.#
2. Chaurasiya, A; Pal, P; Vas, JV; Kumar, D; Piramanayagam, SN; Singh, AK; Medwal, R; Rawat, RS, (2020). Nickel ferrite embedded polyvinylidene fluoride composite based flexible magneto-electric systems, Ceramics International **46** 25873-25880. #
3. Jin, TL; Law, WC; Kumar, D; Luo, FL; Wong, QY; Lim, GJ; Wang, X; Lew, WS; Piramanayagam, SN, (2020). Enhanced spin-orbit torque efficiency in Pt/Co/Ho heterostructures via inserting Ho layer, APL Materials, **8** 111111. #
4. Kumar, D. Sengupta, P. Sbiaa, R. Piramanayagam, SN, (2020). Spin transfer torque induced domain wall oscillations in ferromagnetic nanowire with a nanoscale Dzyaloshinskii-Moriya interaction region, Journal of Magnetism and Magnetic Materials, **507** 166807. #
5. Al Risi, S; Bhatti, S; Al Subhi, A; Piramanayagam, SN; Sbiaa, R, (2020). Magnetic domain structure and magnetization reversal in (Co/Ni) and (Co/Pd) multilayers, Journal of Magnetism and Magnetic Materials, **503** 166579. #
6. Mohammed, H., Al Risi, S., *Jin, T.L, Kosel, J, **Piramanayagam, S.N, Sbiaa, R,** (2020). Controlled spin-torque driven domain wall motion using staggered magnetic wires. Applied Physics Letters, 116, 032402.## **(featured article in Applied Physics Letters)**
7. *Jin, T.L, Tan, F.N, Ang, C.C.I, Gan, W.L, Cao, J.W, **Lew, W.S**, and **Piramanayagam, S.N.** (2019). Tilted magnetisation for domain wall pinning in racetrack memory. Journal of Magnetism and Magnetic Materials, 489, 165410.#

8. *Jin, T.L, Gan, W.L, Tan, F.N, Sernicola, N.R, Lew, W.S, and **Piramanayagam, S.N.** (2019). Synaptic element for neuromorphic computing using a magnetic domain wall device with synthetic pinning sites. Journal of Physics D-Applied Physics, 52(44), 445001. #
9. *Bhatti, S, Ma, C, **Liu, X.X,** and **Piramanayagam, S.N.** (2019). Realization of Energy Harvesting Based on Stress-Induced Modification of Magnetic Domain Structures in Microwires. IEEE Transactions on Magnetics, 55(7), 2301107.
10. Zheng, C, Zhu, K, De Freitas, S.C, Chang, J.Y, Davies, J.E, Eames, P, Freitas, P.P, Kazakova, O, Kim, C, Leung, C.W, Liou, S.H, Ognev, A, Piramanayagam, S.N, Ripka, P, Samardak, A, Shin, K.H, Tong, S.Y, Tung, M.J, Wang, S.X, Xue, S.S, Yin, X.L, and **Pong, P.W.T.** (2019). Magnetoresistive Sensor Development Roadmap (Non-Recording Applications). IEEE Transactions on Magnetics, 55(4), 0800130.
11. *Jin, T.L, Tan, F.N, Law, W.C, Gan, W.L, Soldatov, I, Schafer, R, Ma, C, Liu, X.X, Lew, W.S, and **Piramanayagam, S.N.** (2019). Nanoscale modification of magnetic properties for effective domain wall pinning. Journal of Magnetism and Magnetic Materials, 475, 70-5. #
12. Ma, C, Xia, J, Zhang, X.C, Zhou, Y, Morisako, A, Piramanayagam, S.N, and **Liu, X.X.** (2019). Nd-Fe-B films with perpendicular magnetic anisotropy and extremely large room temperature coercivity. Journal of Magnetism and Magnetic Materials, 474, 406-10. #
13. *Bhatti, S, and **Piramanayagam, S.N.** (2019). High Amplitude Microwave Generation Using Domain Wall Motion in a Nanowire. Physica Status Solidi-Rapid Research Letters, 13(3), 1800479. #
14. *Kumar, D, *Jin, T.L, Al Risi, S, Sbiaa, R, Lew, W.S, and **Piramanayagam, S.N**. (2019). Domain Wall Motion Control for Racetrack Memory Applications. IEEE Transactions on Magnetics, 55(3), 2300708.
15. *Kumar, D, **Gupta, S, Tham, K.K, Nongjai, R, Saito, S, Asokan, K, and **Piramanayagam, S.N.** (2019). Ion-Implantation-Induced Disorder in FePt-C Thin Films. IEEE Transactions on Magnetics, 55(3), 2300805.
16. Al Bahri, M, Borie, B, *Jin, T.L, **Sbiaa, R**, Klaui, M, and Piramanayagam, S.N. (2019). Staggered Magnetic Nanowire Devices for Effective Domain-Wall Pinning in Racetrack Memory. Physical Review Applied, 11(2), 024023. #
17. Ma, C, Zhang, X.C, Xia, J, Ezawa, M, Jiang, W.J, Ono, T, Piramanayagam, S.N, Morisako, A, Zhou, Y, and **Liu, X.X.** (2019). Electric Field-Induced Creation and Directional Motion of Domain Walls and Skyrmion Bubbles. Nano Letters, 19(1), 353-61.##
18. *Bhatti, S, Ma, C, **Liu, X.X,** and **Piramanayagam, S.N.** (2019). Stress-Induced Domain Wall Motion in FeCo-Based Magnetic Microwires for Realization of Energy Harvesting. Advanced Electronic Materials, 5(1), 1800467.
19. Ma, C, *Jin, T.L, **Liu, X.X,** and **Piramanayagam, S.N.** (2018). Switching domain wall motion on and off using a gate voltage for domain wall transistor applications. Applied Physics Letters, 113(23), 232401.##
20. **Gupta, S, **Sbiaa, R,** Al Bahri, M, Ghosh, A, **Piramanayagam, S.N**, Ranjbar, M, and Akerman, J. (2018). Co/Ni multilayers with robust post-annealing performance for spintronics device applications. Journal of Physics D-Applied Physics, 51(46), 465002. #
21. Law, W.C, Tahmasebi, T, Tan, F.N, *Jin, T.L, Gan, W.L, Nistala, R.R, Zhu, X.T, Mo, Z.Q, Teo, H.W, Seet, C.S, See, A, Piramanayagam, S.N, and **Lew, W.S.** (2018). High temperature ferromagnetic resonance study on pMTJ stacks with diffusion barrier layers. Journal of Physics D-Applied Physics, 51(40), 405001. #
22. *Jin, T.L, *Kumar, D, Gan, W.L, **Ranjbar, M, Luo, F.L, Sbiaa, R, Liu, X.X, Lew, W.S, and **Piramanayagam, S.N.** (2018). Nanoscale Compositional Modification in Co/Pd Multilayers for Controllable Domain Wall Pinning in Racetrack Memory. Physica Status Solidi-Rapid Research Letters, 12(10), 1800197. #
23. Dutta, T, Dwivedi, N, Saifullah, M.S.M, Yang, H, **Bhatia, C.S, and Piramanayagam, S.N.** (2018). Nitrogen plasma treatment in two-step temperature deposited FePt bilayer media. Journal of Magnetism and Magnetic Materials, 461, 6-13. #

24. **Sbiaa, R,** Al Bahri, M, and Piramanayagam, S.N. (2018). Domain wall oscillation in magnetic nanowire with a geometrically confined region. Journal of Magnetism and Magnetic Materials, 456, 324-8. #
25. **Gupta, S, *Kumar, D, *Jin, T.L, Nongjai, R, Asokan, K, Ghosh, A, Aparnadevi, M, Suri, P, and **Piramanayagam, S.N.** (2018). Broadband strip-line ferromagnetic resonance spectroscopy of soft magnetic CoFeTaZr patterned thin films. AIP Advances, 8(5), 056125.
26. *Kumar, D, **Gupta, S, *Jin, T.L, Nongjai, R, Asokan, K, and **Piramanayagam, S.N.** (2018). Tailoring the structural and magnetic properties of masked CoPt thin films using ion implantation. AIP Advances, 8(5), 056504.
27. Dutta, T, **Piramanayagam, S.N,** Ru, T.H, Saifullah, M.S.M, Bhatia, C.S, and **Yang, H.** (2018). Exchange coupled CoPt/FePtC media for heat assisted magnetic recording. Applied Physics Letters, 112(14), 142411. ##
28. *Kumar, D, **Gupta, S, *Jin, T.L, Nongjai, R, Asokan, K, and **Piramanayagam, S.N.** (2018). Modification of Structural and Magnetic Properties of Masked Co-Pt Films Induced by High-Energy Ion Implantation. IEEE Magnetics Letters, 9, 4500305.
29. **Sbiaa, R,** and Piramanayagam, S.N. (2017). Recent Developments in Spin Transfer Torque MRAM. Physica Status Solidi-Rapid Research Letters. 11(12), 1700163 #
30. *Jin, T.L, Ranjbar, M, He, S.K, Law, W.C, Zhou, T.J, Lew, W.S, Liu, X.X, and **Piramanayagam, S.N.** (2017) Tuning magnetic properties for domain wall pinning via localized metal diffusion. Scientific Reports. 7, 16208.#
31. *Bhatti, S, Sbiaa, R, Hirohata, A, Ohno, H, Fukami, S, and **Piramanayagam, S.N.** (2017). Spintronics based random access memory: A review. Materials Today, 20(9), 530-48. ##
32. Dutta, T, Piramanayagam, S.N, Saifullah, M.S.M, and **Bhatia, C.S.** (2017). High switching efficiency in FePt exchange coupled composite media mediated by MgO exchange control layers. Applied Physics Letters, 111(4), 042405. ##
33. **Shi, J.Z,** Yang, Y, Tan, H.K, Piramanayagam, S.N, Lim, C.B, Seet, H.L, Ho, S.L, and Hu, J.F. (2017). Partial crystallization in amorphous magnetic film induced by Ru layer interface. Physica Status Solidi-Rapid Research Letters, 11(2), 1600341. #
34. **Sbiaa, R,** Shaw, J.M, Nembach, H.T, Al Bahri, M, Ranjbar, M, Akerman, J, and Piramanayagam, S.N. (2016). Ferromagnetic resonance measurements of (Co/Ni/Co/Pt) multilayers with perpendicular magnetic anisotropy. Journal of Physics D-Applied Physics, 49(42), 425002. #
35. **Ranjbar, M, Sbiaa, R, Mohseni, S.M, Rahimabady, M, and **Piramanayagam, S.N.** (2016). Holographonics. Materials Today, 19(7), 368-9. ##
36. Dutta, T, **Kundu, S, Saifullah, M.S.M, Yang, H, Piramanayagam, S.N, and **Bhatia, C.S.** (2015). Two-step temperature deposited FePt bilayer for tunable magnetic properties. Journal of Physics D-Applied Physics, 48(44), 445007. #
37. **Piramanayagam, S.N**, Shakerzadeh, M, **Varghese, B, and Tan, H.K. (2015). Effect of Carbon Overcoat Implantation on the Magnetic and Structural Properties of Perpendicular Recording Media. IEEE Transactions on Magnetics, 51(11), 3202104 .
38. **Wong, S.K,** Sbiaa, R, Piramanayagam, S.N, and *Tahmasebi, T. (2015). Magnetic Properties and Magnetization Reversal of Thin Films and Nanodots Consisting of Exchange-Coupled Composite Co/Pd Multi-Layer and Co Layer With Orthogonal Anisotropies. IEEE Transactions on Magnetics, 51(9), 6100909.
39. **Sbiaa, R,** Al-Omari, I.A, Kharel, P.R, Ranjbar, M, Sellmyer, D.J, Akerman, J, and Piramanayagam, S.N. (2015). Temperature effect on exchange coupling and magnetization reversal in antiferromagnetically coupled (Co/Pd) multilayers. Journal of Applied Physics, 118(6), 063902 .
40. *Di, K, Feng, S.X, **Piramanayagam, S.N**, Zhang, V.L, Lim, H.S, Ng, S.C, and **Kuok, M.H.** (2015). Enhancement of spin-wave nonreciprocity in magnonic crystals via synthetic antiferromagnetic coupling. Scientific Reports, 5, 10153. #
41. Yang, Y, **Varghese, B, Tan, H.K, Wong, S.K, and **Piramanayagam, S.N.** (2014). Investigations of Stacking Faults in Stacked Granular Perpendicular Recording Media With a High-Anisotropy CoPt Layer. IEEE Transactions on Magnetics, 50(11), 3101404.

