

Abstract Submitted
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Experimental determination of switching field distributions in perpendicular and patterned recording media ANDREAS BERGER, Hitachi Global Storage Technologies, BYRON LENGFIELD, YOSHIHIRO IKEDA, OLAV HELLWIG, ERIC FULLERTON — We have developed and applied a magnetometry method for the measurement of intrinsic switching field distributions in magnetic recording media [1]. The method is based upon a comparison between the major loop and a set of recoil loops, which start at a certain distance ΔM away from saturation. Hereby, we measure the applied field difference ΔH between the recoil loops and the major loop at identical M-values. By simultaneously analyzing complete $\Delta H(M, \Delta M)$ -data sets, we gain a refined measure of the entire switching field distribution $D(H_S)$. We studied the reliability of this method by means of micromagnetic modeling and find it to be robust and precise in reproducing the input parameters. In particular, the method is rather insensitive to inter-granular exchange coupling up to a certain threshold value. Also, a self-consistency check of the methodology was developed. An existing polar-MOKE setup was adapted to allow for $\Delta H(M, \Delta M)$ -data acquisition, which enables a non-destructive sample characterization that is also compatible with the disk shape of recording media. Measurements on perpendicular and patterned recording media were made and results were compared to recording performance tests. [1] A. Berger, B. Lengsfeld, Y. Ikeda, Y. H. Xu, and E. E. Fullerton, IEEE Trans. MAG **41**, 3178 (2005)

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