Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Retention of Giant Magnetoresistance in Thin Films on Very Rough Substrates S.M. WATSON, A.C. REILLY, D.M. VLASSAREV, K. SMITH[1], College of William and Mary, B.C. HOLLOWAY[2], College of William and Mary, W.F. EGELHOFF, JR, National Institute of Standards of Technology — Interfacial roughness is known to affect GMR. Past studies have measured increases , decreases or negligible changes in GMR produced by increasing interfacial roughness. Most studies have explored small scale interfacial roughness induced by changes in growth parameters or annealing[1]. We present a study of the effects of large scale roughness ($\sigma_{rms} > 5$ nm) on the properties of GMR multilayers. GMR thin films were deposited on glass substrates chemically etched for different lengths of time producing a range of lateral and vertical roughness. We found that this long length scale does not have a significant detrimental effect suggesting that viable GMR multilayers can be deposited on a wide variety of surfaces, even with large roughness. M. C. Cyrille et al. Phys. Rev. B, 62, 3361 (2000), J. M. Colino et al., Phys. Rev. B, 54, 13030 (1996). [2] W. F. Egelhoff, Jr. et al., J. Appl. Phys., 82, 6142 (1997) [3] J. Alicea and S. Hershfield, J. Appl. Phys., 93, 7930 (2003)

[1]Department of Physics
[2]Department of Applied Science

Shannon M Watson
College of William and Mary

Date submitted: 30 Nov 2005 Electronic form version 1.4