42. Tan, H.K, **Varghese, B, and **Piramanayagam, S.N.** (2014). Magnetic interactions in CoCrPt-oxide based perpendicular magnetic recording media. Journal of Applied Physics, 116(16), 163909. ###
43. **Piramanayagam, S.N**, **Varghese, B, Yang, Y, Lee, W.K, and Tan, H.K. (2014). Investigations of stacking fault density in perpendicular recording media. Journal of Applied Physics, 115(24), 243901. ###
44. ***Ranjbar, M,** Sbiaa, R, Dumas, R.K, Akerman, J, and Piramanayagam, S.N. (2014). Spin reorientation via antiferromagnetic coupling. Journal of Applied Physics, 115(17), 17C103. ###
45. **Varghese, B, **Piramanayagam, S.N,** Yang, Y, Wong, S.K, Tan, H.K, Lee, W.K, and Okamoto, I. (2014). Equiatomic CoPt thin films with extremely high coercivity. Journal of Applied Physics, 115(17), 17B707. ###
46. **Varghese, B, **Piramanayagam, S.N,** Lee, W.K, and Tan, H.K. (2014). Noise Characterization of Perpendicular Recording Media by Cluster Size Measurements. IEEE Transactions on Magnetics, 50(5), 3201606 .
47. Kundu, S, *Gaur, N, **Piramanayagam, S.N,** Maurer, S.L, Yang, H, and Bhatia, C.S. (2014). Ion Implantation Challenges for Patterned Media at Areal Densities over 5 Tbpsi. IEEE Transactions on Magnetics, 50(3), 3200206.
48. **Sbiaa, R,** and Piramanayagam, S.N. (2014). Multi-level domain wall memory in constricted magnetic nanowires. Applied Physics A-Materials Science & Processing, 114(4), 1347-51.
49. Yang, Y, **Varghese, B, Tan, H.K, Wong, S.K, and **Piramanayagam, S.N.** (2014). Microstructure investigations of hcp phase CoPt thin films with high coercivity. Journal of Applied Physics, 115(8), 083910. ###
50. **Piramanayagam, S.N**, Tan, H.K, and **Varghese, B. (2014). Role of Thermal Effects on Magnetic Interactions in Stacked Magnetic Layers With Perpendicular Anisotropy. IEEE Magnetics Letters, 5, 4500104.
51. **Shakerzadeh, M,** Piramanayagam, S.N, Ji, R, **Varghese, B, Tan, H.K, and Bosman, M. (2013) The effect of high deposition energy of carbon overcoats on perpendicular magnetic recording media. Applied Physics Letters, 103(16), 161604. ##
52. Li, H.J, **Wei, D,** and Piramanayagam, S.N. (2013). Optimization of perpendicular magnetic anisotropy tips for high resolution magnetic force microscopy by micromagnetic simulations. Applied Physics A-Materials Science & Processing, 112(4), 985-91.
53. *Gaur, N, Kundu, S, Piramanayagam, S.N, Maurer, S.L, Tan, H.K, Wong, S.K, Steen, S.E, Yang, H, and **Bhatia, C.S.** (2013). Lateral displacement induced disorder in L1(0)-FePt nanostructures by ion-implantation. Scientific Reports, 3, 1907. #
54. **Sbiaa, R,** Piramanayagam, S.N, and Liew, T. (2013). High speed in spin-torque-based magnetic memory using magnetic nanocontacts. Physica Status Solidi-Rapid Research Letters, 7(5), 332-5. #
55. **Piramanayagam, S.N,** **Varghese, B, Tan, H.K, Hnin, Y.Y.K, Lee. W.K, Okamoto, I, Wu, L.J. and Tripathy, D. (2013). Writability Improvement in Perpendicular Recording Media Using Crystalline Soft Underlayer Materials. IEEE Transactions on Magnetics, 49(2), 758-64.
56. *Tahmasebi, T, **Piramanayagam, S.N,** Sbiaa, R, and Chong, T.C. (2013). CoFeB spin polarizer layer composition effect on magnetization and magneto-transport properties of Co/Pd-based multilayers in pseudo-spin valve structures. Journal of Applied Physics, 113(2), 023909. ###
57. Li, H.J, **Wei, D,** and Piramanayagam, S.N. (2013). Micromagnetic study of effect of tip-coating microstructure on the resolution of magnetic force microscopy. Applied Physics A-Materials Science & Processing, 110(1), 217-25.
58. *Gaur, N, Piramanayagam, S.N, Maurer, S.L, Steen, S.E, Yang, H, and **Bhatia, C.S.** (2012). First-Order Reversal Curve Investigations on the Effects of Ion Implantation in Magnetic Media. IEEE Transactions on Magnetics, 48(11), 2753-6.
59. **Piramanayagam, S.N**, *Ranjbar, M, Sbiaa, R, and Chong, C.T. (2012) Magnetic and First-Order Reversal Curve Investigations of Antiferromagnetically Coupled Nanostructures of Co/Pd Multilayers. IEEE Transactions on Magnetics, 48(11), 3410-3.

60. *Tahmasebi, T, **Piramanayagam, S.N,** Sbiaa, R, and Chong, T.C. (2012). Influence of Spin Polarizer on the Magnetoresistance, Switching Property, and Interlayer Interactions in Co/Pd Single Spin Valves. IEEE Transactions on Magnetics, 48(11), 3434-7.
61. ***Tavakkoli, A,** *Ranjbar, M, Piramanayagam, S.N, Wong, S.K, **Poh, W.C, Sbiaa, R, and Chong, T.C. (2012). Reverse Nanoimprint Lithography for Fabrication of Nanostructures. Nanoscience and Nanotechnology Letters, 4(8), 835-8.
62. *Ranjbar, M, **Piramanayagam, S.N,** Sbiaa, R, Chong, T.C, and Okamoto I. (2012) Advanced Magnetic Force Microscopy for High Resolution Magnetic Imaging. Nanoscience and Nanotechnology Letters, 4(6), 628-33.
63. *Ma, F.S, **Lim, H.S,** Zhang, V.L, Wang, Z.K, Piramanayagam, S.N, Ng, S.C, and Kuok, M.H. (2012). Materials Optimization of the Magnonic Bandgap in Two-Dimensional Bi-Component Magnonic Crystal Waveguides. Nanoscience and Nanotechnology Letters, 4(6), 663-6.
64. Li, H.J, **Wei, D,** and Piramanayagam, S.N. (2012) Micromagnetic studies on resolution limits of magnetic force microscopy tips with different magnetic anisotropy. Journal of Applied Physics, 111(7), 07E309. ###
65. **Piramanayagam, S.N**, *Ranjbar, M, Tan, H.K, Poh, W.C.A, Sbiaa, R, and Chong T.C. (2012). Magnetic properties of antiferromagnetically coupled antidots of Co/Pd multilayers. Journal of Applied Physics, 111(7), 07B916. ###
66. **Piramanayagam, S.N**, and *Ranjbar, M. (2012). Influence of magnetic viscosity on the first order reversal curves of antiferromagnetically coupled perpendicular recording media. Journal of Applied Physics, 111(7), 07B728. ###
67. *Ranjbar, M, **Piramanayagam, S.N,** Sbiaa, R, and Chong, T.C. (2012). Magnetic properties of antidots in conventional and spin-reoriented antiferromagnetically coupled layers. Journal of Applied Physics. 111(7), 07B921. ###
68. *Tahmasebi, T, **Piramanayagam, S.N,** Sbiaa, R, Tan, H.K, and Chong, T.C. (2012). Effect of different compositions of CoFeB spin polarizer on magnetoresistance and switching property of Co/Pd multilayers with perpendicular magnetic anisotropy. Journal of Applied Physics, 111(7), 07D306. ###
69. *Ma, F.S, **Lim, H.S,** Zhang, V.L, Wang, Z.K, Piramanayagam, S.N, Ng, S.C, and Kuok, M.H. (2012). Band structures of exchange spin waves in one-dimensional bi-component magnonic crystals. Journal of Applied Physics, 111(6), 064326. ###
70. **Piramanayagam, S.N,** *Ranjbar, M, Sbiaa, R, Tavakkoli, A, and Chong, T.C. (2012). Characterization of high-density bit-patterned media using ultra-high resolution magnetic force microscopy. Physica Status Solidi-Rapid Research Letters, 6(3), 141-3. #
71. **Yakovlev, N.L,** Sbiaa, R, and Piramanayagam, S.N. (2011). Variable angle magnetometry for exchange-coupled multilayers with in-plane and perpendicular anisotropy. Journal of Applied Physics, 110(12), 123905. ###
72. **Sbiaa, R,** Meng, H, and Piramanayagam, S.N. (2011). Materials with perpendicular magnetic anisotropy for magnetic random access memory. Physica Status Solidi-Rapid Research Letters, 5(12), 413-9. #
73. *Tahmasebi, T, **Piramanayagam, S.N,** Sbiaa, R, Tan, H.K, Law,.R, Lua, S, and Chong, T.C. (2011). Tailoring the growth of L1(0)-FePt for spintronics applications. Physica Status Solidi-Rapid Research Letters, 5(12), 426-8. #
74. *Ranjbar, M, Piramanayagam, S.N, Wong, S.K, **Sbiaa, R,** Song, W, Tan, H.K, Gonzaga, L, and Chong, T.C. (2011). Origin of anomalously high exchange field in antiferromagnetically coupled magnetic structures: Spin reorientation versus interface anisotropy. Journal of Applied Physics, 110(9), 093915. ###
75. *Gaur, N, Pandey. K.K.M, Maurer, S.L, Piramanayagam, S.N, Nunes, R.W, Yang, H, and **Bhatia, C.S.** (2011). Magnetic and structural properties of CoCrPt-SiO2-based graded media prepared by ion implantation. Journal of Applied Physics, 110(8), 083917. ###
76. *Ranjbar, M, **Piramanayagam, S.N,** Wong, S.K, Sbiaa, R, and Chong, T.C. (2011). Anomalous Hall effect measurements on capped bit-patterned media. Applied Physics Letters, 99(14), 142503. ##

77. *Ma, F.S, **Lim, H.S,** Wang, Z.K, Piramanayagam, S.N, Ng, S.C, and Kuok, M.H. (2011). Effect of Interrow Magnetic Coupling on Band Structures of 2-D Magnonic Crystal Waveguides. IEEE Transactions on Magnetics, 47(10), 2689-92.
78. *Gaur, N, Piramanayagam, S.N, Maurer, S.L, Nunes, R.W, Steen, S, Yang, H, and **Bhatia, C.S.** (2011). Ion implantation induced modification of structural and magnetic properties of perpendicular media. Journal of Physics D-Applied Physics, 44(36), 365001. #
79. **Sbiaa, R,** Law, R, Lua, S.Y.H, Tan, E.L, *Tahmasebi, T, Wang, C.C, and Piramanayagam, S.N. (2011). Spin transfer torque switching for multi-bit per cell magnetic memory with perpendicular anisotropy. Applied Physics Letters, 99(9), 092506. ##
80. *Ranjbar, M, *Tavakkoli, A, **Piramanayagam, S.N,** Tan, K.P, Sbiaa, R, Wong, S.K, and Chong, T.C. (2011). Magnetostatic interaction effects in switching field distribution of conventional and staggered bit-patterned media. Journal of Physics D-Applied Physics, 44(26), 265005. #
81. *Ma, F.S, **Lim, H.S,** Wang, Z.K, Piramanayagam, S.N, Ng, S.C, and Kuok, M.H. (2011), Micromagnetic study of spin wave propagation in bicomponent magnonic crystal waveguides. Applied Physics Letters, 98(15), 153107. ##
82. **Piramanayagam, S,N**, Tan, H.K, *Ranjbar, M, Wong, S.K, Sbiaa, R, and Chong, T.C. (2011). Magnetic interaction in perpendicular recording media with synthetic nucleation layers. Applied Physics Letters, 98(15), 152504. ##
83. **Piramanayagam, S.N**, *Ranjbar, M, Tan, E.L, Tan, H.K, Sbiaa, R, and Chong, T.C. (2011). Enhanced resolution in magnetic force microscropy using tips with perpendicular magnetic anisotropy. Journal of Applied Physics, 109(7), 07E326. ###
84. *Deng, S, Aung, K.O, **Piramanayagam, S.N,** and Sbiaa, R. (2011). Magnetostatic Interactions in Antiferromagnetically Coupled Patterned Media. Journal of Nanoscience and Nanotechnology. 11(3), 2555-9.
85. *Ranjbar, M, **Piramanayagam, S.N,** Sbiaa, R, Aung, K.O, Guo, Z.B, and Chong, T.C. (2011). Ion Beam Modification of Exchange Coupling to Fabricate Patterned Media. Journal of Nanoscience and Nanotechnology, 11(3), 2611-4.
86. ***Gaur, N,** Maurer, S.L, Nunes, R.W, Piramanayagam, S.N, and Bhatia, C.S. (2011). Ion-Implantation Studies on Perpendicular Media. Journal of Nanoscience and Nanotechnology. 11(3), 2619-22.
87. *Tahmasebi, T, **Law, R,** Sbiaa, R, Piramanayagam, S.N, and Chong, T.C. (2011). Effect of Short Annealing Times on the Magnetoelectronic Properties of Co/Pd-Based Pseudo-Spin-Valves. Journal of Nanoscience and Nanotechnology, 11(3), 2661-4.
88. Chong, T.C., **Piramanayagam, S.N,** and Sbiaa, R. (2011). Perspectives for 10 Terabits/in(2) Magnetic Recording. Journal of Nanoscience and Nanotechnology, 11(3), 2704-9.
89. *Tavakkoli, A, **Piramanayagam, S.N,** *Ranjbar, M, Sbiaa, R, and Chong, T.C. (2011). Path to achieve sub-10-nm half-pitch using electron beam lithography. Journal of Vacuum Science & Technology B. 29(1), 011035.
90. **Poh, W.C.A, Tan, H.K, Ong, L.T, Hui, H.K, Wong, S.K, Aung, K.O, Tan, E, Sbiaa, R, Kay, Y.S, and **Piramanayagam, S.N.** (2010). Novel planarizing scheme for patterned media. Journal of Vacuum Science & Technology B. 28(4), 806-8.
91. *Ranjbar, M, **Piramanayagam, S.N,** Deng, S.Z, Aung, K.O, Sbiaa, R, Kay, Y.S, Wong, S.K, and Chong, C.T. (2010). Antiferromagnetically Coupled Patterned Media and Control of Switching Field Distribution. IEEE Transactions on Magnetics, 46(6), 1787-90.
92. *Tahmasebi, T, Piramanayagam, S.N, **Sbiaa, R,** Law, R, and Chong, T.C. (2010). Effect of Different Seed Layers on Magnetic and Transport Properties of Perpendicular Anisotropic Spin Valves. IEEE Transactions on Magnetics, 46(6), 1933-6.
93. **Wong, S.K,** **Srinivasan, K, Sbiaa, R, Law, R, Tan, E, and Piramanayagam, S.N. (2010). Characterization of Coupled Novel Magnetic Multilayers With Anomalous Hall Effect. IEEE Transactions on Magnetics, 46(6), 2409-12.
94. **Sbiaa, R,** Bilin, Z, *Ranjbar, M, Tan, H.K, Wong, S.J, Piramanayagam, S.N, & Chong, T.C. (2010). Effect of magnetostatic energy on domain structure and magnetization reversal in (Co/Pd) multilayers. Journal of Applied Physics, 107(10), 103901. ###

