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MAJOR RESEARCH INTERESTS

My research focuses on the fundamental understanding and exploration of magnetic nanostructures in applications such as ultra high density storage, magnetic random access memory (MRAM) and spin logic. We are developing new nanomaterials such as half metals for spintronic applications and ultra high sensitive biosensors. The research group is collaborating with several research institutes in Singapore and overseas. Current projects include

1. Spin dependent transport in magnetic nanostructures (Spintronics)
2. Development of large area nanofabrication techniques
3. Understanding the pinning and de-pinning processes of magnetic domain walls
4. Nanomagnetism (nanowires, nanorings etc) for MRAM
5. Half Metallicity
6. Development of high sensitivity magnetic Biosensors

RECENT REPRESENTATIVE PUBLICATIONS

1. A.O. Adeyeye, G. Lauhoff, J.A.C. Bland, C. Daboo, D.G. Hasko and H Ahmed, "Magnetoresistance behaviour of submicron NiFe wires" (1997), *Applied Physics Letters*, Vol.**70**, 1046-1048.
2. A.O. Adeyeye. J.A.C. Bland, C. Daboo (1997) "Magnetic properties of arrays of holes in Ni₈₀Fe₂₀films", *Applied Physics Letters*, Vol.**70**, 3164-3166
3. A.O. Adeyeye, J.A.C Bland, C. Daboo ad D.G. Hasko,(1997) "Magnetostatic interactions and magnetisation reversal in ferromagnetic wires", *Physical Review B - Condensed Matter*, Vol. **56**, 3265-3270
4. R. P. Cowburn, A. O. Adeyeye and M. E. Welland (1998) "Configuration Anisotropy in Nanomagnets", *Physical Review Letters*, Vol. **81**(24), 5414-5417.
5. R. P. Cowburn, D.K.Koltsov, A.O.Adeyeye, M.E.Welland, (1999) "Single domain circular nanomagnets", *Physical Review Letters*, Vol. **83**, 1042-1045,
6. A .O. Adeyeye and M. E. Welland (2002) "Magnetization process of a single chain of nanomagnets", *Applied Physics Letters*, Vol. **80**(13) 2344 – 2346.
7. A .O .Adeyeye and M. E. Welland, (2002) "Domain wall trapping at mesoscopic ferromagnetic junctions", *Journal Of Applied Physics*, Vol. **92**(7), 3896-3901.
8. N. Singh, S. Goolaup and A. O. Adeyeye (2004) "Fabrication of large area Nanomagnets", *Nanotechnology*, Vol. **15**, pp. 1539-1544,
9. S. Jain, A. O. Adeyeye and D. Y. Dai (2004), "Magnetic properties of half metallic Fe₃O₄ films", *Journal of Applied Physics*, Vol. **95** (11), 7237-7239.
10. C. C. Wang, A. O. Adeyeye, N. Singh, Y. S. Huang and Y. H. Wu, (2005) "Magnetoresistance behavior of Nanoscale Antidot Arrays", *Physical Review B*, Vol. **72**, 174426-1 to 174426-8
11. J.Wang, A.O Adeyeye and N.Singh (2005), "Magnetostatic Interactions in Mesoscopic Ni₈₀Fe₂₀ ring arrays", *Appl. Phys. Lett.* Vol. **87**, 262508-1 to 262508-3
12. C. C Wang, A.O Adeyeye and N.Singh, (2006) "Magnetic and Transport Properties of Multilayer Nanoscale Antidot Arrays" *Applied Physics Letters* **88**, 222506-1 to 222506-3
13. S. Goolaup, A.O. Adeyeye, and N. Singh (2006), "Magnetization reversal mechanisms in diamond-shaped Co nanomagnets" *Physical Review B* **73**, 104444-1 to 104444-8.
14. C. C Wang, A.O Adeyeye and N.Singh (2006) "Magnetic antidot nanostructures: effect of lattice geometry", *Nanotechnology* **17** 1629-1636