Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

FORC Study of Magnetization Reversal Asymmetry in Fe/FeF_2 Exchange Biased Thin Films[1] JUSTIN OLAMIT, KAI LIU, UC Davis, ZHI-PAN LI, Cornell University, IVAN K. SCHULLER, UC San Diego — Asymmetric magnetization reversal in exchange biased ferromagnet/antiferromagnet (FM/AF) thin films have attracted much interest. Recent work has shown that the asymmetry in Ni/FeF_2 films is due to local incomplete domain walls in the FM parallel to the interface [1, 2]. We have investigated reversal asymmetry in Fe/epitaxial-FeF_2 using a First Order Reversal Curve (FORC) technique [3]. The major hysteresis loop is asymmetrical. Along the decreasing-field sweep of the hysteresis loop, FORC measurements show that the nucleation of domain structures occurs gradually while the domain annihilations are abrupt. However, along the increasing-field reversal, the domain nucleations are abrupt and the annihilations occur gradually. Rotating the AF easy axis away from the applied field shows that the nucleation and annihilation field distributions also have different angular dependencies along the field sweeps. These different distributions lead to the asymmetry seen in the shape of the major loop. [1] Li, *et al.*, PRL **96**, 217205 (2006). [2] Morales, *et al.*, APL **89**, 072504 (2006). [3] Davies, *et al.*, PRB **70**, 224434 (2004) ; APL **86,** 262503 (2005); PRB **72**, 134419 (2005).

[1]Work supported by ACS-PRF, Sloan Foundation, and DOE.

Justin Olamit
UC Davis

Date submitted: 20 Nov 2006 Electronic form version 1.4