95. *Poh, W.C, **Piramanayagam, S.N,** and Liew, T. (2010). Magnetic Properties and Corrosion Resistance Studies on Hybrid Magnetic Overcoats for Perpendicular Recording Media. IEEE Transactions on Magnetics, 46(4), 1069-76.
96. **Piramanayagam, S.N**, Sbiaa, R, Tan, E.L, Poh, A.W.C, Tan, H.K, Aung, K.O, Zhao, J.M, and Wong, S.K. (2010). Planarization of Patterned Recording Media. IEEE Transactions on Magnetics. 46(3), 758-63.
97. **Srinivasan, K, **Piramanayagam, S.N,** and Kay, Y.S. (2010). Effect of RuCoCr-oxide intermediate layers on the growth, microstructure, and recording performance of CoCrPt-SiO2 perpendicular recording media. Journal of Applied Physics, 107(3), 033901. ###
98. ****Sbiaa, R,** Piramanayagam, S.N, and Law, R. (2009). Magnetization reorientation in antiferromagnetically coupled Co films and (Co/Pd) multilayers. Applied Physics Letters, 95(24), 242502. ##
99. ****Sbiaa, R,** and Piramanayagam, S.N. (2009). Patterned media with composite in-plane and perpendicular anisotropy recording layers. Journal of Magnetism and Magnetic Materials, 321(23), 3963-6. #
100. ****Wong, S.K,** Chia, B.H, **Srinivasan, K, Law, R, Tan, E.L, Tan, H.K, **Sbiaa, R, and Piramanayagam, S.N. (2009). Anomalous Hall effect measurement of novel magnetic multilayers. Journal of Applied Physics, 106(9), 093904. ###
101. ****Sbiaa, R,** Gandhi, R, **Srinivasan, K, Piramanayagam, S.N, and Seoh, R.M. (2009). Intermediate layer thickness dependence on switching field distribution in perpendicular recording media. Journal of Magnetism and Magnetic Materials, 321(17), 2682-4. #
102. **Tan, E.L,** Aung, K.O, Sbiaa, R, Wong, S.K, Tan, H.K, **Poh, W.C, Piramanayagam, S.N, and Chum, C C. (2009). Nanoimprint mold fabrication and duplication for embedded servo and discrete track recording media. Journal of Vacuum Science & Technology B. 27(5), 2259-63.
103. **Sbiaa, R,** Hua, C.Z, Piramanayagam, S.N, Law, R, Aung, K.O, and Thiyagarajah, N. (2009). Effect of film texture on magnetization reversal and switching field in continuous and patterned (Co/Pd) multilayers. Journal of Applied Physics, 106(2), 023906. ###
104. **Piramanayagam, S.N**, Aung, K.O, *Deng, S, and Sbiaa, R. (2009). Antiferromagnetically coupled patterned media. Journal of Applied Physics, 105(7), 07C118. ###
105. **Piramanayagam, S.N**, and **Srinivasan, K. (2009). CoRuCr-oxide intermediate layers for perpendicular magnetic recording media. Journal of Applied Physics, 105(7), 07B717. ###
106. **Sbiaa, R,** Aung, K.O, Piramanayagam, S.N, Tan, E.L, and Law, R. (2009). Patterned media with composite structure for writability at high areal recording density. Journal of Applied Physics, 105(7), 073904. ###
107. ****Srinivasan, K,** Piramanayagam, S.N, Sbiaa, R, Kay, Y.S, Tan. H.K, and Wong, S.K. (2009). Antiferromagnetic iridium-manganese intermediate layers for perpendicular recording media (invited). Journal of Applied Physics, 105(7), 07B738. ###
108. **Zhao, J.M,** Ho, S.L, Piramanayagam, S.N, and Shi, J.Z. (2009). Optimizing Tape-burnishing/Wiping Process of Magnetic Recording Media through Taguchi Method. Quality and Reliability Engineering International, 25(3), 345-54.
109. **Xu, B.X,** Yuan, H.X, Md, S.F, Ji, R, Zhang, J, Zhang, Q.D, Piramanayagam, S.N, and Chong, T.C. (2009). Study of Recorded Mark Width Change with Laser Power in Heat-Assisted Magnetic Recording. Japanese Journal of Applied Physics, 48(3), 03A058 .
110. **Piramanayagam, S.N**, and **Srinivasan, K. (2009). Recording media research for future hard disk drives. Journal of Magnetism and Magnetic Materials, 321(6), 485-94. #
111. **Piramanayagam, S.N**, **Srinivasan, K, Tan, H.K, Lim, B.C, and Wong, S.K. (2009). Evolution of Perpendicular Recording Media Grains on Carbon-Based Synthetic Nucleation Layer. IEEE Transactions on Magnetics, 45(2), 793-8.
112. **Sbiaa, R,** Tan, E.L, Aung, K.O, Wong, **S.K, Srinivasan, K, and Piramanayagam, S.N. (2009). Material and Layer Design to Overcome Writing Challenges in Bit-Patterned Media. IEEE Transactions on Magnetics, 45(2), 828-32.
113. **Piramanayagam, S.N**, **Srinivasan, K, Sbiaa, R, Dong, Y, and Victora, R.H. (2008). CoCrPt-oxide based perpendicular recording media with hybrid soft magnetic underlayers. Journal of Applied Physics, 104(10), 103905. ###

114. Davies, J.E, Bennett, L.H, Della Torre, E, Choi, B.C, Piramanayagam, S.N, and Girgis, E. (2008). Interactions in Nanoscale Arrays of Soft Magnetic Bi-Layers. IEEE Transactions on Magnetics, 44(11), 2722-5.
115. **Srinivasan, K, **Piramanayagam, S.N,** Chantrell, R.W, and Kay, Y.S. (2008). Microstructure and switching mechanism of stacked CoCrPt-SiO2 perpendicular recording media. Journal of Magnetism and Magnetic Materials, 320(22), 3036-40. #
116. **Srinivasan, K, **Piramanayagam, S.N,** Sbiaa, R, and Chantrell, R.W. (2008). Thermal stability and the magnetization process in CoCrPt-SiO2 perpendicular recording media. Journal of Magnetism and Magnetic Materials, 320(22), 3041-5. #
117. **Sbiaa, R,** Tan, E.L, Seoh, R.M, Aung, K.O, Wong, S.K, and Piramanayagam, S.N. (2008). Sub-50-nm track pitch mold using electron beam lithography for discrete track recording media. Journal of Vacuum Science & Technology B. 26(5), 1666-9.
118. **Srinivasan, K,** Piramanayagam, S.N, and Sbiaa, R. (2008). Antiferromagnetic iridium manganese based intermediate layers for perpendicular magnetic recording media. Applied Physics Letters, 93(7), 072503. ##
119. Qiu, L.J, Shi, J.Z, Piramanayagam, S.N, Chen, J.S, and **Ding, J.** (2008). Nanocomposite magnetic films for high-density perpendicular magnetic recording media. Thin Solid Films, 516(16), 5381-5. #
120. Srinivasan, K, Wong, S.K, **Piramanayagam, S.N,** and Kay, Y.S. (2008). Influence of synthetic nucleation layers on the microstructure, magnetic properties, and recording performance of CoCrPt-SiO2 perpendicular recording media. Journal of Applied Physics, 103(9), 093912. ###
121. *Poh, W.C, **Piramanayagam, S.N,** and Liew, T. (2008). Novel hybrid magnetic overcoats: A prospective solution for low magnetic spacing. Journal of Applied Physics, 103(7), 07F523. ###
122. **Srinivasan, K, **Piramanayagam, S.N,** Wong, S.K, and Kay, Y.S. (2008). Microstructure and magnetic properties of CoCrPt-SiO2 perpendicular recording media with synthetic nucleation layers. Journal of Applied Physics, 103(7), 07F512.
123. **Srinivasan, K, and **Piramanayagam, S.N.** (2008). Enhanced heteroepitaxial growth of CoCrPt-SiO2 perpendicular magnetic recording media on optimized Ru intermediate layers. Journal of Applied Physics, 103(2), 023909. ###
124. **Sbiaa, R,** and Piramanayagam, S.N. (2008). High frequency switching in bit-patterned media: A method to overcome synchronization issue. Applied Physics Letters, 92(1), 012510. ##
125. Qiu, L.J, Ding, J, Shi, J.Z, Piramanayagam, S.N, and Chen, J.S. (2007). Exchange coupling effects in CoCrPt-SiO2/FeCoTaCr composite media for perpendicular recording. Physica Scripta, T129, 140-3.
126. **Piramanayagam, S.N**, and **Srinivasan, K. (2007). Sub-6-nm grain size control in polycrystalline thin films using synthetic nucleation layer. Applied Physics Letters, 91(14), 142508. ##
127. Shi, J.R, Ji, R, and **Piramanayagam, S.N.** (2007). Corrosion performance of thin hydrogenated amorphous carbon films prepared by magnetron sputtering. Diamond and Related Materials, 16(9), 1716-21. #
128. **Piramanayagam, S,N**. (2007). Perpendicular recording media for hard disk drives. Journal of Applied Physics, 102(1), 011301. ###
129. **Shi, J.Z,** Piramanayagam, S.N, Zhao, J.M, Mah, C.S, Kay, Y.S, and Ong, C.Y. (2007). Low-noise crystalline soft underlayer for CoCrPt : SiO2 perpendicular recording media. IEEE Transactions on Magnetics, 43(6), 2100-2.
130. **Piramanayagam, S.N**, Mah, C.S, Ong, C.Y, Shi, J.Z, Dumaya, J.A, Onoue, T, and Ishibashi, S. (2007). Role of substrate bias on the magnetic properties and microstructure of CoCrPt : SiO2 perpendicular recording media. Journal of Applied Physics, 101(10), 103914. ###
131. **Piramanayagam, S.N**, and Zhao, H.B. (2007). Effect of seed layers on the textured growth of Pd/Ru intermediate layers for perpendicular recording media. Journal of Magnetism and Magnetic Materials, 312(2), 476-9. #
132. **Sbiaa, R,** and Piramanayagam, S.N. (2007). Spin-transfer induced noise in nanoscale magnetoresistive sensors. Journal of Applied Physics, 101(7), 073911. ###

133. *Poh, W.C, **Piramanayagam, S.N,** Shi, J.R, and Liew, T. (2007). Novel hybrid facing targets sputtered amorphous carbon overcoat for ultra-high density hard disk media. Diamond and Related Materials, 16(2), 379-87. #
134. **Piramanayagam, S.N**, Shi, J.Z, Zhao, H.B, Pock, C.K, Mah, C.S, Ong, C.Y, Zhao, J.M, Zhang, J, and Kay, Y.S. (2007). Magnetic and microstructural properties of CoCrPt : Oxide perpendicular recording media with novel intermediate layers. IEEE Transactions on Magnetics, 43(2), 633-8.
135. **Shi, J.Z,** Piramanayagam, S.N, Zhao, J.M, Mah, C.S, and Liu, B. (2007). High writability perpendicular recording media with low noise crystalline soft underlayer. IEEE Transactions on Magnetics, 43(2), 873-5.
136. Sbiaa, R, and **Piramanayagam, S.N.** (2007). Patterned Media Towards Nano-bit Magnetic Recording: Fabrication and Challenges. Recent Patents on Nanotechnology, 1(1), 29-40.
137. Tripathy, D, **Adeyeye, A.O,** and Boothroyd, C.B, and Piramanayagam, S.N. (2007). Magnetic and transport properties of Co-doped Fe3O4 films. Journal of Applied Physics, 101(1), 013904. ###
138. **Piramanayagam, S.N**, Pock, C.K, Lu, L, Ong, C.Y, Shi, J.Z, and Mah, C.S. (2006). Grain size reduction in CoCrPt : SiO2 perpendicular recording media with oxide-based intermediate layers. Applied Physics Letters, 89(16), 162504. ##
139. **Shi, J.Z,** Piramanayagam, S.N, Chow, S.Y, Wang, S.J, Zhao, J.M, and Mah, C.S. (2006). CoCrPt-SiO2 perpendicular recording media with a crystalline soft underlayer. IEEE Transactions on Magnetics, 42(10), 2369-71.
140. **Zhang, J,** Ji, R, Xu, J.W, Ng, J.K.P, Xu, B.X, Hu, S.B, Yuan, H.X, and Piramanayagam, S.N. (2006). Lubrication for heat-assisted magnetic recording media. IEEE Transactions on Magnetics, 42(10), 2546-8.
141. **Piramanayagam, S.N**, Shi, J.Z, Zhao, H.B, Mah, C.S, Shi, J.R, Zhao, J.M, Zhang, J, and Kay, Y.S. (2006). Novel approaches to high-density perpendicular recording media. Journal of Magnetism and Magnetic Materials, 303(2), 287-91. #
142. **Piramanayagam, S.N**, Liau, M.J, Shi, J.Z, and Lim, B.C. (2006). Textured growth of CoFe for soft underlayers in CoCrPt:SiO2 perpendicular magnetic recording media. Journal of Magnetism and Magnetic Materials, 303(2), E152-E5. #
143. Shi, J.R, and **Piramanayagam, S.N.** (2006). Nano-scratch resistance study of nitrogenated amorphous carbon films prepared by unbalanced magnetron sputtering. Journal of Magnetism and Magnetic Materials, 303(2), E115-E9. #
144. **Shi, J.Z,** Piramanayagam, S.N, Mah, C.S, and Zhao, J.M. (2006). Influence of gas pressures on the magnetic properties and recording performance of CoCrPt-SiO2 perpendicular media. Journal of Magnetism and Magnetic Materials, 303(2), E145-E51. #
145. **Piramanayagam, S.N**, Shi, J.Z, Pock, C.K, Zhao, H.B, Mah, C.S, Kay, Y.S, Zhang, J, Shi, J.R, and Zhao, J.M. (2006). Investigations on nano-structured perpendicular recording media for high density data storage. Thin Solid Films, 505(1-2), 71-6. #
146. **Piramanayagam, S.N**, Zhao, H.B, Shi, J.Z, and Mah, C.S. (2006). Palladium-based intermediate layers for CoCrPt-SiO2 perpendicular recording media. Applied Physics Letters, 88(9), 092506. ##
147. **Piramanayagam, S.N**, Zhao, H.B, Shi, J.Z, and Mah, C.S. (2006). Advanced perpendicular recording media structure with a magnetic intermediate layer. Applied Physics Letters, 88(9), 092501. ##
148. **Shi, J.Z,** Piramanayagam, S.N, Mah, C.S, Zhao, H.B, Zhao, J.M, Kay, Y.S, and Pock, C.K. (2005). Influence of dual-Ru intermediate layers on magnetic properties and recording performance of CoCrPt-SiO2 perpendicular recording media. Applied Physics Letters, 87(22), 222503 . ##
149. Liu, H.J, Yang, T, Goh, W.C, Sow, C.H, Piramanayagam, S.N, and Ong, C.K. (2005). Magnetotransport properties of nano-constriction array in La0.67Sr0.33MnO3 film. European Physical Journal B. 48(1), 37-40.
150. **Piramanayagam, S.N**, Shi, J.Z, Zhao, H.B, Mah, C.S, and Zhang, J.(2005). Stacked CoCrPt : SiO2 layers for perpendicular recording media. IEEE Transactions on Magnetics. 41(10), 3190-2. ###

