

The exchange bias in MnPd/Co_{1-x}Fe_x bilayers

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Abstract: A systematic study of exchange bias in MnPd/Co and MnPd/Co_{1-x}Fe_x bilayers has been carried out. Very large unidirectional anisotropy constant of 2.2 erg/cm² and the appearance of double-shifted loops, ascribed to the coexistence of positive and negative exchange bias, have been observed. The dependence of exchange bias, unidirectional anisotropy constant and coercivity on thickness, temperature, annealing regime and Fe content has been investigated and discussed. © 2006 Elsevier B.V. All rights reserved.

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References:

1. Meiklejohn, W.H., Bean, C.P., (1956) *Phys. Rev.*, 102, p. 1413
2. Meiklejohn, W.H., (1962) *J. Appl. Phys.*, 33, p. 1328
3. Nogues, J., Schuller, I.K., (1999) *J. Magn. Magn. Mater.*, 192, p. 203
4. Mauri, D., (1987) *J. Appl. Phys.*, 62, p. 2929
5. Malozemoff, A.P., (1988) *J. Appl. Phys.*, 63, p. 3874
6. Devasahayam, A.J., (1998) *J. Appl. Phys.*, 83, p. 7216
7. Yagami, K., (2001) *J. Appl. Phys.*, 89, p. 6609
8. Saito, M., (1997) *J. Magn. Soc. Japan*, 21, p. 505
9. Araki, S., (1998) *IEEE Trans. Magn.*, 34, p. 387
10. Tsunoda, M., (2002) *J. Magn. Magn. Mater.*, 239, p. 182
11. Imakita, I., (2004) *Appl. Phys. Lett.*, 85, p. 3812
12. Phuoc, N.N., (2003) *Physica B*, 327, p. 385
13. Phuoc, N.N., (2006) *J. Magn. Magn. Mater.*, 298, p. 43
14. Kren, E., Kadar, G., (1969) *Phys. Lett. A*, 29, p. 340
15. Ali, M., (2003) *Phys. Rev. B*, 67, p. 172405
16. Tang, Y.J., (2000) *J. Appl. Phys.*, 88, p. 2054
17. Lai, C.H., (2001) *Phys. Rev. B*, 64, p. 094420
18. Koon, N.C., (1997) *Phys. Rev. Lett.*, 78, p. 4865
19. Roshchin, (2005) *Europhys. Lett.*, 71, p. 297