151. **Chen, Y.J,** Dai, D.Y, Zhao, H.B, Pang, S.I, Yin, J.H, Wu, L.J, Guan, T.P, Piramanayagam, S.N, and Wang, J.P. (2005). A study of orientation ratio in longitudinal magnetic thin-film media on plasma-treated textured substrates. Applied Physics A-Materials Science & Processing. 81(1), 147-50.
152. Lu, M.H, Song, T, Zhou, T.J, Wang, J.P, Piramanayagam, S.N, Ma, W.W, and **Gong, H.** (2004). FePt and Fe nanocomposite by annealing self-assembled FePt nanoparticles. Journal of Applied Physics, 95(11), 6735-7. ###
153. **Ma, W.W,** Yang, Y, Chong, C.T, Eggeman, A, Piramanayagam, S.N, Zhou, T.J, Song, T, and Wang, J.P. (2004). Synthesis and magnetic behavior of self-assembled Co nanorods and nanoballs. Journal of Applied Physics, 95(11), 6801-3. ###
154. **Piramanayagam, S.N**, Pang, S.I, and Wang, J.P. (2003). Magnetization and thermal stability studies on laminated antiferromagnetically coupled (LAC) media. IEEE Transactions on Magnetics, 39(2), 657-62. ###
155. **Piramanayagam, S.N**, Yin, J.H, Zhao, H.B, Kasim, J, Chen, Y.J, Zhang, J, and Hee, C.H. (2003). Dynamic orientation ratio in longitudinal recording media. Applied Physics Letters, 83(6), 1175-7. ##
156. **Pang, S.I, Piramanayagam, S.N, and Wang, J.P.** (2002). Advanced laminated antiferromagnetically coupled media with high thermal stability and low noise. IEEE Transactions on Magnetics, 38(5), 1940-2. ###
157. **Piramanayagam, S.N**, Xu, Y.F, Dai, D.Y, Huang, L, Pang, S.I, and Wang, J.P. (2002). Ultrasmall grain size control in longitudinal recording media for ultrahigh areal densities. Journal of Applied Physics, 91(10), 7685-7. ###
158. **Wang, J.P,** Piramanayagam, S.N, Hee, C.H, Huang, L, Pang, S.I, Chow, S.K, Shi, X, and Chong, T.C. (2002). Design of laminated antiferromagnetically coupled media for beyond 100 Gb/in(2) areal density. Journal of Applied Physics, 91(10), 7694-6. ###
159. Pang, S.I, Piramanayagam, S.N, and **Wang, J.P.** (2002). Thermal stability investigations on laminated antiferromagnetically coupled media. Journal of Applied Physics, 91(10), 8620-2. ###
160. Pang, S.I, Piramanayagam, S.N, and **Wang, J.P.** (2002). Advanced laminated antiferromagnetically coupled recording media with high thermal stability. Applied Physics Letters, 80(4), 616-8. ##
161. **Piramanayagam, S.N**, Wang, J.P, Hee, C.H, Pang, S.I, Chong, T.C, Shan, Z.S, and Huang, L. (2001). Noise reduction mechanisms in laminated antiferromagnetically coupled recording media. Applied Physics Letters, 79(15), 2423-5. ##
162. **Piramanayagam, S.N**, Hee, C.H, and Wang, J.P. (2001). Role of thermal energy on the magnetic properties of laminated antiferromagnetically coupled recording media. Journal of Applied Physics, 90(7), 3442-9. ###
163. Hee, C.H, **Wang, J.P,** Piramanayagam, S.N, and Chong, T.C. (2001). Thermal energy consideration in micromagnetic simulation for laminated antiferromagnetically coupled recording media. Applied Physics Letters, 79(11), 1646-8. ##
164. **Ye, W.C,** Zheng, Y.K, Piramanayagam, S.N, Lin, Y, and Krachkovsky, V.Y. (2001). Modeling of readback pulse shape of GMR head. IEICE Transactions on Electronics, E84C(9), 1158-64.
165. **Piramanayagam, S.N**, Wang, J.P, Shi, X, Pang, S.I, Pock, C.K, Shan, Z.S, and Chong, T.C. (2001). Magnetic properties and switching field control of antiferromagnetically coupled recording media. IEEE Transactions on Magnetics, 37(4), 1438-40.
166. Wang, J.P, Shan, Z.S, Piramanayagam, S.N, and Chong, T.C. (2001). Anti-ferromagnetic coupling effects on energy barrier and reversal properties of recording media. IEEE Transactions on Magnetics, 37(4), 1445-8.
167. Shan, Z.S, Jin, D, Ren, H.B, Wang, J.P, Piramanayagam, S.N, Pang, S.I, and Chong, T.C. (2001). Magnetic field and thermal reversal properties of exchange-bias recording films. IEEE Transactions on Magnetics, 37(4), 1500-3.
168. **Piramanayagam, S.N**, Wang, J.P, Shan, Z.S, Ye, W.C, and Chong, T.C. (2001). A method to determine dynamic remnant coercivity over a larger time-scale. IEEE Transactions on Magnetics. 37(4), 1950-2.

169. **Liu, X.X,** Bai, J.M, Wei, F.L, Xu, H, Yang, Z, Piramanayagam, S.N, Takei, S, Morisako, A, and Matsumoto, M. (2000). La-Zn substituted hexagonal Sr ferrite thin films for high density magnetic recording. Journal of Applied Physics, 87(5), 2503-6. ###
170. Piramanayagam, S.N, **Matsumoto, M,** and Morisako, A. (2000). Thickness dependence of magnetic properties of NdFeB thin films with perpendicular magnetic anisotropy. Journal of Magnetism and Magnetic Materials, 212(1-2), L12-L6. #
171. Piramanayagam, S.N, **Matsumoto, M,** and Morisako, A. (1999). Perpendicular magnetic anisotropy in NdFeB thin films. Journal of Applied Physics, 85(8), 5898-900. ###
172. **Piramanayagam, S.N,** Matsumoto, M, Morisako, A, and Takei S. (1998). Studies on NdFeB thin films over a wide composition range. Journal of Alloys and Compounds, 281(1), 27-31. #
173. Piramanayagam, S.N, Matsumoto, M, Morisako, A, Takei, S, and Kadowaki, D. (1997). Controlling the magnetization reversal mechanism in Co/Pd multilayers by underlayer processing. IEEE Transactions on Magnetics, 33(5), 3247-9.
174. Piramanayagam, S.N, Matsumoto, M, Morisako, A, and Takei, S. (1997). Synthesis of Nd-Fe-B thin films with high coercive force by cosputtering. IEEE Transactions on Magnetics, 33(5), 3643-5.
175. Piramanayagam, S.N, Prasad, S, Nigam, A.K, Chandra, G, Shringi, S.N, Venkataramani, N, and Krishnan, R. (1996). Onset of a different scattering mechanism with Fe and Mn substitution in the magneto-transport of a-Co80-x-yFexMnyB12Si8 alloys. Solid State Communications, 97(3), 203-7. #
176. Piramanayagam, S.N, Nigam, A.K, Chandra, G, Prasad, S, Venkataramani, N, Shringi, S.N, Krishnan, R. (1995). Magnetoresistance measurements on Fe- and Co-rich amorphous alloys. Journal of Magnetism and Magnetic Materials, 140, 281-2. #
177. Acharya, B.R, Piramanayagam, S.N, Nigam, A.K, Shringi, S.N, Prasad, S, Venkataramani, N, Chandra, G, and Krishnan, R. (1995). Mossbauer study of interface mixing in Fe/Ni multilayers. Journal of Magnetism and Magnetic Materials, 140, 555-6. #
178. Acharya, B.R, Piramanayagam, S.N, Ajan, A, Shringi, S.N, Prasad, S, Venkataramani, N, Krishnan, R, Kulkarni, S.D, and Date, S.K. (1995). Oriented strontium ferrite films sputtered onto Si(111). Journal of Magnetism and Magnetic Materials, 140, 723-4. #
179. Das, D, Ravichandran, G, Chakrabarty, D.K, Piramanayagam, S.N, and Shringi, S.N. (2003). Selective synthesis of light alkenes from carbon monoxide and hydrogen on silicalite supported iron-manganese catalysts. Applied Catalysis A-General, 107(1), 73-81. #
180. Piramanayagam, S.N, Prasad, S, Shringi, S.N, Nigam, A.K, Chandra, G, Venkataramani, N, and Krishnan, R. (1993). The change in the temperature coefficient of resistivity with Mn addition in Fe-and Co-rich amorphous alloys. Journal of Applied Physics, 73(10), 5595-7. ###
181. Shringi, S.N, Piramanayagam, S.N, Prasad, S, Venkatramani, N, Patni, M.J, Krishnan, R, and Tessier, M. (1993). Magnetic and conversion electron Mössbauer spectroscopy studies in Fe/Ta multilayers. Journal of Applied Physics, 73(10), 6438-40. ###
182. Das, J, Satyanaryana, C.V.V, Chakrabarty, D.K, Piramanayagam, S.N, and Shringi, S.N. (1992). Substitution of Al in the AlPO4-5 and AlPO4-11 frameworks by Si and Fe: a study by Mössbauer, magic-angle-spinning nuclear magnetic resonance and electron paramagnetic resonance spectroscopies and chemical probes. Journal of the Chemical Society-Faraday Transactions, 88(21), 3255-61.
183. Piramanayagam, S.N, Shringi, S.N, Prasad, S, Nigam, A.K, Chandra, G, Krishnan, R, and Ramanan, Vrv. (1990). The effect of Mn addition on hyperfine field parameters of a-Co-Fe-B-Si alloys. Solid State Communications, 76(2), 93-6. #

Books

1. **Piramanayagam, S.N**, and Chong, Tow Chong. (2012).
Developments in Data Storage: Materials Perspective (331 pages). IEEE-Wiley Press, John Wiley & Sons (USA), ISBN: 978-0-470-50100-9 (2012).

Book Chapters

1. **Piramanayagam, S.N,** and Varghese, B. (2015).
"Higher Resolution Scanning Probe Methods for Magnetic Imaging"
Challa Kumar (Editor), 4th volume (Surface Science Characterization of Nanomaterials) of the Springer Series
Springer Berlin Heidelberg ISBN: 978-3-662-44550-1 pp 463-487.

2. Prasad, S, and Piramanayagam, S.N. (2012).
"Fundamentals of Magnetism"
S.N. Piramanayagam and Tow C. Chong (eds.) Developments in Data Storage : Materials Perspective, *IEEE-Wiley Press*, John Wiley & Sons (USA) ISBN : 978-0-470-50100-9 pp. 10-32.

3. Piramanayagam, S.N. (2012).
"Longitudinal Recording Media"
S.N. Piramanayagam and Tow C. Chong (eds.) Developments in Data Storage : Materials Perspective, *IEEE-Wiley Press*, John Wiley & Sons (USA) ISBN : 978-0-470-50100-9 pp.33 – 51.

4. Srinivasan, K, and Piramanayagam, S.N. (2012).
"Perpendicular Recording Media"
S.N. Piramanayagam and Tow C. Chong (eds.) Developments in Data Storage : Materials Perspective, *IEEE-Wiley Press*, John Wiley & Sons (USA) ISBN : 978-0-470-50100-9 pp. 52-77.

5. Choong, Allen Poh Wei, Piramanayagam, S.N, and Thomas Y.F. Liew. (2012).
"Overcoat Materials for Magnetic Recording Media"
S.N. Piramanayagam and Tow C. Chong (eds.) Developments in Data Storage : Materials Perspective, *IEEE-Wiley Press*, John Wiley & Sons (USA) ISBN : 978-0-470-50100-9 pp. 167-192.

6. Zhang, Z, Zhou, T.J, Lu, M, Choong, Allen Poh Wei and Piramanayagam, S.N. (2010).
"Cobalt Nanomaterials: Synthesis and Characterization"
Challa S. Kumar (ed.) Nanomaterials for the Life Sciences Vol. 4: Magnetic Nanomaterials, *WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim*
ISBN: 978-3-527-32154-4 pp. 587-631.

7. Piramanayagam, S.N. (2008).
"Data Storage on Magnetic Disks"
Wiley Encyclopedia of Computer Science and Engineering, (2008).
DOI: 10.1002/9780470050118.ecse230.

Conference Papers

International Conference – Oral presentations
(PRESENTED AND PUBLISHED)

1. **S.N. Piramanayagam**, M. Shakerzadeh, B. Varghese and H.K. Tan, "Effect of carbon overcoat implantation on the magnetic and structural properties of perpendicular recording media", Intermag, China (2015).
2. C.S. Bhatia, **S.N. Piramanayagam**, N. Gaur, S. Kundu, H. Yang and S. Maurer, (Invited), "Ion implantation challenges for patterned media at areal densities over 5 Tbpsi", The Magnetic Recording Conference (TMRC), Tokyo, Japan (2013).
3. M. Ranjbar, R. Sbiaa, R.K. Dumas, J. Åkerman and **S.N. Piramanayagam**, "Spin reorientation induced by antiferromagnetic coupling", 58th Annual Conference on Magnetism and Magnetic Materials (MMM), Denver, USA (2013).
4. B. Varghese, S.N. Piramanayagam, Y. Yang, S. Wong, H. Tan, W. Lee and I. Okamoto, "Equiatomic CoPt thin films with extremely high coercivity", 58th Annual Conference on Magnetism and Magnetic Materials (MMM), Denver, USA (2013).
5. **S.N. Piramanayagam,** B. Varghese, H.K. Tan, Y.Y.K. Hnin, W.K. Lee, I. Okamoto, L.J. Wu and D. Tripathy, (Invited) "Writability Improvement in Perpendicular Recording Media using Crystalline Soft Underlayers", The Magnetic Recording Conference (TMRC), San Jose, USA (2012).
6. N. Gaur, **S.N. Piramanayagam,** S. L. Maurer, S. E. Steen, H. Yang and C. S. Bhatia, 'First Order Reversal Curve Investigations on the Effect of Ion Implantation in Magnetic Media', International Magnetics Conference (INTERMAG), Vancouver, Canada (2012).
   - Shortlisted as one of the six final papers for the Student Best Presentation Award.
7. **S.N. Piramanayagam,** and M. Ranjbar, "Influence of Magnetic Viscosity on the First Order Reversal Curves of antiferromagnetically Coupled Perpendicular Recording Media", 56th Annual Conference on Magnetism and Magnetic Materials (MMM), Arizona, USA (2011).
8. A. Tavakkoli K. G., M. Ranjbar, **S.N. Piramanayagam,** H. K. Tan, Allen Poh W. C., R. Sbiaa, and T. C. Chong, "Reverse Imprint Lithography for Fabrication of Nanostructures", International Conference on Materials for Advance Technology (ICMAT), Singapore (2011).
9. F.S. Ma, H.S. Lim, Z.K. Wang, **S.N. Piramanayagam,** S. C. Ng, and M. H. Kuok, "Materials optimization of the magnonic bandgap in two-dimensional magnonic crystals", ICMAT2011 (International Conference on Materials for Advanced Technologies), Symposium L, 2011, Singapore.
10. F.S. Ma, H.S. Lim, Z. K. Wang, **S.N. Piramanayagam**, S. C. Ng, and M. H. Kuok, "Micromagnetic study of the magnonic bandgap in two-dimensional magnonic crystals", Intermag 2011 (IEEE International Magnetics Conference), 2011, Taipei, Taiwan.
11. M. Ranjbar, A. Tavakkoli K. G., **S.N. Piramanayagam**, K. P. Tan, R. Sbiaa, S. K. Wong, and T. C. Chong, "Effect of antiferromagnetically coupling configurations on switching field distribution of bit patterned media", 55th Annual Conference on Magnetism and Magnetic Materials (MMM), Atlanta, Georgia, USA (2010).
12. S. N. Piramanayagam, E. L. Tan, M. Ranjbar, R. Sbiaa, and T. C. Chong, "Enhanced Resolution in Magnetic Force Microscopy using Tips with Perpendicular Magnetic Anisotropy", 55th Annual Conference on Magnetism and Magnetic Materials (MMM), Atlanta, Georgia, USA (2010).
13. T. Tahmasebi; **S. N. Piramanayagam**; Rachid Sbiaa; Randall Law; Tow Chong Chong, "Effect of Different Seed Layers on Magnetic and Transport Properties of Perpendicular Anisotropic Spin Valves", Joint INTERMAG (MMM) 2010 (18-21 Jan)- Washington DC (USA)
14. **S. N. Piramanayagam**, R. Sbiaa, E.L. Tan, H.K. Tan, J.M. Zhao, W.C. Poh, K. O. Aung, and S. K. Wong, (Invited) "Flyability and planarization of Patterned Media", The Magnetic Recording Conference (TMRC), Alabama, USA (2009).

15. N. Gaur, S. L. Maurer, R. W. Nunes, **S.N. Piramanayagam** and C.S. Bhatia, 'Ion-Implantation Studies on Perpendicular Media', International Conference on Materials for Advanced Technologies (ICMAT), Singapore (2009).
16. T. Tahmasebi; Randall Law; Rachid Sbiaa; **S. N. Piramanayagam**; Tow Chong Chong, "Effect of Interlayer Diffusion on Magnetic and Transport Properties of Co/Pd-based Pseudo Spin Valves", International Conference on Materials for Advance Technology (ICMAT) 2009, Singapore.
17. Sbiaa*, Rachid, Ei Leen Tan, Kyaw Oo Aung, Seng Kai Wong, Kumar Srinivasan and **S.N. Piramanayagam**, "Material and Layer Design to Overcome Writing Challenges in Patterned Media". The Magnetic Recording Conference 2008 (Invited paper) (Grand Copthorne Waterfront Hotel, Singapore)
18. **S.N. Piramanayagam**, Kumar Srinivasan, Hang Khume Tan, Boon Chow Lim and Seng Kai Wong, "Evolution of perpendicular recording media grains on synthetic nucleation layers", The Magnetic Recording Conference 2008 (Invited paper) (, Grand Copthorne Waterfront Hotel, Singapore)
19. Davies*, J.E., L.H. Bennett, E. Delle Torre, B.C. Choi, E Girgis and **S.N. Piramanayagam**, "Interactions in soft magnetic bilayers nanomagnetic arrays". Intermag 2008 (Palacio de municipal congresso, Madrid, Spain).
20. **S.N. Piramanayagam**, K.O. Aung, S DENG and R Sbiaa, "A novel bit-patterned media structure to reduce switching field distribution". 53rd Magnetism and Magneticaterialsonference (Austin, Texas, United States).
21. **S.N. Piramanayagam**, et al., "Patterned media with composite layers to overcome writability beyond 5 Tb/in2". 53rd Magnetism and Magnetic Materials Conference (10 - 14 Nov 2008, Austin, Texas, United States).
22. **S.N. Piramanayagam** et al., "Antiferromagnetic Iridium-Manganese Intermediate Layers for Perpendicular Recording Media". 53rd Magnetism and Magnetic Materials Conference (Invited paper) (10 - 14 Nov 2008, Austin, Texas, United States)
23. **S.N. Piramanayagam** and Kumar Srinivasan, "CoRuCr-oxide intermediate layers for grain size reduction and improved lattice matching". 53rd Magnetism and Magnetic Materials Conference (, Austin, Texas, United States).
24. **S.N. Piramanayagam** et al., "Synthesis of NdFeB Thin Films With High Coercive Force by Co-sputtering", IEEE Transactions on Magnetics (2007). New York: IEEE Magnetics Society. (Intermag 1997, 1 - 4 Apr 1997, Hyatt Hotel, New Orleans, United States).
25. **S.N. Piramanayagam** et al., "Novel Intermediate Layers for CoCrPt-Oxide Perpendicular Recording Media". IEEE Transactions on Magnetics, 43, no. 2 (2007). New York: IEEE Magnetics Society. (Invited paper) (The Magnetic Recording Conference, 7 - 9 Aug 2006, Carnegie Mellon University, Pittsburgh, United States).
26. **S.N. Piramanayagam** et al., "Novel approaches to high-density perpendicular recording media". Journal of Magnetism and Magnetic Materials, 303 (2006). Amsterdam: Elsevier. (Invited paper) (International Symposium on Physics of Magnetic Materials, 14 - 16 Sep 2005, Grand Copthorne Hotel, Singapore). #
27. **S.N. Piramanayagam** et al., "Nano-structured Perpendicular Recording Media". Thin Solid Films, 505, no. 1-2 (2005). Amsterdam: Elsevier. (Invited paper) (International Conference on Materials for Advanced Technologies, 3 - 8 Jul 2005, Suntec City Convention Center, Singapore).
28. **S.N. Piramanayagam** et al., "Stacked CoCrPt:SiO2 layers for Perpendicular Recording Media", IEEE Transactions on Magnetics, 41, no. 10 (2005). New York: IEEE Magnetics Society, (Intermag 2005, 4 - 8 Apr 2005, Nagoya Congress Center, Nagoya, Japan).
29. Ma*, W., Y. Yang, **S.N. Piramanayagam**, T. Zhou, T. Song, J. Wang and T C Chong, "Synthesis and magnetic behavior of self-assembled Co nanorods and nanoballs". Journal of applied physics, 95, no. 11 (2004). New York: American Institute of Physics. (9th Joint MMM/Intermag, 5 - 9 Jan 2004, Anaheim Marriott, Anaheim, California, United States).
30. **S.N. Piramanayagam**, S.I. Pang and J.P. Wang, "Magnetization and Thermal Stability Studies in Laminated Antiferromagnetically Coupled Media". IEEE Transactions on Magnetics (2002). New York: IEEE Magnetics Society. (Invited paper) (The Magnetic

Recording Conference 2002, 26 – 28 Aug 2002, Santa Clara University, Santa Clara, United States).

31. Wang*, J.P., **S.N. Piramanayagam**, C.H. Hee, L. Huang, S.I. Pang, X. Shi and T C Chong, "Laminated Antiferromagnetically Coupled (LAC) media for 100 Gb/in2 Areal Density and Beyond". Journal of Applied Physics, 91, no. 10 (2002). New York: American Institute of Physics. (46th MMM Conference, 12 - 16 Nov 2001, Westin Seattle, Seattle, USA).
32. **S.N. Piramanayagam** et al., "Ultrasmall Grain Size Control In Longitudinal Recording Media For Ultrahigh Areal Densities". Journal of Applied Physics, 91, no. 10 (2002). New York: American Institute of Physics. (46th MMM Conference, 12 - 16 Nov 2001, Westin Seattle Hotel, Seattle, United States).
33. Wang*, J.P., Z.S. Shan, **S.N. Piramanayagam*** and T C Chong, "Anti-Ferromagnetic Coupling Effects on Energy Barrier and Reversal Properties of Recording Media". IEEE Transactions on Magnetics (2001). New York: IEEE Magnetics Society. (Joint MMM/Intermag 2001, 7 -11 Jan 2001, Marriott Rivercenter Hotel, San Antonio, United States).
34. **S.N. Piramanayagam** et al., "Magnetic Properties and Switching Field Control in Antiferromagnetically Coupled Recording Media". IEEE Transactions on Magnetics (2001). New York: IEEE Magnetics Society. (Joint MMM/Intermag 2001, 7 - 11 Jan 2001, Marriott Rivercenter Hotel, San Antonio, United States)
35. **S.N. Piramanayagam** et al., "Perpendicular magnetic anisotropy in NdFeB thin films". Journal of Applied Physics (1999). New York: American Institute of Physics. (43rd Conference on Magnetism and Magnetic Materials, 9 - 12 Nov 1998, Hotel Intercontinental, Miami, United States).
36. **S.N. Piramanayagam** et al., "Controlling the Magnetization Reversal Mechanism In Co/Pd Multilayers By Underlayer Processing". IEEE Transactions on Magnetics (1997). New York: IEEE Magnetics Society. (Intermag 1997, 1 - 4 Apr 1997, Hyatt Hotel, New Orleans, United States).
37. **S.N. Piramanayagam,** S.N. Shringi, Shiva Prasad, A.K. Nigam, Girish Chandra, R. Krishnan and V.R.V. Ramanan, "Mossbauer Spectroscopy studies on FeCoMnBSi alloys" International Conference on Disordered Materials, Indore, India, 3-6 February 1991.
38. **S.N. Piramanayagam,** J.P. Wang, Z.S. Shan, W.C. Ye and T.C. Chong, "Dynamic Coercivity Measurements on Magnetic Thin Film Media", ASIST-5, Hong Kong (2000).
39. **S.N. Piramanayagam,** M. Matsumoto, A. Morisako, "The Effect of Interdiffusion on the Magnetic and Magneto-Optic Properties of Co/Pd Multilayers", ASIST-3, Singapore (1999).
40. J.P. Wang, **S.N. Piramanayagam,** C.H. Hee, L. Huang, S.I. Pang, T.C. Chong, "Laminated antiferromagnetically Coupled Media for 100 Gb/in2 Areal Density and Beyond" ASIST-6, China (2001).

International Conference - Oral presentations
(PRESENTED BUT NOT PUBLISHED)

41. N.R. Sernicola, T.L Jin, D. Kumar, W.S. Lew, R. Sbiaa, and **S.N Piramanayagam**, "Meander Domain Wall Device as a Synaptic Element for Neuromorphic Computing". 64th Annual Conference on Magnetism and Magnetic Materials (MMM 2019), Las Vegas, USA (2019).
42. S.N. Piramanayagam, X. Liu, S. Bhatti and C. Ma, "Stress induced domain wall motion in FeCo based magnetic microwires for realization of energy harvesting" Joint MMM-Intermag conference, Washington DC, USA (2019)
43. T.L. Jin, F.N. Tan, C.C. Ang, W.L. Gan, J.W. Cao, W.S. Lew, and S.N. Piramanayagam, "Control of domain wall motion with tilted magnetization for domain wall devices". 2019 Joint MMM-INTERMAG, Washington DC, USA (2019).
44. D. Kumar, R. Sbiaa, P. Sengupta, and S.N. Piramanayagam, "High frequency domain wall oscillations in ferromagnetic nanowire with nanoscale Dzyaloshinskii-Moria Interaction". 2019 ICMAT, Singapore (2019).

45. T.L. Jin, D. Kumar, W.L. Gan, M. Ranjbar, W.S. Lew, and S.N Piramanayagam, “Spin texture modification in Co/Pd multilayers for controllable domain wall pinning".5th International Conference of Asian Union of Magnetics Societies 2018, Jeju, Korea (2018).
46. W.C. Law, T.L. Jin, G.D.H. Wong, G.K. Rajan, W.L. Gan, S.C. Seng, A. See, S.N. Piramanayagam, and W.S. Lew, “Development strategy for pMTJ free layer with high thermal stability at operating temperatures”. 5th International Conference of Asian Union of Magnetics Societies 2018, Jeju, Korea (2018).
47. S. Bhatti, O. Bo, M. Ranjbar, R.S. Rawat, and S.N. Piramanayagam, “High Energy Density Plasma Based Carbon Overcoat on the CoCrPt-Oxide Perpendicular Recording Media”, Intermag, Dublin (2017).
48. S. Kundu, S.N. Piramanayagam, H. Yang, C.S. Bhatia, V. Zhang, S. Feng, H. Lim, S.Ng, and M. Kuok, “Synthetic antiferromagnetic coupling in nano-structured magnonic crystals for enhanced spin-wave nonreciprocity”, Joint MMM-Intermag, San Diego (2016), Jan 11-16.
49. S.N. Piramanayagam, B. Varghese, H.K. Tan, Y. Yang, and I. Okamoto (Invited), “High Anisotropy Equiatomic CoPt in HCP Phase”, MORIS, Tokyo, Japan (2013), Dec 2-5.
50. M. Ranjbar, S.K. Wong, R. Sbiaa, S.N. Piramanayagam, H.K. Tan, L. Gonzaga, and T.C. Chong, “Investigation of Spin Reorientation in Complex Multilayer Systems using Anomalous Hall Effect”, INTERMAG conference, Taiwan (2011).
51. T. Tahmasebi; R. Sbiaa; S.N. Piramanayagam; R. Law; S. Lua; T. C. Chong, “Growth mechanism of L10 FePt for Magnetic Random Access Memory Applications”, INTERMAG-Taiwan 2011 (25-29 April).
52. S.N. Piramanayagam, M. Ranjbar, D. Suzi, K.O. Aung, R. Sbiaa, and T.C. Chong, “Antiferromagnetically Coupled Patterned Media: Potential and Challenges”, Joint MMM-INTERMAG Conference, Washington, D. C., USA (2010).
53. S.N. Piramanayagam, “Challenges of patterned media”, APMRC, Singapore (2010).
54. Srinivasan, K, S.K. Wong, S.N. Piramanayagam and R Sbiaa, "Observation of metastable remanence states in pinned antiferromagnetically coupled ferromagnetic layers". Intermag 2008 (4 - 8 May 2008, Palacio municipal de Congresso, Madrid, Spain).
55. S.N. Piramanayagam et al., "Novel approaches towards high-density CoCrPt-Oxide perpendicular recording media". Joint MMM/Intermag Conference (Invited paper) (7 - 11 Jan 2007, Marriott Waterfront Hotel, Baltimore, United States).
56. S.N. Piramanayagam et al., "Novel approach to reduce grain size in CoCrPt-Oxide Perpendicular Recording Media". Intermag 2006 (8 - 12 May 2006, Town and Country Resort and Convention Center, San Diego, California, United States).
57. S.N. Piramanayagam and H.B. Zhao, "Recent Progress in Perpendicular Recording Media", The 3rd Magneto-Electronics International Symposium (Invited paper) (15 - 19 Jun 2004, UNIVERSITE DE LA ROCHELLE, La Rochelle, France).
58. Chen, Y., T. Guan, J. Zhang and S.N. Piramanayagam, "Crystallographic preferred orientation and magnetic orientation ratio improvement by utilizing CrRu/RuAl seedlayer in oriented media on directly textured glass substrates". 9th Joint MMM/Intermag Conference (5 – 9 Jan 2004, Anaheim Marriott, Anaheim, California, United States).
59. S.N. Piramanayagam et al., "Dynamic Orientation Ratio - Analytical Model and Experimental Study in Longitudinal Media". 9th Joint MMM/Intermag Conference (5 - 9 Jan 2004, AnaheimMarriott, Marriott, United States).
60. Hee*, C.H., S.N. Piramanayagam, J.P. Wang and T C Chong, "Design of Advanced Laminated Antiferromagnetically Coupled Media". International Conference on Materials for Advanced Technologies (Invited paper) (1 - 6 Jul 2001, Suntec City Convention Center, Singapore).

International Conferences (POSTER PRESENTATION)
Presented and Published

61. S. Gupta, T.L. Jin, S. Bhatti, W.C. Law, W.S. Lew, and S.N. Piramanayagam, “Broadband Strip-line Ferromagnetic Resonance Spectroscopy of Soft Magnetic

CoFeZrTa Patterned Thin Films in the Frequency Domain". 62nd Annual Conference on Magnetism and Magnetic Materials (MMM), Pittsburgh, USA (2017).

62. D. Kumar, S. Gupta, T.L. Jin, R. Nongjai, A. Kandasami, and S.N. Piramanayagam, "Tailoring the Structural and Magnetic Properties of Masked CoPt Thin Films Using Ion Implantation". 62nd Annual Conference on Magnetism and Magnetic Materials (MMM), Pittsburgh, USA (2017).
63. T. Tahmasebi; S.N. Piramanayagam, and T.C. Chong, "Influence of Spin Polarizer on the Magnetoresistance, Switching Property and Interlayer Interactions in Co/Pd Single Spin Valves", Submitted to INTERMAG-Vancouver 2012 (9 May).
64. S.N. Piramanayagam, M. Ranjbar, R. Sbiaa, and T.C. Chong, "First-order reversal curve analysis of antiferromagnetically coupled Nanostructures of Co/Pd Multilayers", INTERMAG conference, Vancouver, Canada (2012).
65. H.J. Li, D. Wei, and S. N. Piramanayagam, "Micromagnetic simulation of MFM tips with different magnetic anisotropy", 56th Annual Conference on Magnetism and Magnetic Materials (MMM), Arizona, USA (2011).
66. T. Tahmasebi, S.N. Piramanayagam; R. Sbiaa, HK. Tan, and T.C. Chong, "Effect of different compositions of spin polarizer magnetoresistance and switching property of Co/Pd single spin valve structure", 56th annual conference on Magnetism and Magnetic Materials-Scottsdale-Arizona 2011 (30th Oct-3rd Nov)- Poster Presentation (This work won the Best Poster Presentation Award).
67. S.N. Piramanayagam, M. Ranjbar, H.K. Tan, Allen Poh W.C, R. Sbiaa, and T. C. Chong, "Magnetic Properties of Antiferromagnetically Coupled Antidots of Co/Pd Multilayers", 56th Annual Conference on Magnetism and Magnetic Materials (MMM), Arizona, USA (2011).
68. M. Ranjbar, S.N. Piramanayagam, R. Sbiaa, and T.C. Chong, "Advanced Magnetic Force Microscopy Tips for High Resolution magnetic imaging", International Conference on Materials for Advance Technology (ICMAT), Singapore (2011).
(This paper has won the best poster Award).
69. S.K. Wong, K. Srinivasan, R. Law, E. Tan, H. Tan, R. Sbiaa, and S. N. Piramanayagam, Characterization of coupled novel magnetic multilayers with Anomalous Hall effect", Joint MMM-INTERMAG Conference, Washington, D. C., USA (2010).
70. M. Ranjbar, S.N. Piramanayagam, R. Sbiaa, K.O. Aung, Z.B. Guo, and T. C. Chong, "Ion Beam Modification of Exchange Coupling to Fabricate Patterned Media", International Conference on Materials for Advance Technology (ICMAT), Singapore (2009).
71. Srinivasan, Kumar, S.N. Piramanayagam, Y.S. Kay, and R. Chantrell, "Microstructure and switching mechanism of CoCrPt-Oxide Perpendicular Recording Media". Perpendicular Magnetic Recording Conference 2007 (, Tokyo Convention Centre, Tokyo, Japan).
72. S.N. Piramanayagam, Kumar Srinivasan, R. Sbiaa, and R. Chantrell, "Thermal Stability and Magnetization Process in CoCrPt-SiO2 Perpendicular Recording Media". Perpendicular Magnetic Recording Conference 2007 (, Tokyo International Forum, Tokyo, Japan).
73. POH*, W C A, S.N. Piramanayagam, and Y F Liew, "Novel Hybrid Magnetic Overcoats - Solution for Low Magnetic Spacing". Journal of Applied Physics, 103 (2008). New York: American Physical Society. (52nd annual Magnetism and Magnetic Materials Conference, 5- 9 Nov 2007, Tampa Marriott Waterside, Tampa, Florida, United States).
74. Srinivasan*, K., S.N. Piramanayagam, S.K. Wong and Y.S. Kay, "Microstructure and magnetic properties of CoCrPt–SiO2 perpendicular recording media with synthetic nucleation layers", Journal of Applied Physics, 103 (2008). New York: American Institute of Physics. (52nd Magnetism and Magnetic Materials Conference, 5 - 9 Nov 2007, Tampa Marriott Waterside, Tampa, Florida, United States).
75. Shi*, J.Z., S.N. Piramanayagam, J.M. Zhao, C.S. Mah, Y.S. Kay and C.Y. Ong, "Low-noise crystalline soft underlayer for CoCrPt:SiO2 perpendicular recording media". IEEE Transactions on Magnetics, 43, no. 6 (2007). New York: IEEE Magnetics Society. (10th Joint MMM/Intermag Conference, 2007, 7 - 11 Jan 2007, Marriott Waterfront, Baltimore, United States).

76. Zhang, J., R. Ji, J. Xu, J. Ng, B. Xu, S. Hu, H. Yuan and S.N. Piramanayagam, "Lubrication for Heat-Assisted Magnetic Recording Media". IEEE Transactions on Magnetics, 42, no. 10 (2006). New York: IEEE Magnetics Society. (Intermag 2006, 8 - 12 May 2006, Country Resort and Convention Center, San Diego, California, United States).
77. Shi*, J., S.N. Piramanayagam, S.Y. Chow, S.J. Wang, J. Zhao and C.S. Mah, "CoCrPt–SiO2 Perpendicular Recording Media with a Crystalline Soft Underlayer". IEEE Transactions on Magnetics, 42, no. 10 (2006). New York: IEEE Magnetics Society. (Intermag 2006, 8 – 12 May 2006, Resort and Convention Center, San Diego, California, United States).
78. J.Z. Shi, S.N. Piramanayagam, J.M. Zhao, C.S. Mah and B. Liu, “High Writability Perpendicular Recording Media with Low Noise Crystalline Soft Underlayer”, APDSC, Taiwan (2006).
79. Liau, M., S.N. Piramanayagam, J.Z. Shi and B.C. Lim, "Textured growth of CoFe for soft underlayers in CoCrPt:SiO2 perpendicular magnetic recording media". Journal of Magnetism and Magnetic Materials, 303 (2006). Amsterdam: Elsevier. (International Conference on Physics of Magnetic Materials, 13 - 16 Sep 2005, Grand Copthorne Waterfront Hotel, Singapore). #
80. S.N. Piramanayagam et al., "Effect of gas pressures on the magnetic properties and recording performance of CoCrPt–SiO2 perpendicular media". Journal of Magnetism and Magnetic Materials , 303 (2006). Amsterdam: Elsevier. (International Symposium on Physics of Magnetic Materials, 13 - 16 Sep 2005, Grand Copthorne Waterfront Hotel, Singapore).
81. S.N. Piramanayagam et al., "Investigations on annealed Ni-P in Al-Mg/Ni-P substrates as soft underlayer for perpendicular recording media". Journal of Magnetism and Magnetic Materials , 287 (2004). Amsterdam: Elsevier. (7th Perpendicular Magnetic Recording Conference 2004, 31 May - 2 Jun 2004, Sendai, Japan).
82. Lu, M., T. Song, T. Zhou, H. Gong, S.N. Piramanayagam*, Y. Yang, W. Ma and J.P. Wang, "FePt and Fe nanocomposite by annealing self-assembled FePt nanoparticles". Journal of Applied Physics, 95, no. 11 (2004). New York: American Institute of Physics. (9th Joint MMM/Intermag Conference, 5 - 9 Jan 2004, Anaheim Marriott, Anaheim, California, United States).
83. Pang, S.I., S.N. Piramanayagam, L. Huang and J.P. Wang, "Advanced laminated antiferromagnetically coupled media with high thermal stability and low noise". IEEE Transactions on Magnetics, 38, no. 5 (2002). New York: IEEE Magnetics Society. (Intermag Conference, 28 Apr - 2 May 2002, Convention Center, Amsterdam, Netherlands).
84. Pang, S.I., S.N. Piramanayagam and J.P. Wang, "Investigations on Thermal Stability for Laminated Antiferromagnetically Coupled Media". Journal of Applied Physics, 91, no. 10 (2002). Seattle: American Institute of Physics. (46th MMM Conference, 12 - 16 Nov 2001, Westin Seattle, Seattle, United States).
85. S.N. Piramanayagam et al., "A Novel Method to Determine Dynamic Remnant Coercivity". IEEE Transactions on Magnetics, 37, no. 4 (2001). New York: IEEE Magnetics Society. (Joint MMM/Intermag 2001, 7 - 11 Jan 2001, Marriott Rivercentre, San Antonio, United States).
86. Shan*, Z.S., D. Jin, H.B. Ren, J.P. Wang, S.N. Piramanayagam, S.I. Pang and T C Chong, "Magnetic Field and Thermal Reversal Properties of Exchange-Bias Recording Films". IEEE Transactions on Magnetics (2001). New York: IEEE Magnetics Society. (Joint MMM/Intermag 2001, 7 - 11 Jan 2001, Marriott Rivercenter Hotel, San Antonio, United States).
87. Fukuoka, T, M. Matsumoto, A Morisako and S.N. Piramanayagam, "Effect of underlayer material on magnetic properties of Nd-Fe-B thin films". Proc.of 8th International Conference of Ferrites (Japan Society of Powder and Powder Metallurgy), (2000). Kyoto: Japan Society of Powder and Powder Metallurgy. (8th International Conference of Ferrites, 18 - 21 Sep 2000, Kyoto, Japan).

International Conferences (POSTER PRESENTATION)
PRESENTED BUT NOT PUBLISHED

88. D. Kumar, T. Jin, V. Chaudhary, K. Tham, S. Saito and S.N. Piramanayagam, Large Uniaxial anisotropy CoPtRh thin films for microwave assisted magnetic recording, Joint MMM-Intermag conference, Washington DC (2019).
89. D. Kumar and S.N. Piramanayagam,
    Domain wall pinning in square wave shaped magnetic nanowires
    Joint MMM-Intermag conference, Washington DC (2019).
90. T. Jin, F.N. Tan, C.C. Ang, W. Gan, J. Cao, W. Lew and S.N. Piramanayagam, “Pinning sites with tilted magnetization for domain wall motion control in racetrack memory”, Intermag 2018, Singapore (2018).
91. S. Bhatti, C. Ma, X.X. Liu and S.N. Piramanayagam
    Stress Induced Domain Wall Motion in CoFe
    62nd Annual Conference on Magnetism and Magnetic Materials (MMM), Pittsburgh, USA (2017).
92. T. Ikeda, S. Imai, K. Okada, A. Morisako, S.N. Piramanayagam and X.X. Liu,
    Magnetoresistive sensors with orthogonal magnetic easy axis.
    62nd Annual Conference on Magnetism and Magnetic Materials (MMM), Pittsburgh, USA (2017).
93. T. Dutta, N. Dwivedi, M. Saifullah, S.N. Piramanayagam, and C.S. Bhatia, “High switching efficiency in FePt bilayer media with exchange control layers.”, Intermag, Dublin (2017).
94. T. Jin, M. Ranjbar, W.L. Gan, W.S.Lew and S.N. Piramanayagam, “ Tailoring magnetic texture for domain wall motion control in nanowires of Co/Pd multilayers.”, Intermag, Dublin (2017).
95. T. Dutta, N. Dwivedi, M. Saifullah, S.N. Piramanayagam, and C.S. Bhatia, “Nitrogen driven tuning of magnetic and microstructural properties of FePt bilayer .”, Intermag, Dublin (2017).
96. T. Jin, M. Ranjbar, W. Law, W.S.Lew and S.N. Piramanayagam, “Tuning magnetodynamic properties in NiFe film with localized diffusion for domain wall devices”, Magnetism and Magnetic Materials Conference, New Orleans (2016).
97. S. Bhatti, T. Ikeda, X. Liu, S.N. Piramanayagam, “Stress Driven Domain Wall Motion in FeCo Nanowires” Magnetism and Magnetic Materials Conference, New Orleans (2016).
98. S. Bhatti, O. Bo, R.S. Rawat and S.N. Piramanayagam, “The effect of a Novel Energetic Carbon Overcoat Deposition on the Magnetic and Structural Properties of FePt Recording Medium”, Magnetism and Magnetic Materials Conference, New Orleans (2016).
99. M. Ranjbar, S.N. Piramanayagam, R. Sbiaa and T.C. Chong, “Control of Switching Field Distribution in Bit Patterned Media”, TMRC 2013 - The Magnetic Recording Conference (20 - 22 Aug 2013, Tokyo, Japan)
100. Hnin Y.Y.K., Poh W.C., Wong.S.K, Tan H.K. and S.N. Piramanayagam, "Long-range ordered cylindrical copolymer thin films in un-patterned substrates". APMRC 2012 (Singapore)
101. POH*, W C A, S.N. Piramanayagam and Y F Liew, "Hybrid facing targets sputtered carbon overcoat for ultrahigh density recording media". TMRC 2006 - The Magnetic Recording Conference (7 - 9 Aug 2006, Carnegie Mellon University, Pittsburgh, United States)
102. S.N. Piramanayagam et al., "A Novel Perpendicular Recording Medium with a Magnetic Intermediate Layer". Intermag 2006 (8 - 12 May 2006, Country Resort and Convention Center, San Diego, California, United States)
103. S.N. Piramanayagam, H.B. Zhao, C.S. Mah and J. Shi, "Novel Intermediate Layers for Perpendicular Recording Medium". 50th MMM Conference (30 Oct - 3 Nov 2005, Fairmont Sanjose, San Jose, California, United States)
104. Shi*, J.R. and S.N. Piramanayagam, "Nitrogenated Carbon Films prepared by Unbalanced Magnetron Sputtering for High Density Recording Media". Intermag Conference (4 - 8 Apr 2005, Congress Center, Nagoya, Japan)

105. S.N. Piramanayagam et al., "Viscosity and dynamic effects observed in first order reversal curves". 9th Joint MMM/Intermag (5 - 9 Jan 2004, Anaheim Marriottt, Anaheim, United States)
106. Hee*, C.H., J. Yin, S.I. Pang, S.N. Piramanayagam and J.P. Wang, "Characterizing magnetic interaction in laminated antiferromagnetically coupled media". 47th MMM conference (11 -15 Nov 2002, Marriott Waterside, Tampa, Florida, United States)
107. S.N. Piramanayagam et al., "Origin of thermal stability in laminated antiferromagnetically coupled media". Intermag 2002 (28 Apr - 2 May 2002, Convention Center, Amsterdam, Netherlands)
108. Chow*, S.K., S.N. Piramanayagam, S.I. Pang and J.P. Wang, "Overwrite, nonlinear transition shift of laminated antiferromagnetically coupled media". Intermag 2002 (28 Apr - 2 May 2002, Convention Center, Amsterdam, Netherlands)
109. S.N. Piramanayagam et al., "Multilayered FeCo/FeCo-O soft magnetic films for recording applications". Intermag 2002 (28 Apr - 2 May 2002, Convention Center, Amsterdam, Netherlands)

Others

Publications in Non – ISI journals (not listed in Web of Science)

1. Wang, J.P, Piramanayagam, S.N, Hee, C.H, Huang, L, Pang, S.I, and Chong, T.C. (2001). Laminated Antiferromagnetically Coupled Media for 100 Gb/in2 Areal Density and Beyond.
   IEIC Technical Report 101(399) pp.61-66.
2. Piramanayagam, S.N, Wang, J.P, Shan, Z.S, Ye, W, Chong, T.C. (2000)
   Dynamic Coercivity Measurements On Magnetic Thin Film Media",
   IEIC Technical Report, 100(422) Pp.39-44.
3. Piramanayagam, S.N, Matsumoto, M, Morisako, A, and Takei, S. (1998). Magnetic and Magneto-Optic properties of CoFe/Pd multilayers.
   Journal of Magnetics Society of Japan, 22, S1, 233 (1998).
4. Piramanayagam, S.N, Nigam, A.K, Chandra, G, Prasad, S, Shringi, S.N, Venkataramani N, and Krishnan, R. (1998). Low temperature resistivity of a-CoFeMnBSi alloys.
   Journal of Magnetics Society of Japan, 22, S1, 67.
5. Piramanayagam, S.N, Matsumoto, M, Morisako, A, and Takei, S. (1997). Studies on Cosputtered NdFeB thin films.
   Journal of Magnetics Society of Japan, 21, 417.
6. Piramanayagam, S.N, Matsumoto, M, and Morisako, A. (1999). The Effect of Interdiffusion on the Magnetic and Magneto-Optic Properties of Co/Pd Multilayers.
   IEIC Technical Report 98(620) pp.89-95.

Publications in other issues (Not peer-reviewed)

7. Tahmasebi, T. and **Piramanayagam**, **S.N.** (2011). Nanoscience and nanotechnology for Memory and Data Storage.
   COSMOS journal of the Singapore National Academy of Science.
8. Wang, J.P, Piramanayagam, S.N**,** and Chong T.C. (2001). Laminated Antiferromagnetically Coupled Recording Media
   Datatech, 7, 73, ICG Publishing Ltd., London, U.K.
9. Piramanayagam, S.N, Shringi, S.N, Prasad, S, Nigam, A.K, Chandra, G, Krishnan, R, and Ramanan, V.R.V. (1991). Mossbauer Spectroscopy studies on FeCoMnBSi alloys. Disordered materials: structure and properties: proceedings of the International Conference, INDIAS-91 held at DA University, Indore, India, from 3-6 February, 1991.

Working Papers / Pipeline (All as main author)

1. High-Frequency Domain Wall Oscillations in Ferromagnetic Nanowire with a Nanoscale Dzyaloshinskii–Moriya Interaction (DMI) Region, submitted to Journal of Magnetism and Magnetic Materials (2020)
2. Domain Wall Devices, submitted to Materials Today Physics (2020)
3. "Enhanced Spin-Orbit Torque Efficiency in Pt/Co/Ho devices using a second interface Ho layer", submitted to Advanced Electronic Materials (2020)
4. "Magnetic Materials for Storage, Memory and Energy Applications", submitted to Advanced Science (2020)
5. "Power-efficient domain wall devices for neuromorphic computing" Under preparation for Nature Electronics (2020)

Innovation

Patents Filed

- US 2005/0259354 A1,
  "Write head",
  S.N. Piramanayagam and Hee Ching Hian

- JP 2003196816A,
  "Laminated Nonferromagnetic Bonded Medium for Data Storage Device",
  J.P. Wang and S.N. Piramanayagam

- US 20090226764A1
  "Magnetic Recording Medium with Iridum-Manganese Based Intermediate Layer and Method of Manufacturing Same",
  K. Srinivasan, R. Sbiaa and S.N. Piramanayagam

- WO2009035411A1
  "Magnetic Recording Media with a Synthetic Nucleation Layer and Method of Manufacture",
  S.N. Piramanayagam, K. Srinivasan

- US 20080062561A1
  "Double-layered perpendicular magnetic recording media",
  J.Z. Shi and S.N. Piramanayagam

- US 20070259215A1
  "Perpendicular Recording Media",
  S.N. Piramanayagam and J.Z. Shi

- US 20130052483A1
  "Magnetoresistance Device",
  T. Tahmasebi and S.N. Piramanayagam

- US 20130059168A1
  "Magnetoresistance Device",
  T. Tahmasebi, S.N. Piramanayagam and R. Sbiaa

- US 20130108889
  "Magnetoresistance Device and Memory Device Including the Magnetoresistance Device",
  S.N. Piramanayagam, R. Sbiaa and T. Tahmasebi

- WO/2011/139235
  "A Magnetoresistive Device",
  R. Sbiaa, R. Law and S.N. Piramanayagam

- JP 2002056529A
  "Method for Changing Material into Magnetic State, method for manufacturing magnetic recording medium and recording medium",
  S.N. Piramanayagam and Jian Ping Wang
  Comment: "Won Jianpingu" listed in the patent actually means Wang Jian Ping; a mistake from the transliteration (Japanese Katakana to Roman letters) process

- SG118153A1
  "Magnetic Recording Medium with Magnetic Overcoat Layer",
  S.N. Piramanayagam and J.P. Wang (Publication No. 118153)

- SG160339A1
  "Double-layered perpendicular magnetic recording media",
  J.Z. Shi and S.N. Piramanayagam

- SG172495A1
  "Spin-torque and multi-level domain wall memory",
  R. Sbiaa, S.N. Piramanayagam and Thomas L.Y. Fook.

- SG140495A!
  "Double-layered perpendicular magnetic recording media",
  J.Z. Shi and S.N. Piramanayagam

- SG136842A1
  "Perpendicular Magnetic Recording Media",
  S.N. Piramanayagam and J.Z. Shi

Patents Granted

- US 6699332 B1
  "Method of producing a magnetic recording medium",
  S.N. Piramanayagam and J.P. Wang

- US 6794057 B2
  "Laminated Antiferromagnetically Coupled Media for Data Storage",
  J.P. Wang and S.N. Piramanayagam

- SG88784A1
  "Method of producing a magnetic recording medium",
  S.N. Piramanayagam and J.P. Wang

- SG96659A1,
  "Laminated Antiferromagnetically Coupled Media for Data Storage",
  J.P. Wang and S.N. Piramanayagam

Technology Disclosure Filed

- **Sensor for low-magnetic field detection (TECH/160/15)**
  S.N. Piramanayagam

- **High sp3 content ultrathin carbon overcoat for magnetic media using high-energy density pulsed-plasma technology** (Singapore patent filed)
  Rajdeep S. Rawat, S.N. Piramanayagam, Joseph Vimal Vas, Mayank Mishra and Lee Choon Keat Paul

TEACHING SUMMARY

Courses Taught (Current year and Last 2 years)

Course Code	*Course Title*	*Academic Year*	*Course Level*	*Type*	*Semester*
PH1801	Foundations of Physics (Class size of ~ 250 students)	AY17 – Present	UG	Lecture	I
PAP747	Spintronics for Information Technology (average ~ 12 students / year)	AY15 – Present	PG	Lecture	II
PH4414	Introduction to Spintronics (average ~ 6 students / year)	AY15 – Present	UG	Lecture	II

Academic Supervision and Mentoring

PhD students

No.	PhD Student	Period	Role	Thesis/ Project Title	Current Status
Currently supervising					
1	Sabpreet Bhatti	2017 – Present	Supervisor	Investigations on one-dimensional magnetic devices	Expected to graduate in 2021
2	William Mah Wai Lum	2019 – Present	Supervisor	Investigations on synthetic antiferromagnetic nanoparticles for Hyperthermia	Expected to graduate in 2022
3	Chan Jianpeng	2020 -- Present	Supervisor	Spin-based Neuromorphic Computing	Expected to graduate in 2024
Graduated (current year and Last 2 years)					
1	Jin Tianli	2015 – 2019	Supervisor	Investigations on Control of Domain Wall Motion Using Synthetically Textured Magnetic Nanostructures	Currently, I have offered her a post-doctoral position in my group
2	Durgesh Kumar	2016 – 2021	Supervisor	Investigations of magnetic nanostructures for Spintronics applications	Expected to graduate in 2020

Masters students (By Research Only)

No.	Masters Student	Period	Role	Thesis/ Project Title	Current Status
Current - Nil					
Graduated - Nil					

Masters students (By Coursework) & Undergraduate Students

No. Graduated (Since joining NTU)			No. Currently Supervising		
MSc[#]	**FYP**	**URECA**	**MSc[#]**	**FYP**	**URECA**
0	7	3	0	1	0

Non-graduating students (3-12 months)

No.	Name of the Student	Period	Category	Thesis/ Project Title	Current Status
1	Arohan Dutta	2019	Foreign internship student	Optical Lithography	Completed
2	Zhou Jiyuan	2017-2018	Nanyang Research program (NRP)	Structural coloration by nanoimprint lithography	Received NRP gold award
3	Wu Kaiyan				
4	Nicholas Chia	2018-2019	NRP students	Lithography	NRP Bronze
5	Kok Chin Yi				NRP Gold
6	Muhammad Syahril Roslan	2018	NRP student	Nanoimprint lithography on magnetic materials	Completed
7	Mah William	2017	URECA	Self-assembly of nanoparticles	Joined PhD in our group
8	Lakshya Gaur	2017	Foreign internship student	Magnetooptic Kerr Investigations on Spintronics Materials	Completed
9	Kishan Suchet Palani	2017	Foreign internship student	Nanoelectronics – Magnetooptic Kerr Investigations on Spintronics Materials	Completed
10	Nicolo Sernicola	2017	Foreign intern	Scanning Microwave microscopy	Completed
11	Laura Bogula	2017	Foreign intern	Self-assembly of nanoparticles	Completed
12	Quang Uy Thinh	2017	URECA	Self-assembly of nanoparticles	Completed
13	Ryusuke Kobayashi	2017	Foreign internship student	ZnO nanorods	Completed
14	Tan En Zhi	2016	URECA	Effect of solvent annealing with Toluene-Hexane solvent mixture on Self Assembly of Ps-PDMS on Si Wafer	Completed
15	Sabpreet Bhatti	2015-2016	Foreign intern student	Carbon overcoat	Joined PhD in our group
16	Chen Hong	2015	URECA	Magnetic Force Microscopy imaging of Domain Wall Memory	Doing PhD at NTU

Post-doctoral fellows

No.	Post-doc Fellow	Appointment	Period	Project Title	Current Status
In employment					
1	Shalabh Srivastava	Research Fellow	2020 ~	Scanning Microwave Microscopy	Working
2	Durgesh Kumar	Research Fellow	2021 ~	Spin-Orbit Coupling based Intelligence Technology	Offered
Left service (Current year and Last 2 years)					
1	Scott Xing	Senior Research Fellow	2020-2021	Spin-Orbit Coupling based Intelligence Technology	Leaving from April 2021
2	Jin Tianli	Research Fellow	2020 -2021	Extending the Limits of Perpendicular Recording Media Technology	Research Fellow at SPMS, NTU
3	Varun Chaudhary	Research Fellow	2018 – 2019	Synthetic antiferromagnetic nanoparticles for hyperthermia	Research Fellow at MSE, NTU

Teaching Awards / Recognition

Year	Teaching Award / Recognition
Awards won by my students	
Kok Chin Yi, Temasek Junior College	NRP Gold award, 2018
Nicholas Chia Zhi Jie, Anderson S JC	NRP Bronze award, 2018
Zhou Jiyuan, Hwa Chong Institution	NRP Gold award, 2017
Wu Kaiyan, Victoria Junior College	NRP Gold award, 2017
Sabpreet Bhatti, PhD student, NTU	Best student presentation finalist, ICMFS, USA

Teaching Grants - Nil

Role	**Year**	**Amount (S$)**	**Source of Grant**

SERVICE SUMMARY

Service Awards / Recognition

Year	Role
Received certificates from IEEE in recognition of the following roles	
2019	Received certificate for my role as General (Co-)Chair of Intermag 2018, held in Singapore. Intermag is the top-tier conference in applied magnetism. Received certificate during Joint MMM-Intermag 2019, Washington DC
2017	For my contributions as the Chair of The Technical Committee of IEEE Magnetics Society, from 2013-2016. Received certificate during Intermag 2017, Dublin, Ireland
2013-2014	For my contributions as the Chapter Chair of IEEE Magnetics Society Singapore Chapter (IEEE MSSC)
2010	For my contributions as the Chapter Chair of IEEE MSSC
2006-2007	For my contributions as the Chapter Chair of IEEE MSSC

School

Period of appointment	Role
2018	As a part of NTU delegation, visited IIT Madras, IIT Bombay, and IISc Bangalore. One joint PhD student was identified and brought to NTU
2017 – Present	Arranged lab visits to my lab during the SPMS open house. The lab was very popular with the demonstrations of lithography activities.
2016	Visited IIT Madras and IIT Bombay to conduct proficiency tests and recruit students for the PhD programs of schools. Three students joined SPMS as a result of this visit.
2015 – Present	Chairman/ Examiner of thesis/Oral examination of PhD thesis: Jia Guichong – PhD (NTU) 2019 Li Sihua – PhD (NTU) 2019 Sachin Krishnia – PhD (NTU) 2018 Cong Longqing – PhD (NTU) 2017 Ramu Maddu – PhD (NTU) 2017
2015 – Present	Chairman/Examiner of the qualifying examination of PhD students: Omar Abdelrahman – 2019 Calvin Ang Ching Ian – 2018 Wong Qiying – 2017 Pasupalak Anshuman Gadadhar - 2019 Wong Dao Hwee Grayson – 2018 Gan Koon Siang – 2017 Desmond Loy Jia Jun – 2017 Das Poulomi – 2017 Gan Weiliang – 2016 Zhou Yu – 2016 Zeng Qingyun - 2016
2015 – Present	Thesis advisory committee member of several PhD students: Li Shengyao Li Sihua Shane WONG Qi Ying Ye Chen

2015 – Present	Examiner of several Final Year Project students
2015 – Present	Actively participated in the SPMS open house activities
2015 – Present	Mentor of several undergraduate students
2015 – Present	Hosting of seminars: Brought/hosted various overseas speakers to speak at the school 2015: Russell Cowburn (Cambridge, UK), Hideo Sato (Tohoku University, Japan), Anil Prabhakar (IIT Madras), Ricardo Sousa (SpinTec, France), Shigeki Nakagawa (Tokyo Inst Tech, Japan), Atsufumi Hirohata (York Univ., UK), 2016: Kazuhiro Hono (NIMS, Japan), Johan Akerman (U. Gothenburg, Sweden), 2017: Hendrik Ohldag (USA), Liu Xiaoxi (Shinshu Univ., Japan), Rachid Sbiaa (Oman), Atsufumi Hirohata (York Univ., UK), Victorino Franco (Sevilla Univ., Spain), Masahiro Yamaguchi (Tohoku Univ., Japan), Hiroaki Yoda (Toshiba, Japan), Hari Srikanth (USF, USA) 2018: Mitsuteru Inoue (Toyohashi, Japan), Yoshichika Otani (Tokyo Uni, Japan), 2019: Takao Suzuki (U. Alabama, USA), Justin M. Shaw (NIST, USA), Part of MRS-S Summer school: H. Srikanth (USF, USA), Victorino Franco (Sevilla U., Spain), K.G. Suresh (IIT Bombay, India), See-Hun Yang (IBM, USA) and Chris Marrows (UK)
2015 – Present	Thesis advisory committee of PhD students Le Kim Quey – School of Mechanical and Aeronautical Engineering Avinash Chaurasiya – NIE, NTU

Academic Community

Period of appointment	Role
2021	Technical Chair, Materials for Humanity 21, Singapore
2020	Chair, 10th International Magnetics Symposium, Singapore
2020	Publicity cochair, TMRC 2020, Berkeley (USA)
2019	Chair, MRS-Singapore Summer School on Magnetic and Spintronics Materials, Singapore (Organized a 3-days event, which featured 10 lectures in a tutorial format, for a group of about 30 students)
2019	Chair, Symposium F, International Conference on Materials for Advanced Technologies (ICMAT 2019), Singapore (2500+ delegates)
2019	Session Chair, IMEC-Stanford workshop, Belgium
2019	Session Chair, TMRC 2019, Minnesota, USA
2018	Chair, 9th Magnetics Symposium, Singapore (2-days event, featuring about 25 talks, including overseas speakers)
2018	Advisory Committee, IcAUMS (Jeju, Korea)
2018	General (Co-)Chair, Intermag 2018, Singapore Intermag is the top-tier conference in applied magnetism. This was a unique opportunity for Singapore to host this conference in the history of about 50 years. I championed the bidding and successful organization of the conference.

2018	Member of International Advisory Committee, MORIS (USA)
2017	Session Chair, ICMAT symposium S, Singapore
2017	Chair, 8th Magnetics Symposium, Singapore (1-day event, featuring about 15 talks, including overseas speakers)
2017	Poster Session Co-chair, TMRC 2017, Japan
2017	Publications Co-Chair, Intermag 2017, Dublin, Ireland (Managed editing of about 600+ paper submissions, together with two other co-chairs)
2016	Session Chair, MMM 2016 (New Orleans, USA)
2016	Program Committee Member, MMM 2016 (New Orleans, USA)
2016	Chair, 7th Magnetics Symposium, Singapore, highlighting the 60th anniversary of Hard Disk Drives (featuring about 20 talks)
2016	Session Chair, Joint MMM-Intermag 2016 (San Diego, USA)
2016	Editor, Joint MMM-Intermag 2016 (San Diego, USA) (Handled about 800 submissions, together with 20 other editors)
2015 ~ Present	Editorial Board Member, Physica Status Solidi group of journals (PSS:RRL has an impact factor ~ 4). It is a Tier 1 journal in NTU
2015	Chair, 6th Magnetics Symposium, Singapore (2-days event, featuring 25 talks, including overseas speakers).
2015	Program Committee Member, MORIS 2015 (Japan)
2015	Chair, Symposium X, ICMAT 2015, Singapore (2000+ delegates event)
2015	Publications Co-Chair, TMRC 2015, UC Berkeley, USA (Managed editing of about 30+ paper submissions, together with another co-chair)
2015	Session Co-Chair, Intermag 2015, Beijing
2015	Publications Co-Chair, Intermag 2015, Beijing (Managed editing of about 600+ paper submissions, together with two other co-chairs)
2013 ~ Present	Editor, IEEE Transactions on Magnetics Plays a key role in “Magnetic Recording”
2012 ~ Present	Editorial Board Member, Scientific Reports
2021 ~	Managing Editor, Nano

Other Services

Period of appointment	Role
2017 – present	Treasurer for MRS-Singapore Although taking care of the monetary aspects is the main task in this role, I have proposed to the society to play a role in educating the younger community, by organizing MRS-S summer schools. As a pioneer activity, I organized a school on Spintronics and Magnetics Materials in 2019. We plan to do many more such schools in the future
2013 - 2016	Chair, IEEE Magnetics Society Technical Committee A group of us revived the technical committee to play an important role. We actively brainstormed new topics for Magnetics conferences. We provided volunteers for program committees, chairing sessions etc. More importantly, we came up with two roadmap papers for new magnetic materials and magnetic sensors.
2013-2014 2010-2011 2006-2007	Chapter Chair, IEEE Magnetics Society Singapore Chapter I initiated an annual event “Magnetics Symposium”, which plays a major role in bringing Singapore researchers to meet regularly. The symposium also features a few overseas speakers and a competition for students to present papers and receive “Best presentation” awards, which help to motivate the students. I have been organizing this symposium regularly. During around 2007, I increased the membership by many new ideas.
2012 - 2016	Committee Member of MRS-Singapore Suggest ideas and play a role in making decisions
2008-2009 2004-2005	Secretary, IEEE Magnetics Society Singapore Chapter As secretary, I still played the lead role as above as chapter chair